The Blue Marble:
A discourse analysis of images of the Earth published on the APOD website

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Abstract

With the advent of space exploration images of the Earth from outer space became available. Among them is one of the most published images of all time – the Blue Marble Earth – of which there exist already several versions. These particular images evoke the idea of us looking at ourselves from a cosmic perspective, being thus invested with a symbolic dimension, in addition to scientific or technical ones. Yet, is this symbolic dimension present in the discourse of science communication that uses these images? With this question in mind, we examine publications at the Astronomy Picture of the Day (APOD) website that make use of these images. Using the perspective of Dominique Maingueneau's discourse analysis, we critically examine the various discursive elements present on the site in order to characterize: (i) the type of science communication discourse used, and (ii) the specific discourse of publications with Blue Marble images. The site has elements of a very credible discourse while, at the same time, being relaxed and close to the reader. The specific publications which portray the Blue Marble Earth seem to reinforce the symbolic dimension of these images.

Introduction

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> *Once a photograph of the Earth, taken from the outside, is available, a new idea as powerful as any in history will be let loose.*
>
> *Sir Fred Hoyle, 1948*

Since the moment when the first images of the Earth became available in the 70's, these images have been widely disseminated and popularized in the most diverse contexts. In addition to its use in public communication of science and technology, these images are widely used in environmental and humanitarian campaigns, institutional advertising etc., as they are images that refer to a global awareness and planetary citizenship. They make us reflect on humanity and the planet Earth, being thus invested with a symbolic dimension, in addition to scientific or technical ones.

In this study we analyze how these images are used discursively in the area of Astronomy science communication, in order to better understand whether this symbolic dimension is also present in this area. The area of science communication has experienced an exponential growth throughout the world during the last decades (BUCCHI e TRENCH, 2008). This is partly due to an increase in interest from the broader public and the increased pressure on the institutions which produce scientific knowledge to justify their actions to the public and manage their public image (MUELLER, 2002). Science communication materializes itself in the most diverse forms and there are different formats to allow for participation of a broad spectrum of people. In this study we focus on public communication related to Astronomy, in which a broad spectrum of different forms of participation can also be observed. Our object of analysis is hereby the Astronomy Picture of the Day (APOD) website, which makes use of images of the Earth in its publications. APOD is a website linked to NASA and one of the first sites directed towards public communication of Astronomy; publications with commented Astronomy pictures are made daily since 1995, having the website a collection of more than 5000 different images.

Our reflections on the discourse used are anchored in the French school of Discourse Analysis, particularly from the perspective of Dominique Maingueneau. For Maingueneau, discourse is not an *"*arbitrary*"* structure, but rather an activity of subjects

embedded into a certain context (MAINGUENEAU, 1998). Hence, it is only possible to attribute a sense to the discourse within its context and in relation to other discourses with which inter-discursive relationships are established. Moreover the discourse is not only constituted by its content but also by its medium, types of transmission and non-verbal practices (MAINGUENEAU, 2004). The whole discourse implies an "enunciative scene" which, following Maingueneau, consists of three distinct scenes: an "encompassing scene", which inscribes the discourse within a typology, a "generic scene" related to the genre to which the discourse belongs and a "scenography", which is constructed by the text itself (MAINGUENEAU, 2004). As part of the scenography, an enunciator image is produced - a discursive *ethos* -, which is a subjective instance which emerges from what is said and shown. To this image a character and a "body" are attributed. The objective of our study is to identify these elements of the discourse on the APOD website and particularly in publications which use images of the Earth as seen from outer space. We seek to identify evidence in the textual and extra-textual elements which allow the different discursive dimensions involved to be characterized.

Methodology

First – as a backdrop - we will focus on the analysis of the site as a whole before our attention turns to the specific publications in which images of the Earth are used. In order to identify these specific images, we searched the publications on the site using the keyword 'earth'. This identified 190 entries which were analyzed one by one. This first analysis revealed that only 72 images were effectively images of the Earth as seen from outer space. As we are only interested in images which show the Earth as a whole, without any other elements, we also excluded simulations, manipulated images and videos as well as close-ups and photos which also included human elements. In the end three different images remained which were published 10 times in total.

The discourse analysis then took place by defining the different discursive categories proposed by Maingueneau, i.e. the co-enunciators in the inter-discourse, the enunciative scenes, the discursive *ethos*, among others.

Results and Discussion

As mentioned above, the APOD website publishes daily, since 1995, one image related to Astronomy. This image also includes a short explanation which is written using a clear and concise language. In addition, on the website one can find a explicative section, a section with educational resources, a section dedicated to Frequently Asked Questions (FAQs), a short glossary, a discussion forum and a specific space in which the reader can share how she uses information and images from the website for educational proposes. The website is managed by two professional astronomers, linked to NASA. Both, in various occasions along the website, make explicit that the site serves educational and science communication purposes as exemplified through the following excerpts: "*... we have therefore given them permission to use APOD text as it seems to give a broader reach to* ***APOD's educational mission****."* or *"Thank you for sharing the APOD experience! We genuinely hope you have had an* ***entertaining and educational*** *few moments with us".*

Visually, the site appears basic being the focus on data and images related to Astronomy. This type of simple design is associated to science communication websites typically managed by scientists or science enthusiasts which focus more on content. At the same time the public to which these sites are directed typically values information more than aesthetics. These and other evidence which could be identified – basic design, no publicity on the site, link to NASA, publications which are up-to-date, authorship of professional astronomers and detailed knowledge of resources available to this thematic on the web[1] - are aligned, producing a legitimate image of trustworthiness and profound knowledge. We can thus confirm that the enunciators are scientists before being communicators and that this two different voices mix up with each other. This kind of science communication had its expansion with the advent of the web, which changed the dynamics of public communication. "The Web permits scientists and their organizations to communicate directly with audiences. The mediation of news organizations is no longer necessary." (WEIGOLD, 2001 pag. 169).

[1] http://apod.nasa.gov/apod/lib/edlinks.html accessed on february 23, 2014

On the other hand the intonation used does not follow a scientific or institutional *ethos*. Analyzing the description which both managers of the site give from themselves[2], we identify a tone more associated with a relaxed science communication, close to the reader and problably also close to the authors. Both speak of themselves in the 3rd person and both present themselves by their first name and even use nicknames (Bob and Jerry). Also they describe themselves as being "*two married, mild and lazy guys*".

Another resource employed throughout the website is humor and irony, which, in our opinion, underlines the tone of proximity used. This is especially visible in the FAQ's section[3], like for example in: "*Q14: How long will APOD keep going? A14:* ***If the "Tomorrow" line at the bottom of today's APOD is not blank, then at least until tomorrow. (Probably.)*** *(...)* ". Further, also the vocabulary used, punctuation and the organization of the text itself are relative informal.

Yet, despite the normal discourse, Bob and Jerry are not like us. Although both have characteristics which normally are seen as in opposition to the scientist stereotype, both warn us that they only appear normal to somebody distracted and, for example, characterize their work as something unusual – "research the universe". It follows that while the discourse at a first glance appears to show normality and proximity, at a second glance it appears as the opposite effect, which re-enforces the credibility of the information and the competence of the communicators. We thus identify on the website a discourse with high scientific credibility, but which materially constitutes itself with a tone which is little institutional. This facilitates more informal discursivities which provide the potential for interaction with a broad public.

Finally, analyzing the hypertext (only of the selected publications), it becomes evident that there are different types of links: 27% to sites managed by NASA; 18% to sites managed by Universities and governmental research institutions in the US; 18% to other publications on the APOD site; 10% to science communication of Astronomy sites, providing more details and explanations on concept or properties of a celestial body; 10 % to Wikipedia and 5% to others. The remaining 12% of the links are no longer online.

From the distribution we conclude that the main objective of using links is not to

[2] http://apod.nasa.gov/apod/lib/about_apod.html accessed on february 23, 2014
[3] http://apod.nasa.gov/apod/ap_faq.html accessed on february 23, 2014

explain concepts but rather to enhance the possibility to retrieve information on a specific issue. The fact that the majority of links is directed to sites managed by NASA, or governmental institutions re-enforces the credibility of the information presented on the site. The self-references, on the other hand, legitimate the authority of the site to talk on these issues and allows for easy navigation to related publications by the reader thus establishing a reader network within the site itself. The extensive use of links, "allows for complex, sophisticated, and interconnected pieces of information", another important feature of internet communication, which "largely eliminates the severe space and time restrictions inherent in ordinary news media" (WEIGOLD, 2001, p. 169).

As mentioned above, now our focus turns to the images of the Earth being our body of analysis publications on the APOD sites which include images of the planet Earth as a whole as seen from outer space. Describing the scenic framework of these publications we find ourselves in the presence of a discourse of science communication (the encompassing scene) that materializes in a website of public communication of Astronomy that every day presents a picture related to this area, accompanied by a textual description with hypertext (generic scene). This scenic framework is common to all publications of the site. On the other hand, the scenographies are specific to each of the publications. In the 4 pictures analyzed we observed 4 different scenographies: the first, "An Earth Ornament"[4], has a narrative tone in which the image is described using many adjectives and with the use of metaphors (p.e. "*The swirling clouds and dramatic colors give the Earth the appearance of a delicate, painted ornament hanging in space"*). Differently, the publication entitled "The Earth from Apollo 17"[5] fits in the scenography of a simple photo caption, which describes some of its details and reports the conditions in which it was obtained. In the case of the publications under the name "Blue Marble Earth from Suomi NPP"[6], the initial words "*Behold one of the more detailed images of the Earth yet created"* has the effect of inserting us in a universe of marketing for a product - in this case the photo - which was taken and manipulated in "such and such" conditions, with "such and such" devices and showing "*many stunning details of our*

[4] http://apod.nasa.gov/apod/ap961225.html e http://apod.nasa.gov/apod/ap991225.html accessed on february 23, 2014
[5] http://apod.nasa.gov/apod/ap950622.html accessed on february 23, 2014
[6] http://apod.nasa.gov/apod/ap120130.html accessed on february 23, 2014

home planet". Finally, in the publications entitled "Welcome to Planet Earth"[7], the scenography is quite different again and the image of the Earth is presented to us as if it was an unknown destination.

This last one, which will be analyzed in more detail, among the publications analyzed is the one that most times has been published in the APOD website (6 times) and, according to the authors, it is the one of the images of the Earth available on the site with highest educational potential and, moreover, is based on one of the most publicized and used photographs of all time.

The enunciation takes place through a peculiar scenography: the Earth, the central element, is presented for an external co-enunciator. The discourse is close to the presentation of an unknown (perhaps tourist) destination, to which the reader is arriving. Such characterization is materialized in the title and initial expression of the text - "*Welcome to Planet Earth*" - and in the last sentence "*Please enjoy your stay on Planet Earth*." It is also visible and strongly supported in the body of the text, where basic information that is part of the astronomical knowledge of any potential readers is extensively given. For example, we are told that the Earth is the 3rd planet orbiting a star called Sun, is spherical, has atmosphere, is composed primarily of rock, 70% of its surface is covered with water, etc. It is also reported that some living beings inhabit it, and, between these life forms, there are a few potentially intelligent, as humans and dolphins. By using the adverb "potentially" and also referring to dolphins, the text puts in perspective the central position in which humans normally picture themselves, using humor and sarcasm. All this elements described emphasize the idea already present in the picture - that we are outside of the Earth, that we are seeing it from space – a paradox, since we are on it. Thus the place evoked by the photo - a point in space outside the Earth from where we look at it - is reinforced by the text that accompanies the image. In addition, the text ends with a "*Please enjoy your stay on Planet Earth* ," which may have the double meaning of invitation/desire and request. Thus, the topic addressed here is the Earth, but not the Earth as a celestial body. Is the Earth as a whole, inhabited by all living

[7]http://apod.nasa.gov/apod/ap960819.html; http://apod.nasa.gov/apod/ap971026.html; http://apod.nasa.gov/apod/ap990131.html; http://apod.nasa.gov/apod/ap010204.html; http://apod.nasa.gov/apod/ap050102.html; http://apod.nasa.gov/apod/ap070325.html accessed on february 23, 2014

beings; the planet of which we make part and the planet we should enjoy. This idea becomes much stronger if we look from outside onto the Earth in its entirety. The scenography of this publication makes us move into that position and have that experience.

Conclusion

Using the perspective of Dominique Maingueneau's discourse analysis, we critically examined the various discursive elements present on the APOD's site in order to characterize the type of science communication discourse used, and the specific discourse of publications with Blue Marble images.

Based on this analysis, the APOD site appears to be a website that is discursively constructed in a very credible fashion while, at the same time, relaxed and close to the reader. In the specific analysis of the publications that make use of Blue Marble Earth (10 in total), various discursive strategies were used and we found discursive elements that evoke the Earth's fragility and need of preservation, the role humanity plays on it and other related aspects. Thus, in addition to the dissemination of scientific knowledge about the Earth and space exploration, these publications perpetuate and reinforce the discourse that gives these images the power to alter our perspective and our way of thinking about the planet and humanity.

There is something mystic about these images, there is something paradoxical in seeing them. They are much more than scientific photographs and the discursive choices of how they are publicly communicated underlines this idea. By showing us these photos several times NASA and "Bob" and "Jerry", aware of its importance, perpetuate and legitimize a discourse that gives these images a symbolic power; the power to alter our perspective, the power to change the way we think about our planet and humanity. It seems as if they want to tell us: "*Welcome to Planet Earth. Please enjoy your stay ...*"

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