

DESIGN AND COMMUNICATION: DIGITAL CHALLENGES AND DILEMMAS

DESIGN E COMUNICAÇÃO: DESAFIOS E DILEMAS DO DIGITAL

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Our lives are dominated by digital technologies, it influences how we socialise, we work, we play, we shop, we explore the world around us and access knowledge and services. We live in both the digital and the physical world, but the digital world has the power to change what we experience every second, this has resulted in constant enhancement. Spontaneity and reactivity assume an increasingly prominent role in this communication universe. This inevitably influences social, economic, and political dynamics.

Faced with a highly mediated and mediatised world, communication has attained significant power. A dispersed power, shared between different protagonists. A power that is not always identifiable and which often tends to be more associated with rumour and crisis than with information and clarification. This power of communication, more and more horizontal, challenges established power bases.

Technological change in the digital world is occurring at a pace that neither society or legislators are able to keep up with. Since the call for this volume of *Comunicação e Sociedade* journal we have seen the launch of CHATgpt and BARD. Artificial intelligence (AI), machine learning, internet of things (IoT) and robotics are sweeping all areas of society in the developed world, enhancing our transport systems, our healthcare, industry and much more. It is still not clear how it will affect our jobs, our security, and our life. There is so much to understand and communicate.

Where does the role of design fit into this system of communication? The discipline of design is extremely diverse, design competencies include planning and strategy, visualising, and prototyping, creating the material and the digital world. But designers work materially and immaterially. Design, in its most varied perspectives and disciplines, can be an important contribution to the construction of more informed, enlightened

and, consequently, fairer societies. Designers can influence behaviour, they can influence policy making, organisation strategy, and through content creation, curation, structure, visualisation create better or indeed worse digital worlds. Designers can deconstruct and decode imagery and photographic content and can animate representations and produce all kinds of narratives of high cosmetic-manipulative content, as can new AI systems such as DALL-E or other AI image generators. The use of design on the other hand can support the development of models, prototypes or the most varied type of solutions that seek to contribute to an active citizenship and respond to the challenges and dilemmas of digital and contemporary societies.

In fact, design is much more than a tool with mere aesthetic functions, it has a central role in an increasingly complex and challenging world to navigate safely, securely and reliably. Design has an important role in the organisation of information, in the construction of narratives and, consequently, in the suggestion of meanings. Therefore, designers and design researchers have serious moral and philosophical challenges. This digital landscape offers so much to so many, such as services for health, mobility, housing, education and to climate challenges, yet we face many unknowns regarding the harm that can be done by these technologies. Designers because of their central role must be cognisant of the digital challenges.

The PETRAS National Centre of Excellence (<https://petras-iot.org>) is a research programme in the United Kingdom created to ensure that technological advances in the IoT are developed and applied in consumer and business contexts, safely and securely. This is done by considering social and technical issues relating to the cybersecurity of IoT devices, and related systems and networks. Design is one of the core disciplines where the PETRAS framework is applied. This framework ensures that when developing and implementing digital solutions they are developed through a PETRAS lens. This means addressing:

Privacy: one of the biggest concerns about digital technologies such as IoT is the potential for it to collect and store large amounts of personal data. This data could be used to track users' movements, habits, and preferences. It could also be used to target them with advertising or to make decisions about their eligibility for insurance or loans.

Ethics: another concern is the potential for data to be used to violate people's privacy or to manipulate their behaviour. For example, IoT devices could be used to track people's movements without their consent or to manipulate their thermostats to make them feel uncomfortable, or use their health data for insurance or employment purposes.

Trust: users need to be able to trust the technology, apps, systems they use and interface with and the companies that collect and store their data. But also, the provenance of information, of images. With AI in general use there is a real concern with regard to misinformation, fake news, among others. If users do not trust, they will be less likely to adopt it, to respect it, or on the other hand they may be influenced in ways that affect the very nature of civil society. Thus, trust becomes a major issue between society and the organisation of industry and government.

Risk: technologies such as IoT, AI, among others, also pose several risks to security. IoT devices could be hacked, which could give attackers access to personal data or control over devices. Devices and systems of all kinds could be used to launch attacks on other systems. Another aspect that needs to be considered by designers is ensuring the resilience of the devices and systems that are being designed and created.

Adoption: adoption and acceptability of the devices and systems are at various levels of maturity, and there are several factors that could affect its adoption rate. This depends on the acceptability and useability of the system, but also the accessibility for all. Yet we know there are counter perspectives in terms of how we gain access and for what purpose. The whole process of use must be carefully considered, especially in relation to safety and security risks for users and their information.

Security: digital worlds are a complex system, and there are several challenges to securing it and making it safe for everyone. One challenge is the sheer number and diversity of IoT devices, of AI algorithms, of companies and expertise involved. There is no single security solution, but security must be embedded in everything that is designed.

There has always been a claim that design has ability to engage real people and communities, understand everyday problems and implement the “right” solutions, not just the “newest technology” and that this enables us to bridge between other disciplines, and to bridge the gap between the rapid advancement in science, technology and engineering, and real people, challenges and contexts on an everyday level (Tseklevs et al., 2021). This may well be the case but it does also mean we must be able to work as a team with other disciplines, other communities and organisations and in the face of the moral challenges do it responsibly.

There has always been a discourse around responsible design (Tatum, 2004), but now more than ever it is critical to understand how design can be a power for good, can be responsible and can cocreate a flourishing world with and for everyone. This volume illustrates the diversity of how design and design research, both analogue and digital, contributes to this endeavour many ways, on a broad and systemic level but also on a narrow level, focusing on concrete solutions to local and specific problems.

Over the last decade, in the north of Portugal, especially in the region of Porto, a set of research projects were developed, in the area of communication design (or with its participation), which were dedicated to social change, studying and acting in various contexts of social fragility. It is important to highlight some of these research cases, which serve as reference for this volume, in order to understand what has been done on the ground, locally:

Manobras no Porto (2010–2013): a project that encouraged “the discovery and the rooting of new models for living, regenerating and connecting with the City’s multiple quotidian” (Alvelos, 2013, p. 46) in the historic centre of Porto. Financed by European Union Funds for Regional Development, this project brought together artists, designers and local residents, researchers from different disciplines, activists and ethnographers, visitors and local governmental and non-governmental organizations, with the common goal of socially and culturally energizing this area of the city, which is a United Nations Educational, Scientific and Cultural Organization World Heritage Site, and which has been suffering in recent years the consequences of the phenomena of mass tourism and gentrification.

Museum of Ransom (launched in 2012): a project of participatory documentary nature that, through the design of an online platform, collected and proposed the interpretation of the vocation of cultural heritage from multiple points of view on the daily life of local cultures, recorded on video, by citizens of the historic centre of the city of Porto (Brandão et al., 2012; Brandão et al., 2014).

Island City (2020): a study of socio-economically disadvantaged and ageing communities, developed through multidisciplinary methodologies that crossed design with ethnographic documentary, where the relationship between the researcher-filmmaker and the subject was one of the main focuses of analysis (Roberti, 2020). One of the resulting outcomes emerged from a partnership with *Bairro ACT* (*Ativar, Capacitar, Transformar*), an initiative of European Anti-Poverty Network and the Ministry of Internal Administration of Portugal (Roberti & Brandão, 2016).

AntiAmnesia (2018–2021): a research project funded by the Portuguese Foundation for Science and Technology, which aimed to make use of design research as an agent for the regeneration and reinvention of narratives and materials, of disappearing Portuguese manufacturing cultures and techniques (Chatterjee & Alvelos, 2020). In particular, it sought to understand how digital media can help build bridges between the ageing community of artisans and the younger generations (Martins et al., 2020).

Bairro está IN(clusivo) (2021–2022): a project developed by the esad-idea research centre, within the framework of the Portuguese Government's National Programme for Healthy Neighbourhoods, which aimed to improve the urban space of Cruz de Pau neighbourhood, in Matosinhos, through design and architecture methodologies and tools (Escola Superior de Artes e Design, 2022).

The experiences observed in these projects reinforce the arguments of a number of authors, namely: the need for designers to get involved and work with communities and local actors (Margolin & Margolin, 2002; Nold et al., 2022); the constraints associated with the complexity of social projects, advocating that action should be taken at the level of small communities or informal organisations (Chen et al., 2015); and the warning about the danger of the utopian dimension of the ambitions that usually move this type of projects, recommending a methodology that enables the contributions to be measurable (Koskinen & Hush, 2016; Nold et al., 2022).

The recognition and study of the legacy left by these projects, accessed through documentation, such as scientific publications, reports or academic theses, or through contact with the people responsible for each project, informed and consolidated the foundations of the project *ECHO - Echoing the Communal Self: Designing the Dissemination and Replication of Self-initiated Practices in Underprivileged Urban Communities in a Post-pandemic World*, which presents its unique characteristics, namely for acting in the specific context of the Balteiro social neighbourhood. This project, presented in this thematic volume, in the article “The Importance of Communication Design in the Process of Disseminating Community Practices in Social Neighbourhoods: The Balteiro”, by Nuno Martins, Leonor Guimarães, Daniel Brandão, Eliana Penedos-Santiago and Emílio Brandão, demonstrates how research in communication design can contribute to the dissemination of community practices in economically disadvantaged contexts such as social housing estates. In their study design's action involved the design of a system for documenting and sharing community practices, which may inspire other citizens to an informed and responsible action. The results are two documentaries about two case studies of self-initiated community practices — Associação Recreativa Clube Balteiro Jovem and Escola Oficina — and the development of an online platform that took into account the level of schooling and literacy of the communities of social neighbourhoods in the city of Vila Nova de Gaia.

The potential of design as a mediator between multiple disciplines and between communities and entities responsible for the digitalization of culture is also studied by Ana Velinho and Pedro Almeida, in the article “The Legacy of Collective Memory in Digital Culture: Digitalisation, Cultural Mapping and Co-Creation”. For these authors, design has been focusing less on the materialization of objects as an end, favouring instead the implementation of co-creation methodologies and the activation of systems that allow people to use technologies to take an active role in documenting and safeguarding

intangible cultural heritage. These processes of digital co-creation of collective memories thus present themselves as participatory alternatives to the usually unidirectional processes carried out by museums, libraries and archives.

Collaboration through digital tools has also been explored in cartography, namely in the mapping of diverse economies, which emerge through the hands of non-governmental organisations, as alternative proposals to the prevailing capitalist economy. Through the analysis of five case studies in Portugal and one in Catalonia, in their article “Mapping Maps of Alternatives: Diverse Economies and Modes of Mapping in Common”, Sara Moreira and Anselmo Canha seek to understand collaborative digital maps as tools of communication of other possible worlds. After an introductory discussion about the democratic qualities of the digital commons, through a methodology that crosses online ethnography with interviews with the people in charge of each analysed project, the authors extracted detailed information about the structures and taxonomies of each case study, which they present in the form of diagrams. The results of the entire investigation are subsequently measured according to the dimensions of governance, economy, technology, knowledge and impact of the collaborative mapping projects analysed.

The role of information design in difficult situations, such as crisis contexts, is analysed by Jacqueline Isaac Machado Brigagão, Claudia Malinverni and Mariana De Gea Gervasio, taking into account the recent pandemic of the disease COVID-19, caused by the SARS-COV-2 virus, in the article “Design in Health Data Communication: Infographics About COVID-19 in Rio Claro Municipality”. In their study, these authors developed a qualitative analysis of 133 newsletters that regularly presented figures on the evolution of the disease in the municipality of Rio Claro, Brazil. Focusing on basic aspects of communication design such as format, colours and content, this study identified an iterative design procedure aimed at refining the communication of information as the pandemic situation evolved.

Indeed, the pandemic of COVID-19 imposed changes in communication in different sectors, and especially in educational organizations. In the article “Challenges and Strategies of Digital Communication in an Educational Organization in Portugal, in the COVID-19 Pandemic Period”, Inês Miguel and Márcia Silva describe parental perceptions of the digital transformation process of the internal communication of an educational organization in Portugal, during three different periods of the year 2020, the year in which the pandemic was declared: the period before the mandatory confinement, the confinement period and the period of return to school. The authors found that informality, transparency, and empathy were important values in the use of digital communication tools and channels by parents of students and teachers, contributing decisively to reducing and preventing alarmism in message transmission and improving communication effectiveness in this context of crisis.

In the last article of this thematic volume, Íris Susana Pires Pereira, Maitê Gil and Cristina Maria Sylla focus on education and the challenges posed by the design of digital texts. In the article “Meeting the Challenges of Designing Multimodal Texts to Promote Multiliteracies Pedagogy”, the authors present the study of the interactive story app

Mobeybou in Brazil, which was developed to help pre-school and primary school children to learn the construction of intercultural and multimodal meanings, empowering them with skills for full participation in digital communication contexts. This research highlights high complexity in the design of multimodal texts for digital media, pointing to the urgency of greater collaboration between research in education, semiotics and design.

In all six papers presented in the thematic section of this volume of *Comunicação e Sociedade* journal, research into, through and for communication design (Frayling, 1993) crosses both digital and material worlds, seeking to study or bridge the two and to understand how design and communication can improve our lives and prepare society for the opportunities as well as the global challenges of tomorrow (Tseklevs et al., 2021).

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REFERENCES

- Alvelos, H. (Ed.). (2013). *Manobras no Porto: Que cidade é esta? Que cidade pode ser esta?* Câmara Municipal do Porto. http://futureplaces.up.pt/manobras/livro_manobras.pdf
- Brandão, D., Alvelos, H., & Martins, N. (2012). The Museum of all: Institutional communication practices in a participatory networked world. *The Design Journal*, 15(2), 203–217. <https://doi.org/10.2752/175630612X13258652805130>
- Brandão, D., Alvelos, H., & Martins, N. D. (2014). O Museu do Resgate: Registos do quotidiano configurados como património documental. In S. Cruz & A. de S. Coelho (Eds.), *UDESIGN'13 – 2.º Encontro Nacional de Doutoramentos em Design: Livro de actas* (pp. 29–37). Faculdade de Belas-Artes da Universidade do Porto.
- Chatterjee, A., & Alvelos, H. (2020) Re-inscribing the value of craft in times of dictated obsolescence. *Craft Research Journal*, 11(2), 275–294. https://doi.org/10.1386/crre_00029_1
- Chen, D.-S., Cheng, L.-L., Hummels, C., & Koskinen, I. (2015). Social design: An introduction. *International Journal of Design*, 10(1), 1–5. <http://www.ijdesign.org/index.php/IJDesign/article/view/2622/723>
- Escola Superior de Artes e Design. (2022). *O Bairro está IN(clusivo)*. <https://esad.pt/pt/news/o-bairro-esta-inclusivo>
- Frayling, C. (1993). Research in art and design. *Royal College of Art Research Papers*, 1(1), 1–5.
- Koskinen, I., & Hush, G. (2016). Utopian, molecular and sociological social design. *International Journal of Design*, 10(1), 65–71. <http://www.ijdesign.org/index.php/IJDesign/article/view/2414/728>
- Margolin, V., & Margolin, S. (2002). A “social model” of design: Issues of practice and research. *Design Issues*, 18(4), 24–30. <https://doi.org/10.1162/074793602320827406>

- Martins, N., Brandão, D., Alvelos, H., & Silva, S. (2020). E-Marketplace as a tool for the revitalization of Portuguese Craft Industry: The design process in the development of an online platform. *Future Internet*, 12(11), Article 195. <https://doi.org/10.3390/fi12110195>
- Nold, C., Kaszynska, P., Bailey, J., & Kimbell, L. (2022). Twelve potluck principles for social design. *Discern: International Journal of Design for Social Change, Sustainable Innovation and Entrepreneurship*, 3(1), 31–43. <https://www.designforsocialchange.org/journal/index.php/DISCERN-J/article/view/75>
- Roberti, A. C. (2020). *Cidade Ilha: O documentário etnográfico autoral como alternativa à exotização, a partir da cidade do Porto* [Doctoral dissertation, Universidade do Porto]. Repositório Aberto. <https://hdl.handle.net/10216/128111>
- Roberti, A. C., & Brandão, D. (2016). Observação documental – O registro imagético e sonoro da vivência nas escadarias do centro do Porto. *Doc On-line*, (19), 247–268. <https://doi.org/10.20287/doc.d19.a10>
- Tatum, J. S. (2004). The challenge of responsible design. *Design Issues*, 20(3), 66–80. <https://doi.org/10.1162/0747936041423307>
- Tseklevs E., Cooper R., & Spencer J., (2021). *Design for global challenges and goals*. Routledge.

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Daniel Brandão holds a PhD in digital media, in the domain of audiovisual and interactive content creation, at the University of Porto (2014), where he developed the project *Museum of Ransom* (www.museudoresgate.org), a participatory website that collects videos made by citizens about the city's daily life, aiming at legitimizing their cultural heritage vocation. He also co-coordinated the project *Citadocs*: creation of collaborative mini-documentaries, born in Future Places Medialab for Citizenship. He holds a degree in communication design (2004) and a master's degree in multimedia art (2008) both at the Faculty of Fine Arts of the University of Porto. He is assistant professor at the Department of Communication Sciences at Institute of Social Science, University of Minho, and integrated researcher at the Communication and Society Research Centre. He is co-principle investigator of the project *bYou: Study on Children and Young People's Experiences and Expressions of the Media* (PTDC/COM-OUT/3004/2020), and integrates the teams of the research projects *ECHO: Echoing the Communal Self* (EXPL/ART-DAQ/0037/2021) and *HERIC 2D: Health Risk Communication* (2022.06008.PTDC), all of them funded by Portuguese Foundation for Science and Technology. He is co-chair of DIGICOM (International Conference on Design and Digital Communication), has co-edited several books on design and has participated in several scientific committees of international conferences and journals. With vast teaching experience in public and private universities in the areas of communication design, audiovisual and multimedia, he has worked in Polytechnic Institute of Cávado and Ave, Escola Superior Artística do Porto, College of Art and Design — Matosinhos, Universidade Católica Portuguesa — Braga. He has worked with several institutions in the area of culture, with particular emphasis on the Serralves Foundation, and its Museum of Contemporary Art, with which he collaborated for six years.

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Rachel Cooper's design research work began in the 1980s with a PhD on technological change in graphic design. She went on to become a professor at Salford University, before being appointed as the founding director of Lancaster Institute of Contemporary Arts (Lancaster University) in 2006. She is distinguished professor of design management and policy at Lancaster University. She is founding director of ImaginationLancaster (<https://imagination.lancaster.ac.uk>), an open and exploratory design-led research centre conducting applied and theoretical research into people, products, places and their interactions. Her research interests cover: design thinking; design management; design policy; and design across all sectors of industry, with a specific interest in design for wellbeing and socially responsible design. She has published extensively on these topics, including books, *Designing Sustainable Cities*, *The Handbook of Wellbeing and the Environment* and *Living in Digital Worlds; Designing the Digital Public Space*. An academic leader with 20 years research experience and collaboration with industry partners. Rachel Cooper has led large interdisciplinary research programmes related to design. She has attracted over

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