

*Creative Strategies for the Communication of Science in a Context of Digital Hegemony:
Experiencing Hands-On Visual Arts Techniques*

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Abstract

This paper points out the benefits of technical and technological revisitation as a mechanism for aesthetic and narrative improvement in the context of science communication. Through a fanzine production workshop, which served as an introduction to graphic arts, we sought to influence new strategies towards the promotion of scientific knowledge in a context of digital hegemony. The epistemological standpoint is largely based on media archeology, as a “way to investigate the new media cultures through insights from past new media” (Parikka, 2012). Two ongoing doctoral studies (in Design and Fine Arts) ensured an exploratory workshop as a way of encouraging participants to exercise new approaches to communication through an analogue medium: the fanzine. The workshop was held within the framework of the 10th Annual SciComPT Science Communication Congress. The activity was carried out in two stages: experimentation with printing techniques (stamps, stencils, monotype and photocopies) and graphic production (editing, reproduction, assembly and binding). From this revisitation of analog visual communication practices, often considered obsolete, the research revealed the processes of analog mimicry present in digital image editing software. Furthermore, the research points towards the materiality and specificity of print media as a singular environment for the construction of discourse and knowledge.

Keywords: Aesthetic and Artistic Education, Communication Design, Infodemic, Media Archeology, Science Communication

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Introduction

This article is an integral part of a doctoral research in design that seeks ways to bring design closer to scientific communication and together mitigate pseudoscience-based disinformation. The main objective of this study is to identify strategies to promote science communication as a topic in design teaching in Portugal, bringing future designers closer to scientific dissemination. In this communication, we will demonstrate the experience carried out in the context of the 10th Annual Congress of Science Communication SciComPT, which was the workshop “The fanzine as an experimental laboratory of graphic arts and principles of self-publishing”, developed by designer and doctoral student Santiago Mourão in partnership with artist and doctoral student Najla Leroy, supervised by Professor Heitor Alvelos.

In this experiment, we defend the potential benefits that technical and technological revisitation in visual arts can provide in the creative and communication processes of scientific communicators. Based on the assumption that experiments with traditional techniques and non-digital media can contribute to influence new strategies for promoting scientific knowledge in a context of digital hegemony, we held an introductory workshop on graphic arts within the scope of the 10th SciComPT Congress, which took place on the 11th May 2022, in Ponta Delgada, Azores, Portugal.

Based on the congress motto “Stop, listen and act: reflect on the past to build the future” and epistemologically supported in one of the fields of media studies, Media Archeology, which is a “a way to investigate the new media cultures through insights from past new media, often with an emphasis on the forgotten” (Parikka, 2012), we worked on the practice of self-publishing production as a way of provoking participants to exercise new communication approaches from a non-digital media: the printed fanzine. Notably recognized as a symbol of do-it-yourself (DIY) communication, fanzines played “a fundamental role in the general evolution of the media and, more specifically, of marginalized cultural forms” (Lara, 1976). From the return to the practice of the fanzine, independent self-publishing and small circulation, we worked on formal parameters and creative freedom with the aim of provoking critical reflections on the different ways of producing images, even in a context of digital hegemony.

Here we point out that science and technology communication was heavily impacted by the Covid-19 pandemic, gaining unprecedented prominence around the world, where all segments of society sought reliable information about the disease, crisis mitigation measures and about the future solutions that were suggested. It was in this context of urgency, restrictions and on a global scale that science communication was challenged to adapt to new communication technologies, expanding into video platforms, podcasts, lives and the most diverse communication formats that current digital social networks allow.

However, it is important to point out that in the same way that digital tools and social networks have benefited scientific dissemination, they have also reinforced the impact of disinformation campaigns based on pseudoscience. In 2020 the World Health Organization classified coordinated attacks against the credibility of science communications as Infodemia (According to the WHO, this is an excess of information, some accurate and some not, which makes it difficult to find reputable sources and reliable guidance when needed). Online disinformation based on pseudoscience predates the pandemic but was accentuated during the periods of confinement imposed by the health crisis. Anti-vaccination campaigns also increased during this period.

There are many initiatives that seek to find solutions on how to mitigate or combat online disinformation, and they are mostly through the development of new digital technologies, such as the use of Artificial Intelligence to identify harmful patterns, improvement of platform algorithms, automated data visualization systems, among others. And in order to contribute to the repertoire of strategies to combat the challenges imposed by online disinformation, we chose to experiment with the technological return in media in order to pluralize and expand the expressive and aesthetic capabilities of scientific disseminators.

The workshop

Unlike digital communication platforms, fanzines do not have pre-determined formal parameters, such as character limits, dimensions, typographic selection, pagination and pre-established layouts. The fanzine, due to its origins in amateur and independent movements, is a medium marked by creative freedom and production without technical refinements, demonstrating to be a good format to experiment with graphic and self-publishing principles in a simple and fast way. The main design feature of fanzines is the elaboration of matrices that are later reproduced, usually in photocopying machines.

The ability to develop matrices with the aim of reproducing informative content is the basis of several technological revolutions in the media that date back to Gutenberg's press, around 1450; passing through the pamphlets with the theses of Martin Luther, in 1517; Thomas Edison's mimeograph in 1880; and, directly inserted in the context of this workshop proposal, the revolutionary automatic photocopiers, commercially introduced in the 1960s.

With the advent of modern computers and the use of graphic editing software, there was a gap between the creation of graphic pieces and their reproduction processes. This change in the visual creation environment, from the material to the digital one, impacted the way of creating graphic pieces, where the technical domain of printing and reproductive processes are not mandatory to create layouts and communications that will later be printed. In the chromatic field, for example, it is not necessary to know how to combine colors to find the expected shade, nor is it necessary to know the most appropriate sequence when printing a piece in polychrome. Creation dissociated itself from the materialization of printed pieces, allowing designers and communicators to focus only on the composition of their communications. However, this dissociation between the processes of creating and reproducing graphic pieces impacts on the expanded understanding of the potential of the printed media, reducing the assimilation of the inherent capabilities of this media (the qualities of the different papers, the relationship between inks and solvents, etc.) and the complex management between technical control and the unexpected results inherent to the use of materials in the natural world. This hypothesis is in line with the concepts of creative processes by the artist and researcher Fayga Ostrower (1987, p. 10), who said that “The processes of creation occur within the scope of intuition (...) they are essentially intuitive processes (...) are not reduced to operations directed by conscious knowledge”.

Inserted in this context, this experiment sought to demonstrate to an audience of science communicators how materiality and learning through the artisanal practice of the visual arts can bring aesthetic qualities and results different from those produced through digital devices.

The format

As part of the 10th SciComPT Congress, the largest science communication event in Portugal, the experiment was designed to meet the workshop format proposed by the organizing committee: a single 3-hour session. The activity was face-to-face, practical, in Portuguese and conducted by trainers Najla Leroy and Santiago Mourão. The workshop took place on May 11, 2022, at the Ponta Delgada Public Library and Regional Archives and had 15 registered participants. The dissemination of the workshop was in charge of the organizing committee of the congress and registration was voluntary and open to the entire audience of the 10th SciComPT Congress, with a maximum participation of 20 participants. For the evaluation, an informal collective conversation was carried out at the end of the event and, later, unstructured interviews with a sample of the participants and with the organizing committee of the congress. In the evaluation phase, the objective was to identify the perception of this focus group of science communicators regarding the relevance of experimenting with traditional visual arts techniques as a creative process and aesthetic education.



Figure 1: Workshop “The fanzine as an experimental laboratory of graphic arts and principles of self-publishing” (Renan, 2022)

To fulfill the goal of demonstrating that the creative process through a hands-on approach contributes to enhanced learning in visual arts, the activity served as an introductory experimental laboratory of graphic arts and self-publishing principles, divided into two main parts: 1) printing techniques and 2) self-publishing principles. In part 1 was worked on the following printing techniques: stamp, stencil and gelatine-based monotype. In part 2 was worked on the elaboration of the content of the publication, printing/copies, assembly and binding/sewing (the content was mostly visual, combining the productions of part 1 with additions of free intervention, such as collages or direct interferences in the matrices).

Total time: 3 hours			
9:30	9:45 - 11:00	11:30 - 12:20	12:30
Presentation	Printing techniques	Self-publishing principles	Conversation

Table 1: Workshop structure

As a result of the practices carried out in the workshop, a collection of a collective 20-page fanzine, with a print run of 20 copies (copies were distributed among participants and the organization). All materials were provided by the organization. For the stamps and stencils, the organizers provided ready-made templates and also encouraged participants to build new templates from the available materials.



Figure 2: Printing Techniques (Renan, 2022)

The workshop provided an opportunity for participants to explore the fundamentals of graphic arts in order to contribute to a better understanding of the potential of printed resources, whether from an analog matrix or digital. During the workshop, the participants experienced the techniques of printing with stencils, stamps, gelatine-based monotype and photocopying. Even in a short period of time, we encouraged experimentation with free-form prints, exploring different colors, overlays of different techniques and/or colors, with an emphasis on learning through the practice of making images.

The second part explored the self-publishing principles and the production of fanzines. Based on the results of the printings obtained in the first part, the participants were guided to collectively conceptualize a mostly visual publication, with an emphasis on visual narratives, based on the congress motto “Stop, listen and act: reflect on the past to build the future” . Subsequently, the authors were encouraged to organize and produce the pages of the publication, in individual or collective work. From the matrices produced and organized collectively, photocopies were made of the 20 fanzines that composed the collection, and in the sequence the participants assembled and finalized the publications (production line for the

assembly of the pages, inclusion of the covers, and sewing). Finally, a collective conversation about the process and the results of the workshop took place.



Figure 3: Sample of original matrices produced (Renan, 2022)



Figure 4: Participants with the fanzines produced in the classroom (Renan, 2022)

Collected data and discussion

The most relevant topic to be analyzed in this experiment is the perception of the audience of science communicators regarding the relevance of experimenting with traditional visual arts techniques as a creative process and aesthetic education, so we start by analyzing the profile of the focal group worked on: the workshop participants.

The audience was made up of 15 participants who signed up of their own free will, mostly Portuguese (one of the participants is of Brazilian origin but has lived in Portugal since childhood), between 25 and 50 years old, and all of them work with science communication but with different academic backgrounds and professional approaches. 11 participants have their first training in the field of traditional sciences, namely natural sciences; 4 participants have their training in the field of communications (journalism and communication design). Even though it is a focus group made up of only 15 individuals who work in the same field, it is necessary to point out that this is a group with a remarkable diversity of approaches within scientific dissemination. Among the participants are professors, press officers, science journalists, facilitators at Science Centers and university institutes, book authors, podcast

producers and designers (participants reported that these different approaches often merge in the daily lives of science communicators).

Here we reinforce that the Covid-19 pandemic has strongly impacted the science and technology communication field globally, giving them visibility on a scale never seen before, which also puts them in front of new challenges. During the various confinements around the world and the uncertainties regarding measures to mitigate the impacts of the pandemic, science communicators found themselves pressured to work under severe conditions, including the accelerated adaptation to new online information technologies. And all these efforts were reflected in good results related to the promotion of scientific literacy in Portugal, as pointed out by the Eurobarometer - Science and Technology 2021.

“Portugal now leads the group of countries with the greatest interest in science and technology. In 2010, only 14% of respondents showed interest in these matters, a very different number from the 62% who responded in the affirmative in 2021. Almost 30 percentage points separate our country from the European average, which stands at 33%. Almost half of the respondents (49%) said that the influence of science and technology on society is “very positive.”

As identified in a group interview at the end of the activity, all participants showed enthusiasm with the results of the workshop and were interested in continuing to explore traditional graphic techniques in order to improve their creative skills. Interests in knowing better the fields of typography, calligraphy and visual narratives (illustrations and infographics) were mentioned. Two participants who work in institutes for the promotion of experimental science teaching (Centro Ciência Viva), reported their interest in reusing the techniques learned in the transmission of knowledge through the educational sector of the institutes where they work. With less emphasis, it was also pointed out the interest in autonomously continuing the production of their own notebooks in order to serve as a graphic diary or notebook for notes. Still during the collective conversation, we identified that the participants with less intimacy with the printed media were the most positively impacted by the activity, namely with the demystification of the book/notebook being a time-consuming and complicated support to work with. All participants were positively surprised that they were able to produce a collection of fanzines in just three hours. Another relevant data pointed out in the collective conversation was the use of visual narratives as a creative process, as it distanced itself from the inherent rigors of science communications, giving freedom to work on creativity during the workshop.

In addition to the collective conversation, we also carried out 3 individual unstructured interviews (a cut of 20% of the focus group), and we also held a meeting with the organizing committee of the congress (the SciCom PT Network) to identify the possible impacts of the activity in the context of the congress.

The individual interviews were intended to validate or refute the aspects identified in the collective conversation and deepen the question of the relevance of experiencing traditional visual arts techniques as a creative process and aesthetic education. The 3 interviewees considered it relevant to experiment with artistic activities in order to amplify their aesthetic vocabularies and technical resources within communication. Two of the interviewees emphasized that the workshop motivated them to seek complementary artistic training, namely in calligraphy and illustration. All of them considered the learning of traditional

techniques in visual arts relevant for aesthetic improvement and a mechanism for expanding their knowledge about communication through images.

In a meeting with the organizing committee of the congress, we received positive feedback on the impact of the workshop on the congress. They considered a workshop with an artistic bias to be positive, which, although it was not a training of utilitarian tools for science communicators, served to strengthen the visual literacy of the participants. They also highlighted the importance of reinforcing the approximation of creative areas that are complementary to scientific communication. At the end of the meeting, we were informed that the organizing committee intends to include workshops and roundtables with professionals and researchers from creative areas in the next editions of the SciComPT Congress. We also received proposals to apply the workshop, and variations on the same theme, in other science communication events in Portugal.

We consider it important to reinforce the atypical situation in which the activity was inserted, as it was the first face-to-face congress after the outbreak of the Covid-19 pandemic, which gave this edition a special connotation, a kind of celebration, which may have contributed to generosity with the feedback received. It is also relevant to point out that the activity did not include performance or efficiency evaluations of the participants. More important than the results, was the process. The focus of the workshop was on experimentation and interaction, and these goals were achieved as everyone participated with curiosity and enthusiasm. The feedbacks pointed to the success in using practical visual arts workshops for aesthetic education with an audience of science communicators.

Conclusions

Considering the special moment of science and technology communication, especially given the enormous challenge imposed by Infodemia, it is opportune to bring the arts and design together to contribute to the fight against disinformation and to identify new strategies that increase the interest and engagement of audiences for the promotion of scientific culture.

The workshop “The fanzine as an experimental laboratory of graphic arts and principles of self-publishing” proved to be successful as a way of promoting the improvement of visual literacy among scientific disseminators. The approach through the technical and technological revisitation of printed media, here specifically represented by the fanzine, was pointed out as a good method to introduce the habit of experimenting with traditional visual arts techniques among professionals used to working mostly through digital tools. The “exotic” character of working with obsolete techniques and materials adds subjective qualities to the exercise, as it is a context that is both new and familiar. The novelty lies in the revisitation of the obsolete, and the familiar lies in the fact that the printed media (including the fanzine) is part of the common imagination of communicators.

As the representations of image editing tools in software are mimics of traditional techniques (pencil, brush, scissors, stamp, copy/cut/paste, etc.), it was quick to understand the use of analog tools. As it was an audience of communicators, the assimilation of the exercises took place quickly and efficiently - which allowed the completion of the publications in an activity of just three hours. Even though part of the class has a background in science, and later specialized in communication, there was no problem for the assimilation of the exercises - which demonstrates a great potential for success in replicating the activity in similar contexts.

Thus, we conclude that the experiment tested was successful in demonstrating the good potential of using traditional visual arts workshops as a model for promoting aesthetic education and broadening visual literacy for science and technology communication professionals.

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