

COMMUNICATING ASTRONOMY WITH THE PUBLIC

LARS LINDBERG CHRISTENSEN

ESA/Hubble
Karl-Schwarzschild-Straße 2
D-85748 Garching, Germany
lars@eso.org

AND

PEDRO RUSSO

Max Planck Institute for Solar System Research
Max-Planck-Straße 2
D-37191 Katlenburg-Lindau, Germany
russo@mps.mpg.de

Abstract. The communication of astronomy to the public is an important topic that will play an ever greater role in the coming years as a link between society and the scientific astronomical community, while supporting both formal and informal science education. The communication of achieved results is now seen frequently as a natural and obligatory activity to inform the public and attract both funding and science students.

A number of obstacles do exist to this communication work. The International Astronomical Union (IAU) Commission 55 “Communicating Astronomy with the Public” seeks to alleviate part of these problems and to establish and support effective ways to communicate astronomy with the public in the long term.

In this paper, we will present¹ the initiatives and activities taking place under the auspices of the IAU Commission 55: Communicating Astronomy with the Public, especially the initial outcome from the “Communicating Astronomy with the Public” journal Working Group.

¹On behalf of the IAU Commission 55 Organising Committee and IAU Commission 55 Journal Working Group members.

1. IAU Commission 55

Astronomy has a very special place in the area of science communication, and, as a tool to communicate science, astronomy possesses almost magical powers. Astronomy touches on the largest philosophical questions facing the human race: Where do we come from? Where will we end? How did life arise? Is there life elsewhere in the Universe? Space is one of the greatest adventures in the history of mankind: an all-action, violent arena with exotic phenomena that are counter-intuitive, spectacular, mystifying, intriguing and fascinating. The science of astronomy is extremely fast moving, and delivers new results on a daily basis. In many ways astronomy can lead the way for other natural sciences and be a frontrunner for the communication of science in general. After the very successful second Communicating Astronomy with the Public (CAP) meeting in Washington DC in 2004 the IAU decided to support this important goal by forming a Working Group dedicated to the public communication of astronomy. The Working Group, “Communicating Astronomy with the Public”, was “promoted” to Commission 55² at the IAU General Assembly in Prague in 2006.

The vision of Commission 55 is:

“It is the responsibility of every practising astronomer to play some role in explaining the interest and value of science to our real employers, the taxpayers of the world.”

The mission is:

- To encourage and enable a much larger fraction of the astronomical community to take an active role in explaining what we do (and why) to our fellow citizens.
- To act as an international, impartial coordinating entity that furthers the recognition of outreach and public communication on all levels in astronomy.
- To encourage international collaborations on outreach and public communication.
- To endorse standards, best practices and requirements for public communication.

Currently the President is Ian E. Robson (UK), the Vice President Dennis Crabtree (Chile) and the Secretary Lars Lindberg Christensen (ESO/ESA).

The Organising Committee consists of:

- Richard T. Fienberg (USA)
- Anne Green (Australia)
- Ajit K. Kembhavi (India)

²<http://www.communicatingastronomy.org/index.html>

- Birgitta Nordström (Denmark)
- Augusto Damineli Neto (Brazil)
- Oscar Alvarez-Pomares (Cuba)
- Kazuhiro Sekiguchi (Japan)
- Patricia A. Whitelock (South Africa)
- Jin Zhu (China)

The actual work of the Commission has been split into a number of working groups that are described here. Unfortunately the “best practices” and “new ways” Working Groups have not made as much progress as hoped as considerable effort has been focussed on organising the International Year of Astronomy 2009 (see below).

2. Washington Charter Working Group

The task of the Washington Charter Working Group is to ensure the promulgation of the Washington Charter. The Washington Charter³ also has its origins in the “Communicating Astronomy with the Public” conference held at the US National Academy of Sciences in early October 2003. It was the most significant tangible outcome from this meeting. The Charter outlines “Principles of Action” for individuals and organisations that conduct astronomical research, stating that they “have a compelling obligation to communicate their results and efforts with the public for the benefit of all”.

The objective of the Commission 55 Washington Charter Working Group is to:

“Endorse the Washington Charter and disseminate information about it: Drafting, circulating, and getting support for a letter to funding agencies, observatory directors, department heads and deans, and other employers of astronomers to encourage them to regard outreach and communication as an important part of our job and theirs.”

The Washington Charter underwent a careful revision in 2005 led by Rick Fienberg from Sky & Telescope, USA. This revision was approved by CAP2005.

The promulgation of the Washington Charter continues to progress satisfactorily and there are now 30 organisations signed up.

3. VAMP Working Group

Public astronomy communication has to develop apace with the other players in the mass market for electronic information (gaming and entertainment industries etc). The problem today is not so much the *availability*

³http://www.communicatingastronomy.org/washington_charter



Figure 1. The logo for the VAMP project.

of excellent astronomy multimedia resources for use in education, outreach and the like, but rather *access* to these materials. The public needs better access to images, videos of stars, galaxies or other astronomical phenomena.

Even for an expert user, locating a particular image invariably requires going to a known resource or relying on the vagaries of, for this purpose not so efficient, existing multimedia search engines, such as Google images or YouTube.

The Virtual Astronomy Multimedia Project (VAMP) Commission 55 Working Group⁴ will enable access to, and vastly multiply the use of, astronomy multimedia resources – images, illustrations, animations, movies, podcasts, vodcasts, etc. VAMP will enable innovative exploitation of all kinds of outreach media in the future by systematically linking resource archives worldwide.

The primary deliverable of VAMP will be a digital library/repository system that stores, organises, and delivers standardised metadata for all Education and Public Outreach (EPO) media for astronomy and planetary sciences. By capitalising on value-added information that already exists – including descriptions from press releases, image captions, fact sheets – VAMP will provide unsurpassed access to refined EPO data products. Visual material will never again be separated from the descriptive context and users will have access to the rich content that astronomers and communication professionals have laboured hard to create.

4. Communicating Astronomy with the Public (CAP) Meetings

The CAP meetings are an initiative aiming at bringing together scientists, public information officers and journalists. Although other meetings have been held on the public communication of astronomy, the first “real” ini-

⁴<http://www.communicatingastronomy.org/repository>

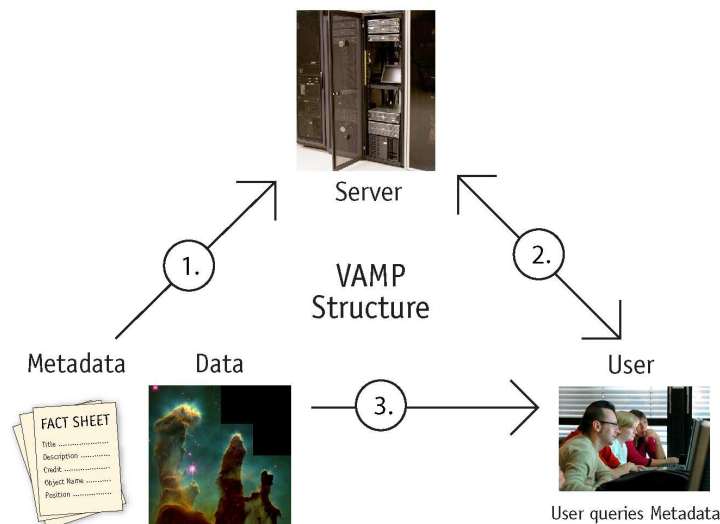


Figure 2. A rough schematic indicating how VAMP will enable the user to find astronomical multimedia resources seamlessly by means of a communication structure and better metadata tagging of the resources.

tiative that belongs in the series of CAP meetings was Terry Mahoney's conference, "Communicating Astronomy" in Tenerife in 2002.

The second, and somewhat more visible, meeting was the Communicating Astronomy with the Public conference, held in Washington DC in 2004, and arranged by Chuck Blue from NRAO.

The third meeting was at ESO Headquarters in Munich, Germany, in 2005.

A Working Group⁵ was created in 2006 to ensure formally that the line of CAP meetings would continue every second year. The fourth CAP meeting will be held in Athens, Greece, 2007⁶. This meeting will play a central role in the planning of the International Year of Astronomy 2009 (see below).

The WG is open to receive proposals for hosting CAP2009. As the past two CAPs have been held in Europe proposals from Asia, Africa, Oceania and the Americas will be especially welcome.

⁵<http://www.communicatingastronomy.org/capconferences>

⁶<http://www.communicatingastronomy.org/cap2007>

5. CAP Journal Working Group

Looking to the future, a new Working Group was created in 2006, following a firm proposal to create a new journal on Communicating Astronomy with the Public. This has made excellent progress and now has widespread support, including that from the editors of *Astronomy Education Review*. Further information can be found at the WG's webpage⁷.

It is proposed that the IAU Commission 55 establishes a partly peer-reviewed journal called Communicating Astronomy with the Public. Such a journal, published quarterly in full colour and printed on demand, is vital for an effective exchange of information within the community. The journal will enable communication professionals to present their information in a coherent and meaningful manner and to learn from colleagues with the same needs. A possible date for the first issue is 8 October 2007, coinciding with the first day of the Communicating Astronomy with the Public 2007 conference in Athens, Greece.

The public communication of astronomy provides an important link between the scientific astronomy community and society, giving visibility to scientific success stories and supporting both formal and informal science education. While the principal task of an astronomer is to discover new knowledge, disseminating new knowledge to a wider audience is becoming increasingly important. This is the main task of public astronomy communication: to bring astronomy to society.

The next few years will be extremely important for astronomy communication and education. The year 2009 will be the International Year of Astronomy, serving as a unique platform to inform the public about the latest discoveries in astronomy as well as emphasising the essential role of astronomy in science education.

Public communication of astronomy is a growing field of science communication, notably in Europe, but China and India may be the next emerging science communication "markets" as publishers are experiencing a flood of science coming from there. Latin America may also be a candidate.

Several agencies, research institutes, astronomy departments and observatories around the world have media officers and communication specialists; science centres and planetariums have an important role to play in informal astronomy education, often producing high quality educational materials. However, as the astronomy communication community expands globally it becomes increasingly important to establish a community of science communication experts. The three previous Communicating Astronomy with the Public conferences have had some success in raising the

⁷<http://www.communicatingastronomy.org/journal/index.html>

profile of astronomy, but a permanent forum where professional expertise and know-how can be presented and preserved for posterity is needed.

5.1. PUBLISHING IN THE GLOBAL MARKETPLACE

Academic publishing in a professional field is an important form of information exchange and discussion.

The publishing business is changing rapidly in response to market forces arising from intense globalisation and the overwhelming popularity of the Internet, bringing significant overall benefits despite some severe disadvantages to publishers. This changing landscape must be factored into the planning of a new journal. Changes in society drive new markets and as a consequence publishers need to devise new business models. The new environment is here to stay, and publishers who embrace the changes in technology and target group behaviour are the ones who will benefit the most.

There is pressure, especially from the scientific community, to allow broader access to scientific information in general. This is the main driver for the “open access” movement. However one time-honoured principle stands: Peer-review continues to provide the stamp of quality for scholarly articles.

Among the perceptible changes are:

- Globalisation means that publishing can be moved to larger scales with cost-savings as a consequence. One example is the use of more outsourcing (typesetting, printing, services etc).
- Publishing houses are merging to form larger and larger companies that can embrace the globalisation and exploit the mobility of manpower and services. More mergers will happen over the next few years.
- Publishing customers, especially for e-publishing, are becoming larger as libraries form consortiums.
- Data management and workflow is – as in many other disciplines – a major issue. Providing access to the right publications at the right time is a must in today’s world.
- Scientists both write and read more articles (see studies quoted in Blom, 2007).
- Globalisation forces publishers to develop new publishing standards, and modify existing ones to benefit from new technology. This can be seen as moving from the traditional model of “2-dimensional printing” to a contemporary digital “3-dimensional publication” with added value such as cross-references, links to catalogues and full multimedia capability (movies, audio, data from graphs). Today’s audience wants

- products “on-demand”, i.e. they want them to be immediately accessible, to be relevant to their needs and in an acceptable format.
- There is pressure, especially from the scientific community, to allow broader access to scientific information in general. This is the foundation of the “open access” movement.
 - The production of scientific literature will move closer to the customer. Print-on-demand alleviates the need for storage capacity with the publishers, reducing production time, and enabling a new level of flexibility (including updating, tailoring and more economic production).
 - The mere existence of a well-tagged publication in cyberspace will enable a higher level of pull marketing (instigated by the consumer as needed) instead of the traditional push marketing that is increasingly overlooked by a customer swamped with information.
 - Involving and sourcing the capabilities of the community (to rank popular articles for instance) is becoming increasingly necessary.

All these points are important for existing journals, but even more pertinent for new, emerging journals – particularly one that addresses public communication with content that regularly touches on the issues outlined above.

Overall, the contrast between the rapid technological change taking place globally and the less rapid change in publishing strategies puts a severe strain on the relationships between producers, publishers and consumers. There is no simple solution: publishers cannot continue to publish in the old way, and scientists cannot self-publish and take over the publication process of the entire body of scientific literature without commercial partners. Publishers will have to adapt and use modern technology to reduce production times and improve flexibility.

5.2. OBJECTIVES OF THE JOURNAL

The purposes of scientific literature include:

- documenting and absorbing knowledge (“Teach and Train”);
- providing a basis for discussions;
- compelling further progress;
- establishing priorities in a field;
- furthering careers (through documentation of the excellence of the individual);
- and helping to avoid the duplication of effort.

These objectives will be adopted by the CAP journal, which aims to publish material in the different areas of astronomy communication in a scientific journal format and with open access (if possible). As an example, we expect that the journal will prove very useful in the public communica-

tion surrounding events such as the International Year of Astronomy 2009. The CAP journal could serve as a repository of ideas, projects, activities, exhibitions and other key topics for the national nodes of the IYA2009.

5.3. TARGET GROUP

The target group of the Communicating Astronomy with the Public journal consists of the following (in order of importance):

- Public information officers
- The scientific (astronomical) community
- The planetarium community and other informal astronomy educators and communicators
- Science communication researchers
- University students
- Educators
- Amateur astronomers
- Science historians
- Decision makers

5.4. KEY FEATURES OF THE JOURNAL

In response to the changing publication environment we propose a journal with the following key features:

- Modern magazine style (determined by audience and scope)
- Frequency: quarterly
- Size: 16-32 pages
- Full colour
- Seven main sections:
 1. News
 2. Announcements
 3. Letters to the Editor
 4. Reviews
 5. Research & Applications (peer-reviewed “science” articles)
 6. Resources
 7. Innovations
- Print-on demand, i.e. printed digitally on request.
- Advanced web presence featuring:
 1. Readable version of the journal.
 2. Online forum: Commenting, discussing, evaluating articles, news, products.

5.5. CONTENT OF THE JOURNAL

Some of the key topics we suggest for inclusion in the CAP journal are:

Best practices

- Case Studies/What works and what doesn't

High-tech communication

- New technologies
- The web as a science communication tool
- Communication in the Virtual Observatory era
- Archives of communication products
- Investigating real astronomical data for EPO use
- Technical standards
- The impact of images
- Art and science, or can a multidisciplinary approach help science?
- Audiovisuals and multimedia

Sociological issues

- Communication ethics
- Science fiction and science
- Scientific lobbying
- Globalisation and science communication
- New ways of communicating

Public Understanding of Science

- Surveys of public understanding and attitudes towards science and technology
- Perceptions of science
- Popular representations of science
- Scientific and para-scientific belief systems
- History of science education and of popular science
- Science in developing countries and appropriate technology

Media

- Science and the media
- EPO in the modern media landscape

Informal education

- Evaluative studies of science exhibitions and interactive science centres
- Playing with astronomy/hands-on experiments
- Planetariums and science centres, a key tool for education and outreach

Miscellaneous

- Multilingual outreach products
- Events, e.g. International Year of Astronomy 2009
- Book reviews

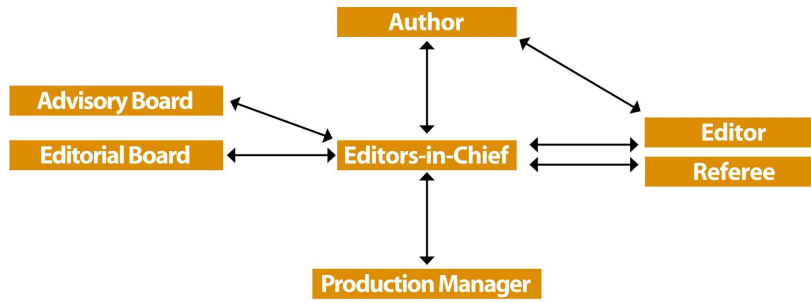


Figure 3. CAP journal organization chart.

- Webpage reviews
- Job announcements
- Other announcements

5.6. EDITORIAL STRUCTURE

An Advisory Board and an Editorial Board must be established to ensure the high scientific standard necessary to achieve the established scientific objectives of the Journal. The members of these Boards should be selected from the different areas of the worldwide astronomy communication community and should include: astronomers, press officers, science communicators, educators and science visualisers. For the structure of the various editorial interactions we refer to Figs. 3 and 4. It is foreseen that these roles are voluntary and unpaid.

The Advisory Board should advise the Editors-in-Chief and the Editorial Board about key topics, and the aims and scientific quality of the magazine.

The Editorial Board should review the production, make recommendations about the scientific quality of the magazine articles and oversee the management of the journal. We expect that the Editorial Board has one representative from each supporting organisation.

The two Editors-in-Chief are ultimately responsible for the content of the journal and the website and hence also for finding and encouraging new material, including the non-peer reviewed material. The Editors-in-Chief are also responsible for voluntary online translations from the community, for fundraising and dissemination. The Editors-in-Chief will evaluate the eligibility of a manuscript on submission and appoint a referee from the relevant field. The referee will interact with the Editors-in-Chief and with the

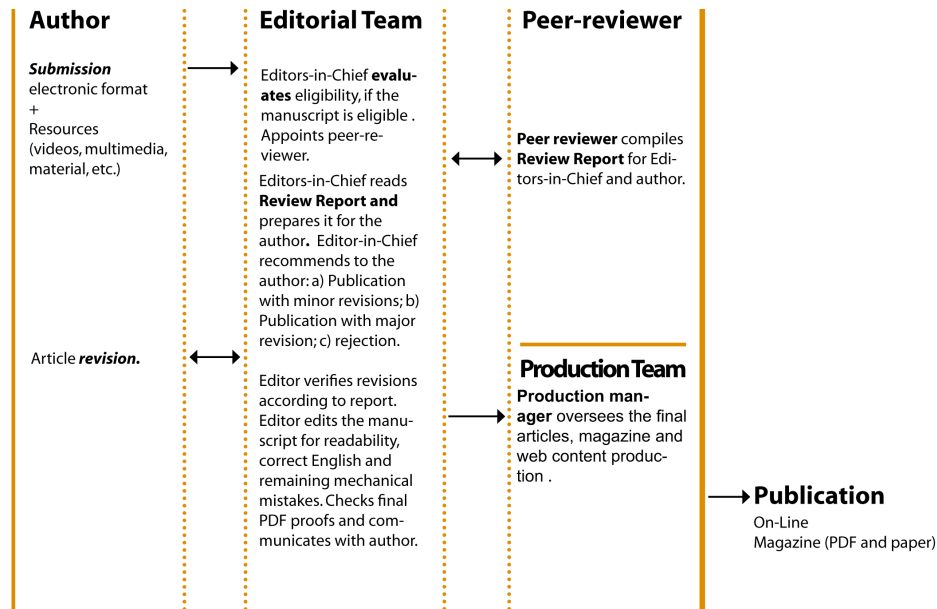


Figure 4. Editorial process.

author and prepare a Draft Review Report. The Editors-in-Chief will prepare the Final Review Report for the author with the decision on whether to publish with or without revision or to reject.

A high level of English proficiency must be ensured with a paid native English-speaking editor/proof reader. The Editor verifies revisions according to the Final Review Report and edits the manuscript for readability, style, grammar etc. The Editor also checks the final PDF and communicates with the author. The Editor is responsible for indexing articles.

In order to develop a robust web infrastructure with appealing graphics a paid production team must be set up including the following skills: production manager, webmaster/web developer, and a graphic designer.

The quality of the scientific articles (“Research & Application”) in the journal will be ensured by peer review as indicated in Fig. 4. Disputes will in the first case be attempted to be resolved by the editors-in-chief. In the second step a new reviewer will be appointed.

5.7. BACK OFFICE

Back office software will probably be implemented to ensure a consistent workflow.

The software package providing by Max Planck Society to help in publishing scientific content on the web is a good example of open source e-publishing tools. It helps to create, maintain and run a family of online journals, as the web application Living Reviews (Online open access journal publishing)⁸.

HyperJournal⁹ is an open source software application that enables online and printed publishing in an innovative and cost-effective way.

Open Journal Systems¹⁰ is a journal management and publishing system, freely available to journals worldwide for the purpose of making open access publishing a viable option.

Journal articles will have a metadata tag and a Digital Object Identifier (DOI). CrossRef¹¹ is the official DOI link registration agency for scholarly and professional publications.

5.8. BUSINESS MODEL

We recommend that the actual production of the journal to the print-ready PDF (based on quarterly issues each of 32 pages) should be taken care of by the editorial and the production teams as outlined above. The total costs per year would be in the vicinity of €29,000.

Two possible publishing strategies are compared below (Table 1). Model A considers the case for self-publishing, while model B looks at the publishing in collaboration with a commercial publisher. Both models assume, at least initially, that it is not feasible to charge for subscription (either to individuals or library consortiums) or for “pay per view”, and also not to levy any fee for publishing papers.

Business model A: self-publishing

If the entire production, printing, distribution, marketing and web archiving are also done by the team, the total costs per year would be in the vicinity of €52,000.

An in-kind contribution of €10,000/year from an existing education and outreach office for infrastructure, hardware, bandwidth and software has already been secured from ESO and ESA/Hubble. The remaining part of the budget, €42,000/year, could be sought from, for instance, the large astronomical institutions that have astronomy outreach as an important priority.

Business model B: publishing in collaboration with an existing publisher

Collaboration with a commercial publisher has the following advantages:

⁸<http://dev.livingreviews.org/>

⁹<http://www.hjournal.org/>

¹⁰<http://pkp.sfu.ca/?q=ojs>

¹¹<http://www.crossref.org/>

- Instant credibility
- Easier distribution
- Easier electronic dissemination (via ADS, DOI etc)
- Existing back office software
- An established rigorous workflow
- Professional marketing experience
- Access to advertising tools

A number of disadvantages naturally also exist with such a model:

- Less autonomy for the editorial team
- Uncertainty about the future beyond Year 2
- Rigorous workflow
- Large back office software

Some pros and cons of the different models are outlined in Table 1.

Publishing Models	Pros	Cons
Complete self publication (52 000 EUR/year)	<ul style="list-style-type: none"> • Full Control (from editorial process up to distribution) • Absolute Open Access • Future Partnerships with Organizations and Sponsors 	<ul style="list-style-type: none"> • Budget • Fundraising • Distribution
Part self publishing (29 000 EUR/year)	<ul style="list-style-type: none"> • Editorial and Design Control • Credibility • Distribution and Electronic dissemination (via ADS, DOI etc.) • Backoffice software and rigorous workflow • Marketing and advertising 	<ul style="list-style-type: none"> • Subscriptions fees (after probation period) • Budget and Fundraising
Publisher (0 EUR/year)	<ul style="list-style-type: none"> • Know-How and in-house expertise • Distribution and Electronic dissemination (via ADS, DOI etc.) • Backoffice software and rigorous workflow • Marketing and advertising 	<ul style="list-style-type: none"> • Editorial Control • Subscriptions fees

5.9. OTHER JOURNALS ON THE MARKET

It is important to compare CAP with existing journals on the market. There are, to our knowledge, no existing journals for astronomy communication for professional or public communication as such. The proposed journal does, however, fill a missing region in a wider spectrum of communications-related publications (see Fig. 5).

*Astronomy Education Review*¹²:

¹²<http://aer.noao.edu/>

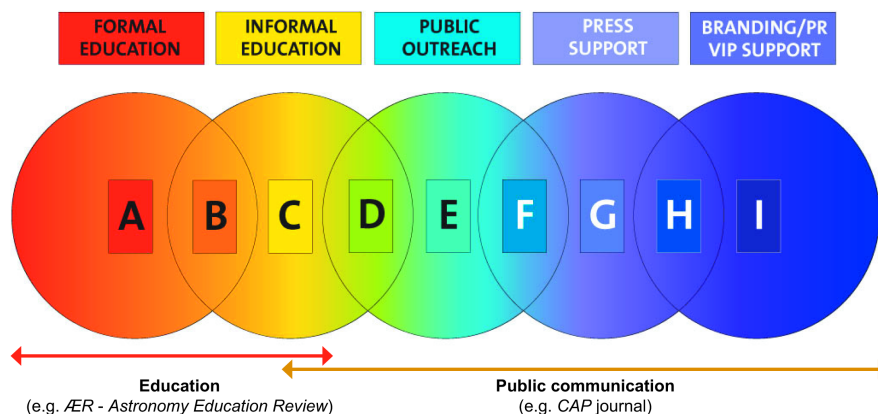


Figure 5. The CAP journal within the scope of the entire science communication “space” (Morrow, 2000 & Christensen, 2006).

A journal dedicated to astronomy education, both formal and informal. This is an excellent peer-reviewed journal and can in many ways be seen as the “sister-journal” to CAP. There is an overlap between the two journals in the area of informal education, but this is not seen as a disadvantage. Instead of enforcing “what can be published where” it could be advantageous to duplicate overlap articles in both journals to ensure a larger readership (see Fig. 5).

*Public Understanding of Science*¹³:

Taking a more classical approach, this journal covers aspects of the interrelationships between science and the public. This journal is almost exclusively peer-reviewed.

*Science Communication*¹⁴:

Published by the same publishing house (SAGE Publications) as the Public Understanding of Science, this journal addresses some of today’s political and social science debates.

*JCOM-Journal of Science Communication*¹⁵:

JCOM is an open access on-line journal on scientific communication.

*International Journal of Mathematical Education in Science & Technology*¹⁶:

¹³<http://pus.sagepub.com/>

¹⁴<http://scx.sagepub.com/>

¹⁵<http://www.doaj.org/doaj?func=openurl&genre=journal&iissn=18242049>

¹⁶<http://journalsonline.tandf.co.uk/content/1464-5211/?p=6a6a85d139304f4a8694900823041200&pi=22>

This journal contains articles describing experiences in mathematical education, and how they are assimilated and eventually adapted to everyday needs in schools, colleges, polytechnics, universities, industry and commerce.

5.10. INTELLECTUAL PROPERTY RIGHTS

Ownership of the intellectual property (IP) rights to the material published in the *Communicating Astronomy with the Public* journal is an important issue.

Authors should sign an exclusive license form that prevents publication by third parties, although the author retains the IP rights to the material and can publish in derived media such as arXiv, etc.

Science Commons¹⁷ provides a new way to copyright science publications. Science Commons ensures, at a minimum, that scholarly authors retain enough rights to archive their work on the public internet. Every Science Commons Addendum preserves the freedom to use scholarly articles in teaching, conference presentations, lectures, other scholarly works and professional activities.

In summary, the present situation of public astronomy communication shows a clear need for a specific publication addressing the needs of the public astronomy communication community. We strongly believe this need could be answered well by a partly peer-reviewed, journal called *Communicating Astronomy with the Public*.

6. International Year of Astronomy

Last but definitely not least, Commission 55 is heavily involved in the organization of the International Year of Astronomy 2009. There are very good reasons for celebrating a global year of astronomy. We live in what may be the most remarkable age of astronomical discovery in history. One hundred years ago we barely knew of the existence of our own Milky Way. Today we know that many billions of galaxies make up our Universe, and that it originated approximately 13.7 billion years ago. One hundred years ago we had no means of answering the centuries old question: Are there other solar systems in the Universe? Today we know of over 200 planets around other stars in our Milky Way. One hundred years ago we studied the sky using only optical telescopes, the human eye and photographic plates. Today we observe the Universe, both on Earth and in space, using telescopes with advanced digital detectors that are sensitive to all wavelengths from

¹⁷<http://sciencecommons.org/>

high-energy gamma rays through to low frequency radio emission. Our view of the Universe is now more fully polychromatic than ever before.

At the IAU XXV General Assembly in Sydney, Australia, July 2003, the IAU voted unanimously in favour of a resolution asking the United Nations to declare the year 2009 as the International Year of Astronomy. This was done partly in recognition of the Italian astronomer, physicist and philosopher Galileo Galilei (1564-1642). Galileo observed the heavens with an optical telescope for the first time in 1609. He discovered craters on the Moon, moons around Jupiter and the phases of Venus, dramatically revising mankind's understanding of the Solar System.

This formal initiative was set in motion at UNESCO in 2004 by the Permanent Representative of Italy, Ambassador Francesco Caruso. A project of resolution was presented by Italy to the 33rd UNESCO General Conference, with support from Brazil, France, Japan, UK, Northern Ireland and Germany in October 2005. The approved text – Resolution 33 C/67 – established that UNESCO recommended to the General Assembly of the United Nations that 2009 be designated the International Year of Astronomy (IYA2009).

It is the hope of IAU and the IYA2009 project that the UN will proclaim the IYA2009 during the UN General Assembly in 2007. In 2006 the IAU set up an Executive Committee Working Group on International Year of Astronomy 2009, with assistance of Commission 55 (then the IAU Working Group on Communicating Astronomy with the Public), and in close consultation with educators and historians within and outside the IAU.

IAU will continue to coordinate this important event and launched the main project website¹⁸ in 2006.

The majority of IYA2009 activities will take place locally, regionally and nationally. Numerous countries have already formed national nodes to prepare activities for 2009.

The IAU Executive Committee Working Group IYA2009 is setting up a series of IYA meetings that started March 2007 in Garching, Germany. This was the kick-off meeting for the national Single Point of Contacts (SPoCs) at the ESO HQ on March 3rd and 4th. This meeting was a tremendous success, with 26 out of the 63 identified SPoCs attending, coming from places as far afield as China, Japan, South Korea, Australia, USA, Canada and Mexico (31 countries represented in total). The webcast of the meetings and the presentations can be found at the meeting website¹⁹. The next IYA2009 meeting will be the Communicating Astronomy with the Public meeting²⁰ in October 2007 in Athens, Greece

¹⁸<http://www.astronomy2009.org/>

¹⁹http://www.communicatingastronomy.org/iya_eso/programme.html

²⁰<http://www.communicatingastronomy.org/cap2007/>

One of the key issues settled in Garching was an agreement on the logo and slogan for IYA2009, and these are now being spread through the communities. In the meantime the SPoCs are expected to set up a national organisational structure and strategy and link their national node webpages to the main IYA2009 webpage.

Presently, the IAU EC Working Group is seeking funding for and setting up an IYA2009 Secretariat in close collaboration with the outreach offices at ESO in Munich. A coordinator for IYA2009 has recently been appointed, Pedro Russo, and he will start work in August 2007. The WG will maintain close coordination with the large national and international organisations such as the International Council for Science (ICSU), the American Astronomical Society (AAS), National Aeronautics and Space Administration (NASA), the UK Science and Technology Facilities Council (STFC), the Royal Astronomical Society (RAS), the European Space Agency (ESA) and the European Southern Observatory (ESO), as well as with numerous national astronomical societies, organisations and agencies.

The IAU hopes and believes that by declaring 2009 the International Year of Astronomy, universities, schools, museums, observatories, societies, and others will be encouraged to increase their efforts to reach out to the public, and especially to young people to enthuse them about astronomy in particular, and about science in general.

In the year 2009 itself, the opening ceremony of the IYA2009 will probably be in Paris in January, the closing ceremony in Italy in December, and activities will be organised around the world during the whole of 2009. Notably, IYA2009 activities will be highlighted during the IAU XXVII General Assembly in Rio de Janeiro, Brazil, 3-14 August 2009.

Below follows the formal vision, mission and goals for the International Year of Astronomy 2009.

6.1. VISION

The vision of the International Year of Astronomy 2009 (IYA2009) is to help the citizens of the world rediscover their place in the Universe through the day- and night-time sky, and thereby engage a personal sense of wonder and discovery. All humans should realise the impact of astronomy and basic science on our daily lives, and understand better how scientific knowledge can contribute to a more equitable and peaceful society.

6.2. MISSION

IYA2009 will be a global celebration of astronomy and its contributions to society and culture, highlighted by the 400th anniversary of the first use of an astronomical telescope by Galileo Galilei. The aim of the Year is to

stimulate worldwide interest, especially among young people, in astronomy and science under the central theme “The Universe, Yours to Discover”. IYA2009 events and activities will promote a greater appreciation of the inspirational aspects of astronomy that embody an invaluable shared resource for all nations.

6.3. GOALS

The goals of IYA 2009 are:

1. Increase scientific awareness.
2. Promote widespread access to new knowledge and observing experiences.
3. Empower astronomical communities in developing countries.
4. Support and improve formal and informal science education.
5. Provide a modern image of science and scientists.
6. Facilitate new networks and strengthen existing ones.
7. Improve the gender-balanced representation of scientists at all levels and promote greater involvement by underrepresented minorities in scientific and engineering careers.

As mentioned, IYA2009 activities will take place locally, regionally, nationally and internationally. National nodes have been formed in each country to prepare activities for 2009. These nodes establish collaborations between professional and amateur astronomers, science centres and science communicators. At the global level the IAU will play a leading role as a catalyst and coordinator. While the IAU will organise a small number of truly global or international events such as the Opening and Closing Events, the main activities will take place at the national level and will be coordinated by the IYA2009 National Nodes in close contact with the IAU IYA2009 Secretariat and the IAU EC Working Group on the International Year of Astronomy 2009.

IYA2009 is, first and foremost, a series of activities for people all around the world. It aims to convey the excitement of personal discovery, the pleasure of sharing fundamental knowledge about the Universe and our place in it, and the value of the scientific culture.

IYA2009 has the potential to become one of the largest and most successful global astronomy outreach events in history, and will hopefully leave an imprint of inspiration and awe of our place in the universe on millions of young minds.

A network of hundreds if not thousands of astronomical organisations, nationally and internationally, will be one of the heritages of IYA2009 that will last far beyond the year 2009.

7. Conclusions

The public communication of astronomy faces some interesting challenges in the near future. Professional astronomy communicators must be able to adapt and change workflows and operational strategies quickly to answer the demands of the global marketplace and follow rapid changes in communication technologies. We are promised a bumper crop of astronomical data over the next few years. This is a great opportunity to devise realistic hands-on experiments in astronomy, with a particular appeal to the younger generation. However it also puts high demands on the technical set-up of education and outreach offices.

IAU is working on some cutting-edge communication projects to gather the community around common projects, with shared goals, that will enable the community to stand stronger in the fierce competition with other, better financed, communication competitors such as the gaming industry and the entertainment industry. The VAMP project is one such community-building project aiming for a global agreement on some simple common standards for metadata and information exchange that could mean a leap in the dissemination of astronomical multimedia products.

The CAP journal will permit internal communication to flow more easily, and allow good ideas and know-how about what works, and what doesn't to be shared freely.

The International Year of Astronomy 2009 is another example of such a project. We believe that IYA2009 has the potential to become one of the largest and most successful global astronomy outreach events in history.