

Lecture Notes in Networks and Systems 464

Xin-She Yang
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Amit Joshi *Editors*

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Preface

The Seventh International Congress on Information and Communication Technology will be held during February 21–24, 2022, in a hybrid mode and organized by Global Knowledge Research Foundation. The associated partners were Springer and InterYIT-IFIP, Activate Learning, City of Oxford College, UK. The conference will provide a useful and wide platform both for display of the latest research and for exchange of research results and thoughts. The participants of the conference will be from almost every part of the world, with backgrounds of either academia or industry, allowing a real multinational multicultural exchange of experiences and ideas.

A great pool of more than 1100 papers were received for this conference from across 95 countries among which around 300 papers were accepted and will be presented through digital platforms during the two days. Due to the overwhelming response, we had to drop many papers in the hierarchy of the quality. Total 42 technical sessions will be organized in parallel in 4 days along with a few keynotes and panel discussions in hybrid mode. The conference will be involved in deep discussion and issues which will be intended to solve at global levels. New technologies will be proposed, experiences will be shared, and future solutions for design infrastructure for ICT will also be discussed. The final papers will be published in four volumes of proceedings by Springer LNNS Series.

Over the years, this congress has been organized and conceptualized with collective efforts of a large number of individuals. I would like to thank each of the committee members and the reviewers for their excellent work in reviewing the papers. Grateful acknowledgements are extended to the team of Global Knowledge Research Foundation for their valuable efforts and support.

I look forward to welcoming you to the 7th Edition of this ICICT Congress 2022.

Ahmedabad, India

Amit Joshi, Ph.D.
Organising Secretary, ICICT 2022;
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Technologies + Design for Social Integration



Marcelo Jereb  and María Elena Tosello 

Abstract This work synthesizes two didactic experiences carried out in the Digital Graphics Workshop, an optional course of the School of Architecture, Design, and Urbanism of the Universidad Nacional del Litoral, based in the city of Santa Fe (Argentina). The workshop proposes a transdisciplinary look that integrates knowledge and practices of three careers—architecture, visual communication design, and industrial design—to achieve a creative appropriation of the available technological instruments, in order to contribute from the design to specific problematic situations. From the professorship, we take ICT as a means to operate in the design processes, either in the ideation, development, production and/or communication stage. Technologies are not an end in themselves but a means to enhance our practices as designers operating in a community. Thus, the question is not what can we do with the available technologies? But, in what way, can we use them to help improve the living conditions of our society?

Keywords Sociotechnical networks · Design proposals · Situated knowledge

1 Introduction

1.1 A New Paradigm

We are going through a moment of change in social, cultural, and epistemological paradigms, which implies a transformation in our conception of the world and in our way of interpreting and designing the human habitat. It is the consciousness that knows that is transformed throughout history. Knowledge changes because the subjects change. In addition, in any discipline, different results will be obtained if different indicators and technological resources are used [1].

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Today, we understand that the form of observation influences what is observed. The idea of a unique and equal reality for all is replaced by an idea of intersubjective reality, built from multiple views and interpretations. Reality is a complex and multidimensional system, i.e. a network of processes that occur simultaneously in different directions and levels of articulation.

The new paradigm does not derive only from instrumental and technological changes but also encompasses the various dimensions of man's life in society. Thomas and Buch [2] refer to the "sociotechnical" as an indissoluble dimension. Society is not determined by technology, nor is technology determined by society. Our societies are technological, just as our technologies are social. We are sociotechnical beings.

In any case, there is no doubt that digital technologies have influenced the paradigm shift and have not only caused changes in the ways of perceiving, knowing, experiencing, and communicating reality but have also caused a great impact on languages, associated with hypertextualization, telematization, and multimedia communication, which promote relational and complex thinking.

1.2 ICT and Knowledge

Access to this new context of exchange led to the appearance of unprecedented situations in which human bonds and potentials took on new dimensions. Ascott, an artist recognized for linking art, technology, and consciousness since the 1960s, proposes the concept of cyberception as a new human capacity that implies the convergence of cognitive and perceptual processes, in which connectivity to networks.

We are acquiring new faculties, being here and potentially anywhere else at the same time, gives us new avenues of thought and perception that expand our genetic capacities. We are mediated, empowered ... [3]

In addition to bringing with it a potential that has influenced various fields of knowledge, emerging technologies have generated a process of dilation of reality from the creation of a new virtual social space time, which is intertwined with physical space.

Simultaneously, the Internet has folded space, causing trans-spatial forms of interpersonal relationship, work, leisure, and knowledge. In this expanded and hybrid context, which promotes the alternation or the simultaneous experience of physical and virtual spaces, cyberculture develops [4], and to act in it, one must be connected and know how to function in a network and through digital representations.

We have moved from the information society to the network society [5]. There are inclusive sociotechnical networks formed by the integration of interdependent dimensions that in the current context of physical-virtual presence make it possible to build knowledge by carrying out responsible interaction actions and with equal opportunities to create, teach, learn, research, dialogue, design, and produce under the participatory modality of a workshop, using the communicational, transformative, and open potential of ICT [6].

2 Our Practices

From this approach that blurs—at least in part—the boundaries between technology and human sciences, between the physical and the virtual, we established pedagogical strategies to carry out significant experiences in the Digital Graphics Workshop, seeking to collaborate with problematic situations in the regional scope of our university.

For this, we decided to partner with other academic spaces of the same university and social organizations that operate in the territory and address various problems. This implied transposing more borders: between formal and non-formal education, between different branches of design, between different fields of knowledge, developing complex strategies to design, and produce artifacts, interfaces, and representations capable of articulating the links between inhabitants, their actions, and the different dimensions of the habitat in which they develop.

We implemented two experiences applying digital media to enhance creativity. In the first one—carried out in 2018—we partnered with the Civil Association La Funda, a socio-educational space dedicated to protecting and accompanying vulnerable childhoods in three peripheral neighborhoods of Santa Fe city (Fig. 1), placing emphasis on community nutrition, comprehensive sexuality education, and popular education, from the perspective of public health and human rights.

The second experience was developed in 2021 together with the Extension Project of Social Interest “Insular Narrations” [7] and the pre-professional practice of the Degree in Occupational Therapy, who have been developing their activities in the La Boca neighborhood (Fig. 2), a coastal settlement located in the valley of flooding of the Paraná river and emerged on the side of the access channel to the port of our city.

In urban situations with very different physical characteristics, with different social actors and cultural identities, and in historical contexts close in time, but



Fig. 1 With Civil Association La Funda, 2018



Fig. 2 La Boca and its natural and cultural landscape, 2021

paradoxically different (product of the derivations of the Covid-19 pandemic), the challenge was the same. What can we contribute from digital media and the disciplines of the design family to project a more sustainable and inclusive environment? How can we act from the public university to the integration of our asymmetric societies?

2.1 Methodology and Proposals

The methodology consisted of presenting the students with the problems of the analyzed sectors and the needs of their communities, as well as a set of instruments and media related to digital graphics: Web design and programming, parametric design and digital manufacturing, graphic design and multimedia, responsive artifacts (Arduino) and augmented reality.

The assignment was to create, at the intersection of problems and means, the possible design proposals that would be addressed in interdisciplinary groups, always in coordination with a general project of the workshop that provided a framework of coherence to the works (Fig. 3).

This strategy favored exchanges and collective construction, in a process of association and negotiation between subjects and institutions [8], in which the use of collaborative platforms, social networks, and shared databases was fundamental. As part of the workshop assignment, each proposal should go through the transmedia narrative in some way, either in the conception of the idea, in its development process, or in the way of communicating it to the community.

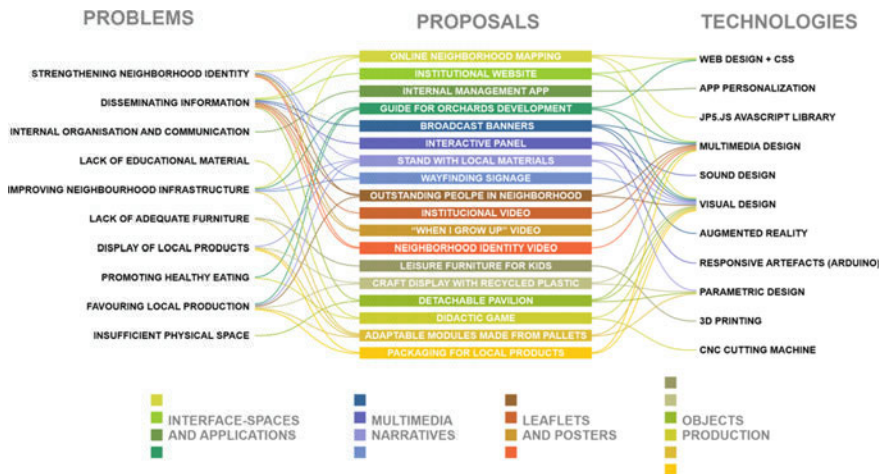


Fig. 3 Methodology, 2018–2021



Fig. 4 Proposals for La Funda: detachable pavilion, augmented reality banners, promotional videos, 2018

In the 2018 experience, productions aimed at making the association visible and contributing with its internal organization—supported with great effort by volunteer work—as well as the manufacture of objects that could collaborate in the training tasks that are developed with the children of the neighborhood. We highlight the audiovisual productions intended for advertising campaigns due to the strong affective commitment they managed to transmit, building the story from the looks and wishes of the children, some even incorporated the use of augmented reality in printed banners.

Also, interesting is the proposals that use laser cutting technology and 3D printing for the manufacture of educational games and multipurpose furniture. Particularly, striking is a proposal that combines parametric design and an artisan production/manufacturing process made with common materials, applied to the production of a removable stand (Fig. 4).

In the 2021 experience, the proposals should be aimed at making the natural and cultural heritage of Barrio La Boca visible, valuing the identity of its community, and providing innovative ideas with the capacity to drive sustainable development processes. That is why many of the proposals were related to community tourism or social economy initiatives (artisan products). In this edition, the professorship placed more emphasis on transmedia narratives, so all the proposals went through multiple platforms and languages.

We highlight some audiovisual pieces that managed to capture the particularities of the site, its history and its inhabitants to communicate them with an especially sensitive poetics. Some proposals related to local microeconomics were also very original, such as: packaging design, multifunctional furniture, and product displays, all of them raised from recycling, and the use of everyday objects from the immediate environment.

A display stand made from melted and hand-molded plastic bottle caps was highlighted. The proposal, which admits variants of use and scale, was devised based on parametric design logics, allowing the exploration of formal alternatives and combinations in order to achieve a versatile and efficient product (Fig. 5).

As a closing of the workshop, in both experiences, there were two presentation instances. An internal exhibition in which each group presented to the rest of their classmates the detected problem, the objectives of their design proposals, and the processes developed. Afterwards, there was a collaborative exposition which allowed to share the achievements with the entire educational community and, above all, to