

Astronomy and Space Science in Portuguese Popular Newspapers at the End of the 20th Century

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Summary

This article is a short, and inevitably incomplete, account of articles on astronomy and space science in Portuguese newspapers during the last quarter of the 20th century. It gives some insight into the social and science policy at that time and helps explain and put in context the changing patterns in newspaper coverage of astronomy and space science in Portugal.

Introduction

Science and technology are an integral part of everyday life, inextricably bound to our increasingly complex society. Our future is already framed by scientific advances in the environment, biology, communications, astronomy and more. The presence of science and technology in contemporary society stimulates discussion and reflection about the interaction between science, technology and society, and encourages studies that observe how they behave in relation to each other. After World War II, and in particular since the mid-1980s (Royal Society of London, 1985), these studies have reached new heights in accuracy and relevance. Following internationally developed studies (Dornan, 1990; Lewenstein, 1995; Fonseca, 2006) about the public understanding of science, the aim of this article is to understand and put in context the changing patterns in the newspaper coverage of astronomy and space science in Portugal.

Methodology

Following the traditional assumption made in research that newspapers are, to some

extent, representative of the entire traditional media landscape when it comes to science and technology coverage, we have decided to focus this research on quantifying and characterising newspaper articles that concern astronomy and space science in the Portuguese press between the years 1976 and 1999.

This research is based on the phased application of a varied set of methods and techniques, using quantitative and qualitative methodologies. The methodology was developed after newspaper articles on astronomy and space sciences were collected systematically and comprehensively, forming a longitudinal section of articles on this theme. The analysis unit used is the article.

The newspaper articles were collected manually from paper copies of the newspapers. In this article we present the results of considering five variables. As well as presenting some annual frequencies, we also present some indices that allow specific questions to be analysed.

Articles from the newspaper *A Capital* were gathered for the period between 1976 and 1999. The choice of this time span was

linked to the need to study the development of the appearance of astronomy and space science in Portuguese newspapers since Portuguese democracy stabilised, in the period after the Constitution of the Portuguese Republic was approved in 1976. Because a longitudinal analysis like this should not be carried out without considering the social, political and historical framework, the qualitative and quantitative analyses are first put in context.

As in other international studies, we have chosen one of the main commercial daily newspapers with a national circulation. The newspaper *A Capital* was one of the most regular periodicals over the period studied.

The intention was to focus on a periodical that is widely read by the Portuguese population and not exclusively by the intellectual elite. Although the media are not always so easily categorised, we opted to analyse a "popular" newspaper as defined by Correia (2006). A "popular" newspaper has a lower information content, is more sensationalist, directed towards a less well-educated public, and with less demanding standards than the top-end publications.

In selecting which publication days to analyse, it was necessary to take into account a set of criteria that ensures uniformity for the study. Thus, a database that included all workdays from 1 January 1976 to 31 December 1991 was constructed using SPSS (Statistical Software Package for the Social Sciences). The decision to restrict the analysis to workdays only was made after considering how the content differed in newspaper editions between workdays, weekends and holidays (Bauer et al., 1995). We then randomly selected editions for two days of publication for each month between 1976 and 1999. The whole newspaper edition was then analysed (including the many themed supplements and magazines). We excluded content such as obituaries, ephemerides, announcements, job offers, non-scientific meetings, advertisements, reader comments and letters to the editor.

To minimise mistakes in coding a random selection of 25% of the sources was made and read a second time. All the coding was developed by a single researcher to minimise subjective effects.

The political, social and scientific contemporary context of Portugal

As we cannot analyse newspaper content without understanding the main elements of the political and social reality in Portugal, the articles were divided into three time periods that marked the distinct phases in the political, social and scientific contemporary history of Portugal:

1. Infant democracy: 1976–1985

During most of the 20th century, Portugal was a country with almost no investment in science and technology. During the years of dictatorship, Portugal had a poor and closed culture that condemned the country to decades of economic and scientific delay.

After the revolution on 25 April 1974 and the subsequent process of democratisation, Portugal was still behind when compared with other European countries.

Portugal started to take a new path towards science. However, this was a period of great political instability. It was marked by the reorganisation of the scientific research system and by the redefinition of public policies in the area of science and technology.

It was not until 1984 that the first degree programme in astronomy was available in Portuguese universities.

Portugal was very dependent on technology provided by third parties, with a weak

economic sector and closed to innovation and investment in research and development (Caraça, 1980, 1983; Gonçalves and Caraça, 1984a; Gonçalves and Caraça, 1986).

2. Europe and stability: 1986–1995

1986 saw the beginning of a new political period marked by the first decade of Portuguese European integration. The mechanisms for financing science and technology were reformed to allow cooperation between European research institutes and Portuguese institutes.

The government committed itself to increasing national expenditure in research and aimed to increase the number of workers in the scientific community, as well as providing incentives for entrepreneurs to encourage investment in science and technology. The first State Secretaries were appointed, with responsibilities specifically for scientific research and, later for science and the technology, triggering changes in public policy for science and technology.

The integration of Portugal into the European Economic Community (EEC) in 1986 brought new expectations to the country.

3. Science as a national odyssey: 1996–1999

In 1995 the government changed hands. With the establishment of a Ministry of Science and Technology, the new government formally raised the status of science and the technology. The general goals of these policies were to promote high quality scientific research, the creation of independent evaluation systems, the promotion of international scientific cooperation, providing the incentive for scientific development and its necessary diffusion through the economy and society.

In 2000, Portugal became a member of the European Southern Observatory (ESO) and the European Space Agency, taking its first steps towards a national policy for astronomy and space science.

Regarding astronomy and space science, the first nationally driven initiative to popularise astronomy in Portugal, known as "Summer Astronomy" began in 1996.

Results

Our sample of articles from *A Capital* covering astronomy and space science between 1976 and 1999 contained 1971 articles concerning science and technology and 254 articles on astronomy and space science (around 13%).

Frequency of articles

Changes in the frequency of appearance of relevant articles throughout the period allowed us to verify some trends and connect them to the contemporary context outlined above.

During the first period (1976–1985), articles about astronomy and space science were few, but numbers did increase over time. This trend applied to all areas of science and technology. At this time, Portugal was in political turmoil, so newspapers were concentrating on political issues. Science topics, and astronomy and space science in particular, were not seen as important issues. With the exception of a daily column, "Halley's Comet", written by a Portuguese astronomer, all the astronomy and space science topics concerned international issues like Soviet and American astronomers fighting for "pole position" in terms of their knowledge of astronomy and space science, research on Venus and Jupiter and speculation about life on Mars. It was at the end of this period, in 1984, that the first degree programme in astronomy was offered in Portuguese universities.

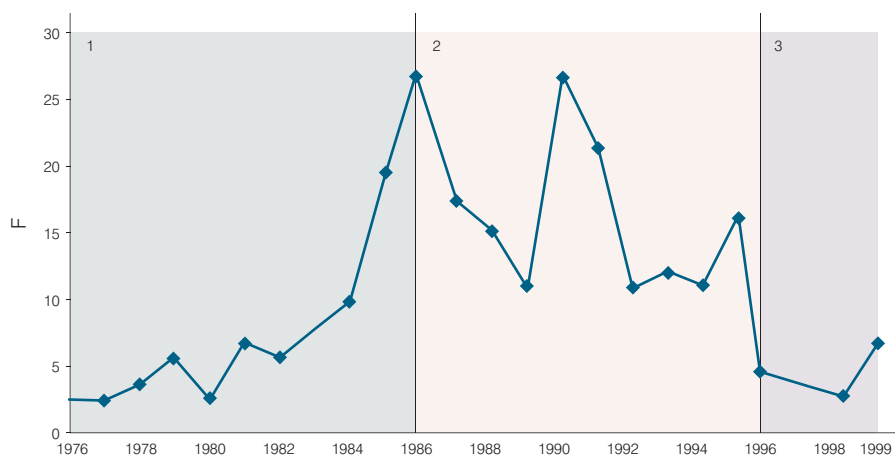


Figure 1. Articles about astronomy and space science appearing in *A Capital* between 1976 and 1999.

The second period (1986-1995) was rather unstable, with two peaks in coverage: 1986 and 1990. 1986 is explained by the daily column about Halley's Comet and by the Cold War space race. 1990 is explained by the approaching end of the US-USSR space race, and by the emergence of new countries competing in the field of astronomy and space science, such as the European Union countries and Japan. In 1990, Portugal became a candidate member state of the European Southern Observatory, and this alerted journalists to astronomy as a topic. This also made Portugal look at astronomy and space science differently, and take its first steps towards a national policy concerned with these matters.

After 1990 there was a global downward trend in terms of science and technology that is unexplained, but is a possible consequence of the disappearance of the communist bloc.

The third period (1995-1999) shows a downward trend, although it ends with a small increase. The trend in astronomy and space science is against that in science and technology overall, probably because of the rapid pace of developments in science and technology, such as those related to medicine and health, that attracted more attention from journalists and editors. 1996 saw the first Ministry-driven initiatives to popularise astronomy in Portugal, with projects like: *Astronomia no Verão* (Summer Astronomy) and the Porto Planetarium. If the second period was a time for bureaucratic and legal developments, the third was the period of popularisation. After the year 2000 the trend may well again be upwards.

Position in the newspaper

The section where the articles appear is an important indicator, and gives a measure of how the newspaper specialises relative to specific themes. Just as everyday life is ever more compartmentalised with "boxes" for every dimension of our life, so newspapers follow the same pattern, and create specific sections for specific issues. We choose what to read by sorting the sections we want and excluding those we don't want to read.

Astronomy and space science stories in *A Capital* appear mainly in two sections: *Ciência sem fronteiras* (a science page) and *A Capital dia a dia* (a sensationalist, bizarre or lurid news section known as the *faits divers* page). Almost 18% of the articles do not appear in a specific section. Regarding astronomy and space science, the section *Viagens no tempo* (Travels in time) was quite important, too. It was written by the

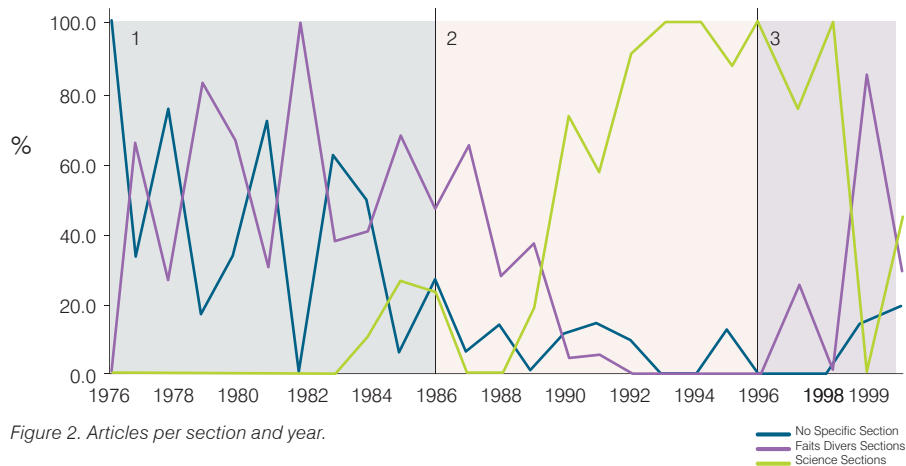


Figure 2. Articles per section and year.

same astronomer who produced the *Diário do Cometa Halley* (Halley's Comet Diary).

In the first period, we can see that the distribution of articles was dominated by articles spread throughout the newspaper, and by the *faits divers* section *A Capital dia a dia*. Science and technology as a whole followed the same trend. This *fait divers* page had small and more trivial articles about astronomy, appearing side by side with cartoons, cookery articles, natural catastrophes, bizarre people, fashion or the weather forecast.

In the second period, we can see that these sections become less important and that the astronomy section *Viagens no tempo* and the science page *Ciência sem fronteiras* become more important. In the science page *Ciência sem fronteiras*, the articles were long and profound. Astronomy and space science were no longer marginal topics there for entertainment or to pique the curiosity. Science and technology as a whole followed this trend.

In the third period, we can observe some diversification. There is a decline in appearances on the science page *Ciência sem fronteiras* and a growth in appearances on the health and wellbeing section *Viver* (Liv-

ing). Science and technology as a whole followed this trend, too.

Level of the articles

In order to understand the scientific level of the articles about astronomy and space science a scientific index was constructed by selecting a set of the elements that were expected to be included in scientific writing: quotes from scientists, mention of the underlying theory, mention of the methodology, use of technical language and jargon, mention of bibliographic references, data and results and the scientists' names. The newspaper articles were classified according to these expected elements. The results found in each period are clear: there is a decrease in articles with a low scientific content and an increase among those with medium and high scientific content as time goes on. In general, these results are consistent with more general articles about science and technology.

Level of news play

Science and technology issues, and astronomy and space science in particular, are an easy target for sensationalism. To understand how sensationalist an article is, some formal features of the article

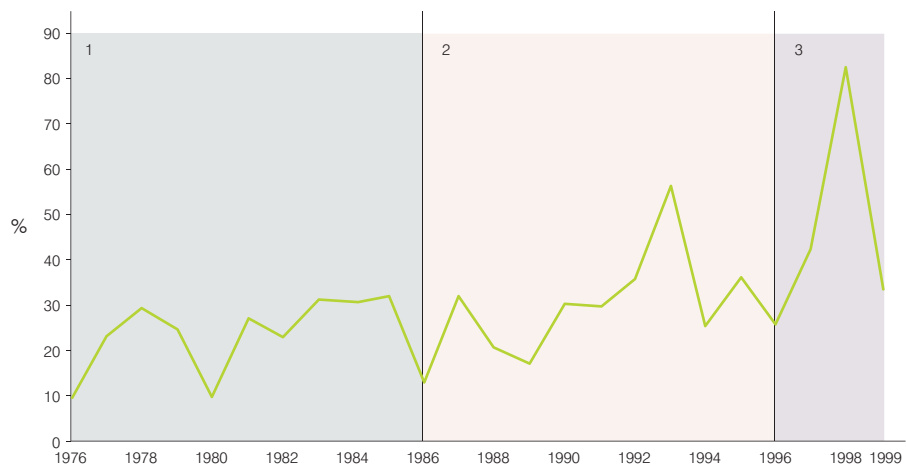


Figure 3. Scientific level of the article per year, as measured by the scientific index.

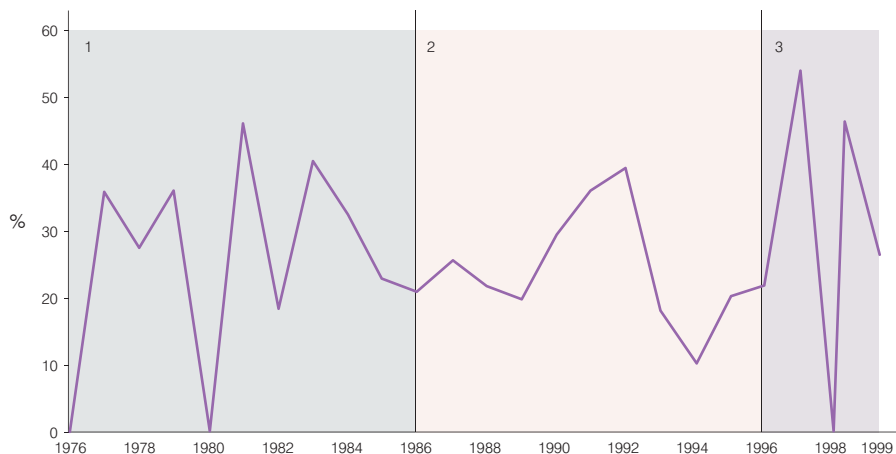


Figure 4. Budd score index.

were selected and a Budd Score was constructed (Budd, 1964), based on the following criteria: highlight on first page, location on prominent page, location on page upper half, has illustrations and title dimension above the average.

In general, astronomy and space science articles have very low news play, for comparison, articles with average news play score around 20%. Articles with a high news play appear only occasionally. The last period seems to point to a new trend with more articles with a higher news play. The analysis of all science and technology articles in this newspaper shows that they also follow these trends.

Conclusions

There are some conclusions that can be drawn from this study:

- Astronomy and space science are relevant topics for newspaper editors. Although we can find fluctuations in the newspaper coverage, it seems that content is directly connected with national and international politics.
- Astronomy and space science were initially seen as more trivial topics suitable for the lightweight *faits divers* pages, but have increasingly become seen as a more serious, important and relevant topic.
- The dominant presentation of astronomy and space science in the newspapers is through visual communication, using strong and unusual images from space.
- As newspaper coverage of the topics has become more specialised, astronomers have been invited to write about the subject and to explain in more detail, so that, more scientific information about astronomy and space science is slowly becoming available.

These conclusions are just the tip of a huge, unresearched iceberg of information that, everyday and everywhere, is there for all of us: the journalist's perception of astronomy.

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Biographies

Rui Brito Fonseca has a degree in Political Science and a master's in Labour Sciences. He is now working on a sociology PhD looking at science and technology in Portuguese newspapers between 1976 and 2005. A researcher at CIES/ISCTE-IUL, Lisbon, Portugal since 2000, his main area of study is the public understanding of science, media studies and communication.

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