

Fifteen years of *¿Cómo ves?*, a Mexican monthly popular science magazine

Estrella Burgos

Department of Science Communication
National Autonomous University of Mexico (UNAM)
eburgo@universum.unam.mx

Abstract

¿Cómo ves? is a popular science magazine produced at the Department of Science Communication of the National Autonomous University of Mexico (UNAM) since December 1998. It is aimed at a readership of teenagers and young adults (17-25 years old), although it has older readers as well. The magazine is sold commercially throughout the country in newsstands and through subscriptions. It covers mainly natural sciences and its main goal is to convey how science works, not just its results. We aim at presenting a scientific view of the world, fostering critical thinking and engaging the reader in discovering how a particular piece of knowledge was attained. We want to offer, as much as possible, science as it is done in the real world, show its scope and limitations, and the people behind it.

Introduction

Naturaleza is the pioneering popular science magazine in Mexico, published by UNAM for fifteen years (from 1978 to 1990), directed by Dr. Luis Estrada (Zamarrón, 1994). This magazine was aimed to a readership of college students (undergraduate and graduate) and rehearsed and refined new ways to bring science closer to the readers. In the early eighties the publication of three other magazines that have made an impact in the history of science popularization in the country started: *Información Científica y Tecnológica* (no longer active, aimed at the general public) and *Ciencia y Desarrollo* (still active, at first aimed to college students and academics, in recent years to the general public), both created by the National Council of Science and Technology

(CONACYT), and *Ciencias* (still active, for college students and academics), from UNAM. Nowadays, several Mexican universities publish popular science magazines, such as *Conversus*, from the National Polytechnic Institute and *Elementos*, from the Autonomous University of Puebla. A few research centers and state councils of science and technology publish popular science magazines. The supply of popular science publications encompasses also publications from other countries, or local editions that consist partly of foreign material like *Muy interesante* and *Quo* (Vance, 2013), and *National Geographic*, that usually has one or two features on a science topic. In recent years UNAM has added the *Revista Digital Universitaria* (RDU), exclusively online, that covers academic work in natural and social science and the humanities and it is aimed at a non-specialized readership.

In 2012 CONACYT created the Mexican Index of Popular Science and Technology Magazines with the purpose of “fostering the popularization of science and technology in written media, as well as to acknowledge the good work and quality” of such publications. Currently 16 magazines have been included in the index, among them *¿Cómo ves?* (CONACYT, 2014), which is the magazine with the largest run, 20 thousand copies, and the only printed one that is published monthly (RDU is also published monthly), the majority of the others are published quarterly.

¿Cómo ves? is published by the Department of Science Communication (Dirección General de Divulgación de la Ciencia, DGDC) of UNAM, which is in charge of two museums (*Universum* and the Museum of Light) in Mexico City, an education area that develops workshops and materials for students and teachers, the production of books, videos, multimedia, radio and TV shows, plus a one-year course on science communication.

The Magazine

¿Cómo ves? has 40 coated pages in color. The magazine is distributed commercially across all of Mexico in newsstands and has 1,500 subscribers, among them students, researchers, teachers and school libraries. Within the market of popular science magazines *¿Cómo ves?* is the least expensive (just below two American dollars a copy), in order to make it accessible to as many young people as possible.

The team consists of nine people: an editor-in-chief (Estrella Burgos), an assistant editor (Isabelle Marmasse), a scientific coordinator (Sergio de Régules), a copy editor (Gloria Valek), a designer (Atenahys Castro), an assistant designer (Georgina Coria) and two people working in the area of administration and commercialization (Gabriela García and Guadalupe Fragoso) and one in charge of the web page (Mónica Genis). Additionally, we have an editorial board, two external advisers, two special contributors and interns or students doing social service (the number varies, currently there are two of the latter).

The purpose of the magazine is to offer its readers a realistic picture of science, with its accomplishments and setbacks, and thus promote critical thinking. We aspire to recreate the making of science for our readers, with the goal of allowing for them to be participants and beneficiaries of this experience (Estrada, 2014) as much as possible, and giving them tools to distinguish between that which is science and that which is not. Because of this, we try to emphasize the methodologies and procedures used in science research, how scientific knowledge becomes validated, and how it is essentially dynamic. We strive to present scientific information in a broad context, allowing the readers to locate it within the different scientific disciplines, as well as making them aware of its importance to social and individual life (Burgos, 2008).

Content

At least a third of the magazine is devoted to graphic material, which is in turn filled by external photographers and illustrators. Additionally, we have digital photography archives at our disposal, as well as the DGDC's photographic archives.

¿Cómo ves? publishes five feature articles per issue and has twelve fixed sections that include two columns (one by Martín Bonfil, on the philosophy of science, the other by Marc Abrahams, creator of the Ig Nobel awards), book reviews, event listings, humor (featuring the work of cartoonist Sidney Harris), riddles and one devoted to some of the work in the department's two museums. In the website (www.comoves.unam.mx) we offer materials from previous issues, and a selection of the current issue, including the cover feature, all for free. Between March 2013 and March 2014 the web site had over

900 thousand visitors. The Facebook page has (until April 5) 50, 535 followers, and the Twitter account 17,300.

The magazine has feature articles from many areas of natural sciences, technology, and to a lesser degree, social sciences. Every issue has an article about episodes and protagonists from the history of science and technology. We have strove to cover current scientific issues as well as content we consider to be of permanent interest and health issues of particular relevance to the target readership. It is our policy to frequently include stories on recent research done in Mexico, especially but not exclusively at UNAM. Recent topics covered are: the addicted brain, animal experimentation, the Rosetta and Curiosity missions, cysticercosis, statistics, medical imaging, quasicrystals, forensic science, and sweeteners. Climate change and environmental issues are recurring topics in the magazine.

The editorial board helps with the selection of topics, and it's integrated by three researchers, two science communicators, one journalist and two teachers, who also keep us up to speed on the recent advancements in their areas, as well as recommend authors and revise proposed articles.

The editorial staff prepares some of the texts of the fixed sections while the rest of the material is mostly in charge of external contributors or members of the DGDC employed in other areas of the department. We also receive many unsolicited articles. The magazine pays for all external contributions; the fees are competitive within the market of magazines in Mexico.

Contributors

¿Cómo ves? has published researchers, communicators, journalists, professors, as well as recently graduated young people with training in science or communication, interested in science communication. Every article is assessed by the editorial team regarding the importance and relevance of the subject at hand, as well as making sure it is presented in a way that can be appealing to the target audience. When the article is referred by an author who's not an expert in the subject, we request the assistance of a specialist, whether from the editorial board or from a research center or institute.

We usually ask the authors for several changes, because most of them have no experience in science writing or in writing for a young audience. Often, the editors rewrite and complement the material with additional information presented in boxes, and the final version is always sent to the author for revision.

In general, we have found that authors are well disposed to make changes and adjustments. Our purpose is to have an ever-growing number of contributors whose work matches the editorial guidelines from the start and that are skilled in storytelling, particularly narrative journalism (Burgos, 2011). The magazine is open for authors from other countries, and we already have contributions from science writers and researchers from Latin America, Spain and the USA.

The magazine itself is not intended for the school but in every issue, *¿Cómo ves?* offers a teacher's guide related to one of the articles, in which we provide additional information and a bibliography, and suggest activities to be carried out in the classroom. This guide is available for free in our web page. In the last year we had over 100 requests to include articles from the magazine in high school textbooks, most of which were granted for a small fee.

Distribution and sales

The magazine's run, with its 20 thousand copies, is distributed as follows: 16,000 for newsstands through the whole country; 1 500 for subscribers; the rest are distributed among contributors, small distributors, the editorial board, university departments, and used for promotion activities. The magazine has five interior pages and three covers for advertisement. These spaces are partially devoted to institutional advertisement that promote activities of potential interest of young people, and to the exchange of advertisements with other magazines.

Currently, the average sales are at 75%, which is considered highly successful in Mexico's publishing market. On the other hand, regarding the market it is the best placed magazine published by any Mexican university. It's worth mentioning that *¿Cómo ves?* doesn't have a lot of means to promote itself, and has been made known mainly through the readers's recommendations.

The fact that the magazine is published by UNAM and has the support of many of its researchers has been crucial in raising awareness, particularly in schools. Likewise, the fact that the magazine belongs to the DGDC has facilitated contact with members of the scientific community and has allowed us to work with science communicators with a renown trajectory who labor in the department, not to mention that we have access to the department's vast photographic archive and its two museums, which we have used for promotion and for sales.

UNAM's internal regulations were not originally made to include the publication of a magazine that has to compete in the open market and meet strict deadlines, meaning that paperwork for payments to contributors and contracting distributors usually needs to be facilitated beyond what is normal for other areas. Over the years together with administrators we have found a way to successfully deal with this but we need further improvement.

Conclusions and challenges

After fifteen years of experience publishing *¿Cómo ves?*, we can conclude the following there is interest from the general public, young people in particular, in science and technology (the extent of such interest has yet to be assessed). A magazine aimed primarily at young people fills a void unsatisfied by other publications. The adaptive work performed on the articles in order to make them accessible and interesting to the target readership has been of crucial importance to the acceptance of *¿Cómo ves?* among readers, both young and adult. Likewise, the presentation of this material through agile design and attractive color photographs and illustrations has been key for the magazine to penetrate a very competitive market.

¿Cómo ves? is now regarded in Mexico as a model of science communication (Guzmán, 2014) and we often have requests from the editors of other popular science magazines to explain our editorial guidelines and procedures. Three members of the team are teachers at the one-year course on science communication and give workshops in other courses; usually we detail those procedures to the students.

Among the challenges we face are to widen the readership, improve the web page and fully embrace digital technologies. We are currently developing a digital edition in hopes of launching it by August 2014.

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