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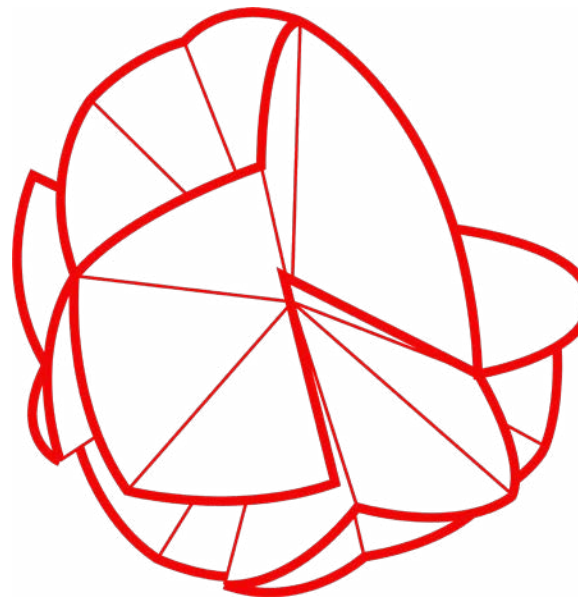
Disrupting Geographies in the Design World

Proceedings of the 8th International Forum of Design as a Process

Alma Mater Studiorum — Università di Bologna



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The Latin Network for the Development of Design Processes

The Latin Network for the Development of Design Processes is a group of researchers, academics, students and business professionals of Latin languages and cultures who study and operate in a particular field of design known as design processes. They meet in a Forum, conceived as an international specialised conference, to engage in lively discussions and debates about their studies and experiences.

The Network was founded in 2008 with the “Carta di Torino” manifesto. Since its very beginning, Professor Ph.D. Flaviano Celaschi has been leading a team that, over the years, guaranteed the cultural and scientific focus of the members of the Network, fostering inter-institutional cooperation. Since 2015, the Network has been hosted by the Alma Mater Studiorum – Università di Bologna, within the Advanced Design Unit (ADU) of the Department of Architecture, coordinated by Professor Ph.D. Elena Formia.

So far, the members organised eight Forums, covering the following thematic axes:

Design Cultures as Models of Biodiversity
1st Edition
Universidade do Vale do Rio dos Sinos, Porto Alegre, Brazil
June 24-26, 2009

Design, Art, Craft: Cross-fertilizations and Experiences
2nd Edition
Universidade de Aveiro, Aveiro, Portugal
October 28-30, 2010

Innovation in Design Education
3rd Edition
Politecnico di Torino, Torino, Italy
November 3-5, 2011

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4th Edition
Universidade do Estado de Minas Gerais – UEMG, Belo Horizonte, Brazil
September 19-22, 2012

Advanced Design Cultures. The Shapes of the Future as the Front End of Design-Driven Innovation
5th Edition
Tecnológico de Monterrey, Campus Guadalajara, Mexico
September 18-20, 2014

Systems & Design. Beyond Processes and Thinking
6th Edition
Universitat Politècnica de València, València, Spain
June 22-24, 2016

Design & Territory: Emergencies and Conflicts
7th Edition
Universidad Nacional de Colombia, Sede Palmira, Colombia
June 23, 2020

Disrupting Geographies in the Design World
8th Edition
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June 20-22, 2022

For more information about the Editions and related publications, see: https://www.forumdesignprocess.org/dgdw22/past-editions/

8th Forum Main Partners

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The Advanced Design Unit is a community of professors, researchers and experts who deal with design cultures and their continuous innovation. It operates in the University of Bologna through teaching activities, research, and the third mission.

https://site.unibo.it/advanceddesignunit/it

Tecnológico de Monterrey (TEC)

Established in 1943, Tecnológico de Monterrey is a distinguished private nonprofit university dedicated to cultivating leaders with robust entrepreneurial acumen and a profound sense of humanity, making them globally competitive. With a presence in 26 cities across Mexico, the university boasts a student enrollment exceeding 65,000, encompassing both undergraduate and doctoral programs. Garnering recognition on the global stage, the QS World University Rankings (2021) position Tecnológico de Monterrey at an impressive 155th worldwide. Within its esteemed Escuela de Arquitectura, Arte y Diseño, the university nurtures talents in Architecture, Digital Art, Design, and Urbanism.

https://tec.mx/es

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The UC School of Design equips professionals to navigate intricate scenarios, addressing challenges stemming from the ever-evolving landscape of scientific and technological advancements and the socioeconomic and cultural intricacies of the contemporary world. Rooted in the ethical principles of the University, this educational endeavour places particular emphasis on fostering creative intelligence, nurturing critical thinking, and cultivating social sensitivity.

www.diseno.uc.cl

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diid is an open-access, peer-reviewed scientific design journal published three times a year. It was founded in 2002 to fill a gap concerning scientific journals in Italy related to industrial design and design studies. Over the last two decades, *diid* has investigated design disciplines and practices, recording their development thanks to the significant contribution of Italian and international scientific communities. The one inaugurated in 2021, with issue no. 73, is a new phase. The journal, while exploring advanced design cultures, delves into specific aspects such as anticipation, narratives of complex systems belonging to the evolving landscape of capitalism and relational dynamics, the front-end of innovation, the avant-garde of theoretical and applied design debates. The pivotal theme under the lens of analysis is transformation, aiming to comprehend its various impacts and meanings within the realms of innovation domains. With this approach, it aims at overpassing spatial, cultural, economic, and technological boundaries giving voice to design research coming from different areas.

https://www.diid.it/diid/index.php/diid

8th International Forum of Design as a Process

Disrupting Geographies in the Design World

Alma Mater Studiorum — Università di Bologna
Bologna, June 20-22, 2022

Responsible Innovation
Social Justice
Ecocentrism
Changing Education

www.forumdesignprocess.org/dgdw22

How design is evolving to respond to the urgent needs facing our environment and society at large? How to understand and design the dynamic relations between artefacts, human beings and the ecosphere? How might design principles and practices adapt their approaches to attend to the diversity that characterised the world?

In an increasingly globalized world, new geographies in and of design offer the stage for negotiating ecosystem's complexity. Design is positioned as a key driver for improving the living standards of many, where human and environmental capitals are pivotal in local economies, and also for the connection to the rest of the world.

The 8th International Forum of Design as a Process (Bologna, June 20-22, 2022) featured speakers from the Global Design community, expanding the original vocation of the Latin Network for the Development of Design as a Process to include researchers and designers of the Mediterranean Area, Middle East, IOR (Indian Ocean Region), and Global South regions. The aim was sharing new perspectives on design futures with responsibility and justice, at the forefront of change, establishing strategic partnerships, and creating accessible knowledge.

The Forum, spanning three-days of meetings, reflection opportunities and networking activities, involved designers, scholars, young researchers, design entrepreneurs, opinion leaders, in an experimental format. Grounded in three pillars – seminars, workshops, and exhibitions –, the event aimed to attract audiences to Bologna, consolidating the potentials of the design world as hub for thought and creative production for present and future generations.

Speakers' contributions inspired the designers' community of practices, and resonated with students and the wide community, to connect design to all aspects of culture and life. This interdisciplinary approach explored the intersections of materiality and culture, post-coloniality, decoloniality, gender studies, and other areas of human thought and action which seek to analyze, question and challenge the disruptive geographies in the world, today.

Five tracks were proposed to address the different dimensions of design futures centered on responsibility and justice.

The submitted papers were reviewed, and a selection is published in this Digital Special Issue of *diid. disegno industriale – industrial design*. Each track begins with a red page containing the original text used in 2022 for the call for papers, also indicating the names of Chairs, Co-Chairs, and Track Editors. Following this, an introductory paper outlines the contents published in the form of research articles for each track.

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Wits School of Arts

Designing From Within

Paolo Cardini
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Disrupting Geographies in the Design World

Flaviano Celaschi
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Realists of a Larger Reality: Cities, Political Imagination and Social Creativity

Gabriella Gómez-Mont
Experimentalista

The Single Issue Lie: Design and Intersectionality

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Freelance

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3 International Universities Involved in the Organization

7 National and International Endorsers and Partners in the Activities

138 Long Abstracts Submitted

24 Countries

150 Participants

17 Ph.D. Students and Research Fellow Involved

13 Master and Bachelor Degree Students Involved

13 National and International Students Involved in the Workshop “Strange Wonder”

Track 5

New Education Pathways for Future Designers in a Changing World

There is a large consensus about the idea that the pandemic crisis is transforming almost everything for the next years or decades. The crisis will last longer than a few months and its behavioural and social implications could even be permanent, affecting the way we will produce and consume "knowledge" as a direct manifestation of our culture. These boundary conditions could represent the occasion to rethink about our own learning and education frameworks and methods to prepare future designers having a significant role and impact on the emerging challenges affecting organizations and the overall society. The track reflects upon two complementary perspectives. The first, how designers can apply their peculiar productive thinking to specific educational spheres (i.e. academies, universities, schools), but also to other organizations, to produce impactful changes related to cognitive processes and artifacts, moving into an environment where the field of education is going through significant disruptions from multiple points of view. The second, how a non-hegemonic approach to design education could introduce new perspectives on the future of experiences, opening to a more collaborative, inclusive, transdisciplinary and collective learning system. If knowledge has now to be considered at the same time a product, a service, a space, a time, this track invites researchers, practitioners, corporates, students and professionals in the field of education to share their experiences and studies on design-driven processes and related impactful projects on new formats and contents, technologies and interactions, local spaces in global geographies, processes and relationships for the ideation, production, distribution and regeneration of education. In general, the attention should not be addressed to emergency researches and practices arisen during the Pandemic period, but mostly to future focused practices.

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New Education Pathways for Future Designers in a Changing World

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Abstract
The article presents the results of the debate that emerged during the *8th International Forum of Design as a Process*, organized in Bologna by the design units of three partner institutions: the University of Bologna, the Pontificia Universidad Católica de Chile and the Tecnológico de Monterrey (20-22 June 2022). In particular, the Authors were chairs of the New Education Pathways for Future Designers in a Changing World theme track. It focused on two complementary perspectives. First, how designers can apply their peculiar "productive thinking" to educational spheres or other forms of organizations; second, how a non-hegemonic approach to design education could introduce new perspectives on future experiences. After an introduction about the overall theorical background, five themes have been created to frame the papers by international scholars. The conclusion outlines some elements that can be considered in a process of continuous research and discussion.

Keywords
Pluriverse education
Responsible knowledge
Collaborative learning system
Knowledge prosumers

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Introduction

There is a large consensus about the idea that the pandemic crisis that affected the Planet in the past years has transformed almost everything with impacts for the next years or decades. The crisis is lasting, and its behavioral and social implications could even be permanent, transforming the way we will produce and consume "knowledge" as a direct manifestation of our culture. These exceptional conditions represented the occasion to rethink about our own learning and education frameworks and methods to prepare future designers having a significant role and impact on the emerging challenges transforming organizations and the overall society (Meyer & Norman, 2020).

Starting from these assumptions, the Track New Education Pathways for Future Designers in a Changing World reflected upon two complementary perspectives. The first, how designers can apply their peculiar "productive thinking" (Celaschi et al., 2020) to specific educational spheres (i.e., academies, universities, schools), but also to other forms of organizations, to produce impactful changes related to cognitive processes and artifacts. The second, how a non-hegemonic approach to design education could introduce new perspectives on future experiences, opening to a more collaborative, inclusive, transdisciplinary and collective learning system (Escobar, 2018; Bosco, Gasparotto & Formia, 2021; Boehnert, Sinclair & Dewberry, 2022; Noel, 2022; Formia, Gianfrate & Succini, 2023).

If knowledge has now to be considered at the same time a product, a service, a space, a time, the Track hosted researchers, practitioners, students and professionals who shared experiences and studies on design-driven processes and related impactful projects on new formats and contents, technologies and interactions, local spaces in global geographies, for the ideation, production, distribution and regeneration of education (Salamanca, Mercer & Briggs, 2019; Succini et al., 2021).

In general, the attention has overpassed the practices arisen during the pandemic period being mostly interested to explore future-focused research and processes. The selected essays answered the call of *8th International Forum of Design as a Process*'s Track in creative ways. This led to the publication of 24 papers, by 59 Authors, coming from 10 countries. In particular, the involved institutions and organizations are: Federal University of Pernambuco State, Universidade Federal de Mato Grosso, and UNISINOS (Brazil); Langara College (Canada); Pontificia Universidad Católica de Chile (Chile); Pontificia Universidad Javeriana, Cali (Colombia); Université Côte d'Azur (France); Codesign Toscana ETS, Iuav University of Venice, Politecnico di Milano, Politecnico di Torino, Sapienza University of Rome, and University of Bologna (Italy); Rzeszow University of Technology (Poland); Polytechnic Institute of Portalegre and University of Aveiro (Portugal); University of Borås (Sweeden); University of Applied Sciences & Art Northwestern Switzerland (Switzerland).

To provide for a general overview of the main topics collected in this part of the volume, we started from the word "E.D.U.C.A.T.E", whose anagram contains the key concepts identifying the stream presented below: Empower, Diversity, User-Centricity, Creativity, Ambition, Transition, Ethics. Each of these keywords has been set in

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relation to the others, arriving at the identification of commonalities between the Track contributions, resulting in five main themes. Below, we briefly summarize them, point to fruitful moments of connection, and thereafter highlight opportunities for future development.

Theme 1: Design Ethics and Enabling Education for Emerging Challenges

The first topic is related to Design Ethics and Enabling Education for Emerging Challenges. It focuses on the role of design to get the right "posture" towards wicked problems, such as decolonization, social coexistence, democratic participation, student-centered education, employment perspective. The Authors address design-driven models, experiences, and projects developed in academic environments, but also linked to non-institutional contexts and implemented in local communities.

Starting from the case of Langara College when the Author has been asked to lead a new course called *Decolonizing the Design Process* — which reflects Canada's nationwide trend toward Indigenization of educational frameworks —, Scot Geib (*Decolonizing the Design Process: A Case Study In Authorship, Power, and Control*) explores opportunities and obstacles related to a shift in education models with a focus on Western paradigm disruption. The theme of democratization emerged also in the paper by Valentina Facoetti, Laura Galluzzo, and Ambra Borin (*OpenMind Handbook. A system of design tools and processes to empower democracy culture in primary schools*) that investigates the role of Service Design in activating participatory processes that can foster the co-creation of educational experiences aimed at raising awareness of social coexistence. On the other side, Sasha Londoño-Venegas and Adriana Jaramillo Botero (*Architecture, design and community in Colombia. More Urban, more Rural, more Social: the workshop experience*) focus on the multiple roles of knowledge that calls researchers, teachers and academics to share experiences and studies on small-scale impact projects related to non-conventional formats. In the context like Colombia, which is described as case study, with high rates of neglect of vulnerable sectors such as school-age children, the paper points out the social responsibility of the academia to work on knowledge innovation in terms of formats, contents, practices and methodologies.

Practices for enabling students towards their future opportunities are described in the paper by Lara Maria Luft, Debora Barauna, and Gustavo Severo de Borba (C*reative Community for Generation Z teachers in Brazil through Strategic Design*). It explores the reasons behind the observed lack of engagement among young individuals in pursuing teaching as an appealing professional path. According to the Authors, to overcome the perceived lack of interest among GenZ, design can play a significant role in addressing this issue by fostering the creation of creative communities that enhance connection among members and encourage collaboration (such as the *CoNUMIdade Turbo experience* mentioned in the paper as case study). Finally, Clio Dosi, Eric Guerci, Jacek Jakieła, Joanna Świętoniowska,

Eleni Vordou, Maria José Varadinov, Matteo Vignoli, Gastão de Jesus Marques, and Joanna Wójcik (*Design Thinking and Career Development: A Comparative Study*) highlight the importance of career awareness for university students and the related social responsibility of universities to guide them through the process of choice driven by employability criteria and a counseling approach.

Theme 2: Innovation, Creativity, and Diversity to Lever Collective Intelligence and Inclusion in Complex Environments

The second topic is related to Innovation, Creativity, and Diversity to Lever Collective Intelligence and Inclusion in Complex Environments. It reflects on the role of design to value diversity and inclusion (Costanza-Chock, 2020), hybridizing learning paths by culture and creativity as catalysts for innovation. The first group of papers is strongly connected to the dimension of private organizations such as companies, investigating design-driven innovation perspectives as form for disrupting canonical processes towards a more inclusive and creative vision. Progressively the attention moves towards eco-systems that include wider groups of stakeholders such as universities, creative and cultural industries, local actors, and communities. Finally, the last group of papers reflect methodologically upon the agency of creativity in complex innovation environment.

Isabela Moroni and Amilton Arruda (*Design Processes: from the historical perspective to the application in startups companies*) underline the role of innovation in maintaining an organization's competitive capacity. This dynamic is fundamental for the construction of the central competence of a company which is the ability to generate knowledge. A five-step process is described for this purpose. By presenting the Electrolux case, Marco Limani (*Design and innovation: where do we want to play? Inquiry into some design's strengths and weaknesses in innovation*) discusses the role of design education compared to managers educated in design. According to the Author, fundamental barriers exist to successfully overtaking and legitimizing design in innovation processes. This is because the discourse cannot be siloed among design, business, management, marketing or technology; world complexity requires a holistic approach and the support of each discipline's vertical and horizontal capability to increase the innovation likelihood of success.

Starting from the case of *Design Ecosystem* in Portugal, Marlene Ribeiro and Francisco Providência (*Design ecosystem in Portugal. Education, research and entrepreneurship*) investigate the role of design in creating new problems, activating change in consumption habits and organizational evolution. In this light, the research tries to identify possible causes for the still fragile connection between design and industries and to point out alternatives for a more effective collaboration. In a similar perspective, Rita Duina, Marco Berni, and Andrea Del Bono (*The design posture: a collaborative learning-by-doing approach*) present the perspective of *Codesign Toscana Project* on the idea of "design posture", which emerges as a multifaceted concept with a different nuance when discussed by "experts" or "practitioners". According to the workshop

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series described in the paper, experts adopt a self-reflexive attitude towards their personal and professional life as designers for communities; practitioners are more oriented in conceiving the concept as a "mood" towards the community they work or live in and as a widespread sense of agentivity among people involved in design processes. The research also tries to formalize "design posture" both theoretically and in practice to trigger a series of active citizenship dynamics that can facilitate the multiplication of spaces for inclusion and empowerment. Moving towards a more specific sector, Daria Casciani (*Advanced Manufacturing for Sustainable Fashion. Developing interdisciplinary educational experiences*) investigates the fashion industry as a creative industry with high cultural, social, and environmental impacts, demanding a paradigmatic shift through digital transformation toward a sustainable change. Starting from the lessons learned from the *Advanced Manufacturing for Sustainable Fashion* (ASMF) module conducted at Politecnico di Milano (Design School) in the course Design for the Fashion System, the paper states how fashion education needs to nurture professionals who can tackle increasingly complex challenges, dive into technological systems. Davide Fassi and Francesco Vergani (*Co-designing contents with situated stakeholders: an in-field process in Nolo – Milan*) describe *OCN – Open Campus Nolo*, a living lab promoted by Politecnico di Milano: a multi-purpose format that proved to be suitable for binding research, teaching, and action together, providing methodological principles that could be scaled and replicated in local environments. This context emerges as "design incubator" characterized by the proactivity of local actors - such as citizens, shopkeepers, associations, informal groups -, acting at the core of the design process by developing brand-new and tailor-made solutions, and, at the same time, providing environmental, economic, and social beneficial transformation in an inclusive and democratic way.

Starting from the case of *NUBE Lab Project*, Alejandra Amenábar Álamos (*Creativity and Mirror Effect. Teaching creative skills through non-traditional pedagogies*) aims to indicate creativity and innovation as future engines of the global knowledge economy. In this scenario, a consistent role is played by "design pedagogy" which is crucial for transferring project methodologies and fostering creative skills. However, the technological and social transformations of this century have challenged traditional educational canons and the very definition of creativity. The paper overcomes these challenges by analyzing non-traditional educational paradigms to address them from a design methodology perspective. Finally, Yuqing Zhu and Yunyu Ouyang (*How Design Thinking Could Benefit Future Educational Environments in a Post-Pandemic Era?*) reflect on the change of the learning environment pattern which has characterized the post-pandemic era. As an effort to better support the new traits, design thinking, especially the empathizing, redefining and prototyping strategies, could help in adapting to the new surroundings at three different scales: the family and neighborhood scale, the regional medium-scale learning experience, the international scale, where innovation could be focused on the creation of virtual platforms to grant equal access for learners from developing countries.

Theme 3: User-Evolution to Build New Knowledge Pathways

The third topic is related to User-Evolution to Build New Knowledge Pathways. It reflects on the role of design to build knowledge trajectories focusing on the continuously evolving user-perspective by exploring new topics and the impact of enabling technologies to create hybrid form of education.

Daphne Degiorgis, Marco D'Addario, Beatrice Lerma, and Doriana Dal Palù (*How a technology identity can enhance the diffusion of good design practices in Product Sound Design*) investigate Product Sound Design as a promising research field. The case study is a patented method-and-tool, conceived to collect, analyze, and recreate various sounds to develop a new generation of products with designed mechanical and, eventually, digital sounds. Spreading this innovation within the design community is fundamental to stimulate future more focused and aware practices and can be seen as an example of a way to "educate" the designer to future-focused themes and reconnect the technology to potential users.

Vittorio Linfante and Andrea Manciaracina (*Learning and teaching from and by social media. Instagram to support blended learning models*) investigate the effectiveness of social media, particularly Instagram, within a teaching activity. The assumption behind is that digital transformation drives new visualization, promotion and storytelling processes of the design system, defining new relationships between physical and virtual spaces in which users are not just spectators of the creative phases, but are increasingly involved in processes of "value co-creation" and "cooperative investment". On the other side, the case study *Gamelon Pad*, developed within the research activities of the Open Design group, as part of the virtuaLAB (Politecnico di Torino) activities, in collaboration with Fablab Torino, is described by Fabrizio Valpreda (*Education & Practice in Open Design. Improving the learning experience through knowledge connections*) as the occasion to test a new approach to a multidisciplinary design process, starting from the educational experience. The paper underlines a scenario where a student is put into conditions to experiment the entire design process, in order to develop a physical design solution for a user with disabilities.

Theme 4: Design for Transition

The fourth topic is related to Design for Transition. It reflects on the role of design to enable ecological, social and technological paradigm evolution (Irwin, Tonkinwise & Kossoff, 2022).

Angela Grosso Ciponte and Evelyne Roth (*You can never solve problems with the same mindset that created them. How can we change the how and the what we teach to enable our students to become truly «terrestrial» designers? A proposition following Bruno Latour's «Terrestrial Manifesto»*) describe a series of workshops where interdisciplinary teams of students, as well as lecturers, work in cooperation with enterprises on concrete cases to explore methodological approaches to circular design. Results validate the hypothesis that education can successfully work in an open process and collaboratively convey circularity. Transition has to be consid-

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ered as a target of education at the university level, while companies in transition can operate sustainably in a circular way, even if the main economy does not yet follow this model. Starting with didactic design experimentations, Loredana Di Lucchio and Ivo Caruso (*Good for Good. Designing packaging in the era of deliveries*) point out the attention to process innovation as the result of a progressive loss of centrality of product design. Due to a deep change of scenario, in recent decades design as a discipline and practice has shifted its attention from the morphological and technological aspects of an object (both material or immaterial) to questions related to the interaction in between object and man (Human-Centred Design), in between object and environment (Design for Sustainability), in between object and object (Design for Interaction), in between object and society (Design for Social Innovation), to arrive to exclude the object from the innovation process (Design of Services) and to open to the broader field of systemic design. Leonardo Moiso, Sofia Cretaio, Cristina Marino, Chiara L. Remondino and Paolo Tamborrini (*Onboarding future Systemic Innovation Designers through informal and collaborative activities*) highlight the importance of educational methodologies in shaping digital environments, with the designer's expertise playing a pivotal role. This methodological application is also explored in professional development programs or lifelong learning initiatives, where incorporating digital tools and educational methodologies improve individuals' skills in a rapidly changing digital landscape. Delia Dumitrescu and Martina Motta (*Material practices in transition: from analogue to digital in teaching textile and fashion design*) present case studies exemplifying diverse ways of approaching the teaching of material design in textiles and fashion field, wherein haptic knowledge is combined with digital media. The results of each case study are an example of the positive impact of a cross-disciplinary approach, and of the benefits of combining tools in a context shifting from Industry 4.0 to Industry 5.0. Starting from *ARTERI'A* Project in Vigolzone (Italy) municipality, Nour Zreika and Daniele Fanzini (*Designing for the Future of Education Through Cultural Heritage*) highlight the role of schools and the importance of cultural heritage education. The contribution points out the importance of informal education to be considered as a formal learning tool to be used in a new concept of school that becomes think tanks for designers, stakeholders, and policymakers.

Theme 5: Future-proof Scenarios and Perspectives

The fifth topic is related to Future-proof Scenarios and Perspectives. It reflects on the role of design to build, unbuild, rebuild new scenarios and narratives for the future, including different fields of application (Celaschi et al., 2019).

Suzanne E. Martin (*We Need to Talk About Learning Design. A Proposal for Critical Conversation*) underlines the need for a significant reorientation of design theory and practice to make this a transformative moment in history. According to the Author, design education has the responsibility to re-imagine learning and enable new ways of shaping pedagogical knowledge, finding ways to illuminate the words that visualize that future. Based on the emerging trend of

the "living publication scenarios", Eleonora Lupo and Sara Radice (*Collaborative learning of Ph.D. candidates in Design on emerging scenarios in scientific publication*) show models and practices to disrupt traditional publication patterns and envision new formats beyond the canonical "article". They point out how new typologies research products and new forms of dissemination meet the challenges of an impactful design education to empower PhD students. Finally, Liana Chiapinotto, Fernando Guimarães Horlle, Tássia Ruiz, and Celso Carnos Scaletsky (*Scenarios, networks and systems: an alternative to dichotomous patterns*) outline an alternative point of view on the way design teaches and thinks scenarios, beyond prospective methods that stimulate speculation by antagonisms. Network elements allow us to imagine the future and reflect on the past and present in a systemic way, with the density and specificity that are required from the design professional in problematic situations.

Discussion

Encompassing a variety of aspects regarding the connection between design and knowledge innovation, the previous compilation is far from being exhaustive. A series of "wicked problems" (Rittel & Webber, 1973) have not gone into detail in it. For instance, the rise of artificial intelligence, the urgent challenges for maintaining the Planet, the post-human perspective, the new hybrid-flexible forms of learning linked to enabling technologies, the "education gap", the multidisciplinary contaminations, the growing of skills-centered education ask for new theoretical perspectives, as well as concrete design actions. Addressing our attention to such topics, considered as the contemporary condition of Transition Design (Irwin, 2015) Education, but also Transition Design in and for Education, could yield even more interesting results paving the way for further scholarly discussions.

The second aspect is related to the distance between design research and teaching, that needs to be considered because they "have always had a close (and difficult) relationship in most contemporary educational settings" (Jonesa et al., 2022). The submission received clearly demonstrates that processes of action design research are strictly linked to educational contexts, both inside and outside academia. This is true also if we consider a non-hegemonic approach that overpasses the dominant Western centric perspective.

Finally, the overall discussion opens to consider design education as a specific field of knowledge with all the complexity and contradiction that entails, but also to enlarge the perspective on design as a driver of new eco-systemic education which includes a huger set of contexts (private and public organizations, associations, institution, etc.) and a wider set of not-institutional and informal practices.

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How a Technology Identity Can Enhance the Diffusion of Good Design Practices in Product Sound Design

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Abstract
People are plugged into an intangible sound universe. But only a tiny part of the sounds we are exposed to have been purposefully designed. Recently, designers are bashfully approaching these intangible products' quality. Product Sound Design represents, in fact, a promising research field still scarcely explored. The design community is answering this concern through new design methods. An Italian university developed a patented method-and-tool, conceived to collect, analyze, and recreate various sounds to develop a new generation of products with designed mechanical (and, eventually, digital) sounds. Spreading this innovation within the design community is fundamental to stimulate future more focused and aware practices. As well as all new technologies, the new patent didn't have its own identity from the beginning. Extensive work conducted with the scientific approach has therefore been undertaken to redesign its identity to make its disruptiveness intelligible and understandable.

Keywords
Digital identity
Product sound design
SounBe
Technology identity
Virtual presence

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Introduction

Nowadays, all over the world, people are plugged into an intangible universe made of sounds. The "soundscape" (Schafer, 1969) in which we live comprises communicative and uncommunicative, pleasing and unpleasing, useful and sometimes useless stimuli. What is commonly understated is that only an infinitesimal part of the everyday object sounds we are exposed to (e.g., the crackling sound of packaging, the rolling sound of an office chair, etc.) has been purposefully designed (Fenko, Schifferstein & Hekkert, 2011).

What is Product Sound Design and why it is so important

> Products are ubiquitous, so are the sounds emitted by products. Every sound seems to influence our reasoning, emotional state, purchase decisions, preference, and expectations regarding the product and product's performance. Thus, auditory experience elicited by product sounds may not be just about the act of hearing or a sensory response to acoustical stimuli (e.g., this is a loud and sharp sound). People actually experience a product sound beyond its acoustical composition [...]: a complimentary and meaningful relationship exists between a product and its sounds. (Özcan Vieira, 2008).

According to the World Health Organization (WHO), noise pollution is one of the most dangerous environmental threats to health (WHO, 2018). It continues to be a growing concern among policymakers and the public alike. In addition to road traffic, railways, aircraft, wind turbines, and leisure noises, a need for updated health-based guidelines originated at the Fifth Ministerial Conference on Environment and Health (organized in Parma, Italy, in 2010), where Member States asked WHO to produce appropriate noise guidelines that would include additional noise sources such as personal electronic and non-electronic devices or toys (WHO, 2018).

All this evidence highlights how an up-to-date discipline, at the encounter between acoustics, design and cognitive ergonomics, is strongly needed. Product Sound Design represents, in fact, a promising research field, but one that is internationally still needs to be explored.

The Advent of New Practices for Product Sound Design

In recent times, designers are bashfully approaching these intangible products' quality. The design community is starting to answer this concern through new design methods. According to this, in an Italian university, a multidisciplinary team developed a patented method-and-tool named SounBe Fig. 1, conceived to collect, define, analyze, and recreate a variety of sounds, to develop a new generation of products with mechanical (and, eventually, digital) sounds (Dal Palù et al., 2018) as described in scientific literature (De Giorgi et al., 2011; Dal Palù & De Giorgi, 2018).

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Fig. 1
An overview of SounBe tool.

SounBe tool consists of a set of accessories housed in a briefcase and designed to produce sounds from materials samples following a standardized procedure. It can be adopted as a reliable tool to generate sounds to be described also with semantic differentials technique, frequently adopted in sound quality investigation studies. SounBe is an evolving and open tool: as the complexity of gestures and exciting modes existing in real life and in real interaction between a human and an object, or between two objects, is almost endless, the device offers the possibility to reproduce several more common gestures, but the method can be implemented with new gestures still not explored. The physical device allows not only to test material samples but also to submit to the test simple and small products such as, for example, a coffee cup (Dal Palù et al., 2018).

Spreading this innovation within the design community is fundamental to stimulate future practices, especially concerning Product Sound Design. Moreover, the dissemination of SounBe method-and-tool could have a significant role and impact in the educational path of future designers and prepare them to be able to produce impactful changes in the development of innovative cognitive processes, and artifacts, in which sound will be a main asset. As well as all new technologies, the new patented method-and-tool didn't have its own identity from the very beginning.

Finally, this design-driven process was focused on the key questions proposed in the next lines:

- How to ensure that the SounBe technology spreads in the design community?
- What identity to give to the new technology?
- Can a new *phygital* identity (i.e., a new identity that mix physical and digital levels, aiming at the convergence between the two spheres (Johnson & Barlow, 2021) help spread physical technology on and off the web?

This contribution tries to show how a new technology developed to face a phenomenon attracting an increasing attention not only can benefit from a totally new and ad hoc designed physical and digital identity, but also how impactful this could be on the ideation, production, distribution, and regeneration of education (and of next generation products). A descriptive report of this process

is proposed, with the aim not to represent a possible method to be replicated, but to offer the perspective of a case study on the possibility of designing the identity not only of a product or a brand, but of a technology.

Scientific Approach

A new technology identity design is a matter that goes far beyond the boundaries of communication, user experience, and innovation. In the specific case of this research, the identity of a new technology can help spread its adoption, with a consequent positive effect on future product design practices.

The analysis of literature (Haverkamp, 2013; Riccò, 2016) defined a spot at the intersection between visual design and sound, and the integration with semiotics and the synesthetic approach is shown to be crucial to meet cross-sensorial needs. The subsequent sub-chapters, and the related approach schematization Fig. 2, will depict a clearer image about it, always in relation to the proposed case study.

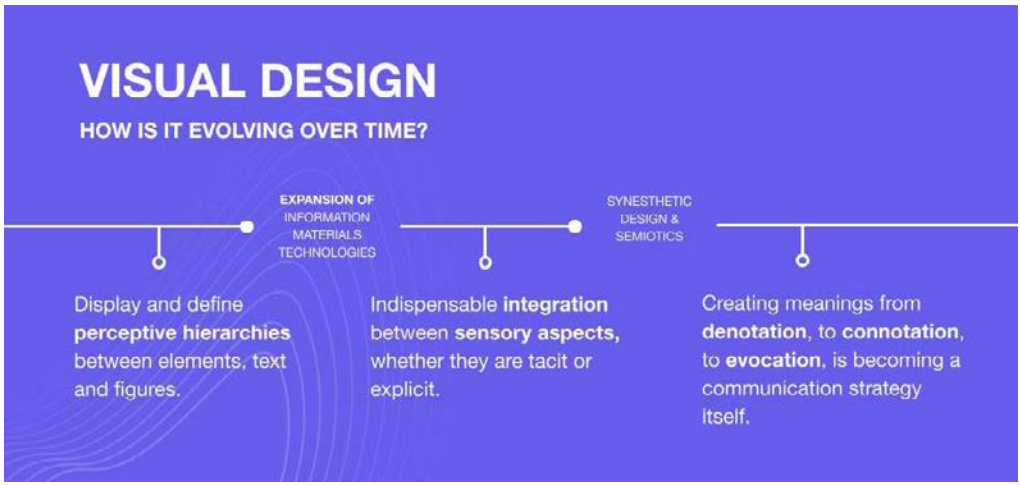

Fig. 2
A schematization of the adopted approach.

A Communication Strategy Based on the Synesthetic Approach

Since products and services' identities shape their desirability, acceptability, and adoptability (Elwyn et al., 2013), they could positively affect future practices, especially those concerning product design.

Traditionally, visual designers seek to display and define perceptive hierarchies between writings and figures. However, as Merleau-Ponty (1945) declared, objects' aspects don't identify just in their geometrical shape but, instead, they are linked with the whole human sensorial sphere. Moreover, the expansion of information, materials, and technologies drives products to an indispensable integration between sensory aspects, whether they are tacit or explicit as many studies researchers confirm. The Italian designer Bruno Munari (1981), in the early 1980s, affirmed that design projects not

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only should consider the senses other than sight but consider them as an essential linked entity. Multisensory integration turns out to be fundamental to meeting the users' cognitive needs, leading to more comprehensive design products (Chandrasekaran, 2017). The result is a necessary interdependence that, in this case, must take place between visual and sound stimuli (Riccò, 2008).

Even though the use of sight is normally perceived as the main sense faculty, other senses, specifically hearing, merge sharply with the sight to shape a consistent representation of the context we are immersed in (Liu, 2020). We will dive deep into the relationship between vision and auditory senses in the next paragraphs.

Visualization to Drive Perceptions

Despite the exploitation of sensory integration, especially with audition, visual-lead translation is still recognized as the most efficient method, on a communicative level, to let the users fully embrace the relationship between the senses (Liu, 2020). The designer can direct the characteristics of those interactions, defining sensorial priorities and hierarchies, to avoid inconsistencies (Riccò, 2008).

Thus, concerning visual strategies, the wise use of typography can drive human attention towards precise sentences, keywords, or lone glyphs to strengthen visual identities, logos or explanatory texts. Moreover, previous color associations and well-known brand identities shape our perceptions, establishing unconscious patterns in our mind. The latter react to shapes similarly, associating them with previous and personal experiences.

The Semiotic Principles of Design

Theoretically, objects or signs denotation is objectively perceptible, but its representation, instead, is an internal image that was formed relying on the memories of sensitive impressions and activities people experienced (Frege, 1892). Hence, this semiotic principle leads to the subjective connotation of a visual element, which changes according to each individual. Starting from this rule, the designer must consider the *denotative*, *connotative,* and *evocative levels*, both individual and collective, of a certain visual stimulus. Nowadays, the process of creating meanings from denotation to connotation, to evocation, can be considered as a communication strategy itself (Bonfantini et al., 2007) frequently exploited by media, visual merchandisers, and designers.

Visual and Auditory Stimuli: An Effective Interdependence

As a typical means of synesthetic translation, the audio description would enrich visual information, thereby conveying the emotions within visual content (Liu, 2020).

In broad terms, verbal and visual descriptions of the sound world require a figural language allowing the visual register to take immediate relevance. In addition, concerning harmony and melody dynamics, the sound vocabulary retains traces from the visual arts (Riccò, 2008).

Thus far, we illustrated the constitutional synesthetic principle on which the research and design of SounBe communication systems are based. In summary, sight and sound are in a constant relationship: from figures arise sounds (think, for example, of the famous "The Scream" by Edward Munch) and with sounds, we can evoke images. We must therefore not expect sounds *to be heard*, but sounds *to be seen*, *evoked* in the literal sense of the term.

In summary, while presenting the current project we intend to propose how an increasing sensory intervention would accommodate richer design elements and design issues where complexity plays an important role (Liu, 2020). By exploiting sight stimuli and psychological processes, a system of visual elements allowed the authors to reach significant results in terms of effectiveness within the creation of a communication strategy that could meet users' needs as well as SounBe main features.

These approaches have been applied to ensure a wide dissemination of SounBe potentiality mainly online, but also offline, through an integrated communication strategy that will be disclosed in the next section.

First Outcomes

As we already said, the communication of the technology was based on a convergence between digital and physical spheres. After a due scenario analysis based on mood boards of the existing panorama related to sound fruition intended in a wide perspective, here only briefly mentioned through some examples taken into account Fig. 3, for the digital "showcase" of this technology, a coordinated image was created, as well as an identity on the website (www.sounbe.design), and a communication plan through straightforward wording for the potential user (designers, researchers, companies), to make its disruptiveness visible and tangible, though online.

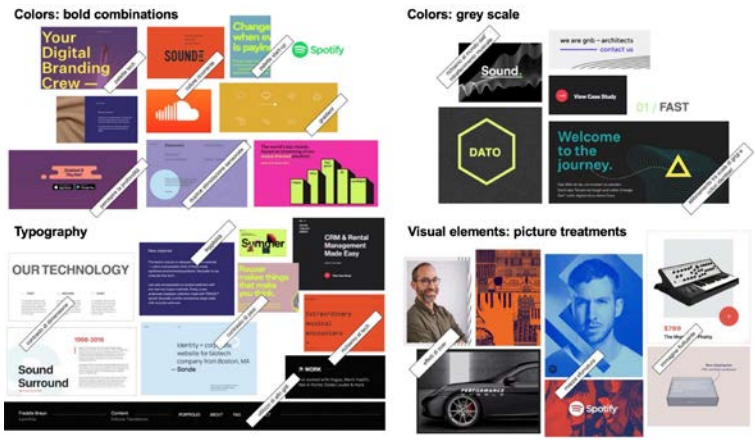

Fig. 3
A synthetic overview of the performed scenario analysis through a mood-board of case studies taken into account on the theme of sound fruition in general.

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Specifically, the multi-level communication of the instrument has been fully revised Fig. 4.

From the initial color palette, colors have moved to ones emphasizing the high-tech aspect of the instrument and the spirit of start-ups. The grayscale, colors of the technique, were flanked by bold combinations of violet (which refers to the blue of the University where SounBe was developed, but also to a more electric color, close to the world of innovation) and acid green (which winks at novelty and sensory stimulation). The gradient map in a combination of identity colors was chosen for the treatment of images, returning visual and narrative uniformity to the photographs chosen to tell the project.

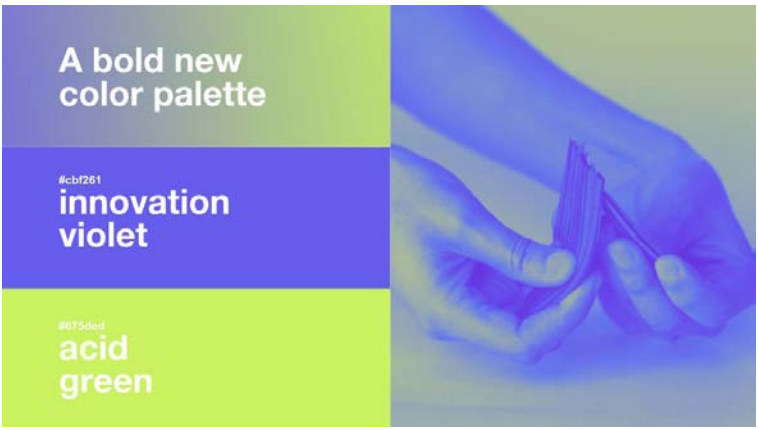

Fig. 4
An example of colors and coordinate image of the technology new identity.

The research subsequently focused on finding the most suitable shapes to tell the world of sound design. The choice fell on the visual imagination of sound waves, stylized to also resemble icons and shapes symbols of the most relevant application sectors for sound design. The result is waves evoking the reverberation of sound and remembering iconic products or silhouettes (e.g. luxurious bracelets or candy packaging) Fig. 5. The logo was the first ground for this new attitude towards shapes, designed to be constantly updated with different sound waves. The new dynamic identity has been completed with a typography that privileges the contrast of dimension between the texts, still in favor of high legibility, in combination with the use of some glyphs such as +, >, arrows. The choice of a sans-serif typography was almost natural, both for the technological context in which the project fits, and to be able to adapt more easily in particular to digital contexts.

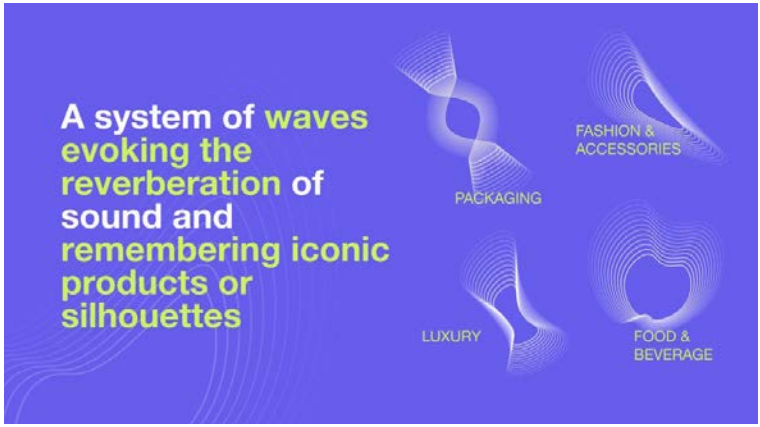

Fig. 5
The system of SounBe's sound waves.

The Showcase of the New Identity of Sounbe

The first context of application of the redesigned identity was the new website, conceived as a real "showcase" of the technology and developed through in-house design phases such as mood boards, brainstorming, cognitive mapping, experience prototyping, all performed inside the extended research team.

Thanks to brainstorming and participatory design with the project team, a vertical scrolling landing page was structured. This choice wants to be a metaphor for deepening the contents. The website is divided into sections, developing the story of the potential of technology, with a simple language and suitable for both simple curious people and designers and companies. Just as if it were a start-up, SounBe is also told, through its technical aspects, the advantages it can generate and the real services with which this technology can be exploited. In this narrative, a human component is not lost, thanks to the faces and stories of the designers who contributed, thanks to their multidisciplinary skills, to the realization of the tool and the services connected to it.

A New Awareness Thanks to Social Media

Social networks can also be leveraged to build a new awareness around sound design. The launch of the new SounBe website was in fact flanked by a social campaign dedicated to the interactions between the culture of design and the history of design with the world of sound. The story of some case studies, such as products with design peculiarities, winners of important awards such as the "Compasso d'Oro ADI", or with a certain reputation and recognition, has been useful to generate interest and amazement around SounBe's technology, as well as to entice designers and companies to take an interest in this area. From a graphic point of view, a series of social cards were created in which it was possible to express the maximum of the visual identity of SounBe, using the sound waves, the colors of the palette and the onomatopoeias corresponding to the sounds that characterize each product presented. The result

is an operation that combines dissemination on the themes of the project culture, promotion of a technology that fits into a sector with great possibilities for development and the ability of good design to marvel Fig. 6.

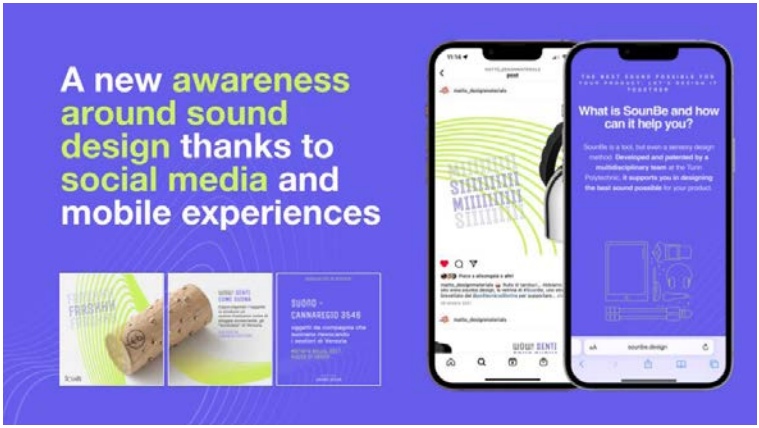

Fig. 6
SounBe's social media and mobile experiences.

Reflections and Reasoning

It is the task of each designer to think about the future with a proactive approach oriented towards growth and continuous improvement. Similarly, the task of academia is, among others, to orient skills and abilities of the future professionals towards the most current challenges that society raises.

Rethink about our own learning and education frameworks and methods to prepare future designers having a significant role and impact on the emerging challenges affecting organizations and the overall society is a key activity of the academic design community. In fact, a non-hegemonic approach to design education could introduce new perspectives on the future of experiences, opening to a more collaborative, inclusive, transdisciplinary, and collective learning system.

The Intelligibility of a New Technology: A Key-Asset

The design-driven innovation is crucial in driving new ideas and new technology; D to D (i.e., Designers to Design) innovations are currently developed more and more (Dal Palù, De Giorgi & Lerma, 2014). Recent research shows how industrial designers might be able to effectively support scientists and technicians in their research activities to foster an effective collaboration (Driver, Peralta & Moultrie, 2011). Unexpectedly, the role of the designer as a key-driver of innovation seems to be underrated by designers themselves, although research in design appears to be anyhow a powerful resource.

In the case of this contribution, the technology was developed by a multidisciplinary team that includes designers at the service of design, and even the technology identity and presence has been developed to convey its adoption and to catch the attention of a design-led public (confirmed by a progressive and growing interest in the technology, obtained since the launch of the communication strategy).

As we all know, the adoption of innovative technologies is nowadays conveyed more and more by the online communication channels. Also, for this reason, a *phygital* technology identity was strongly necessary. In fact, the "physical + digital" dimension was considered the proper space in which the diffusion of SounBe technology could take place. This case study could represent a first reference for other multisensory communications of new technologies identities through the *phygital* medium in the Sound Design sector. However, in this sense, attention to this contribution should not fall only on *how* the project of the new identity of the technology in question (which represents a simple case study) was resolved, but rather on *why* it is important to focus attention on this aspect. In addition, this example raises another debated point within the design community: the necessity to consider the designing of the correct identity of a new technology as a stage of the TRL scale, to strongly convey its adoption.

A New "Sensibility" Within the Design Community

Making a new technology understandable — without the pretension of bothering, however, the adjective *accessible* — is more than creating its online showcase, it is making its potential available to a larger number of possible users. The identity of a new technology can help it to be more inclusive (for instance helping to connect it to its early adopters), and include people who are normally excluded by rapidly changing technology (Langdon, Clarkson & Robinson, 2007). Moreover, in the case of the SounBe communication system, it can also help to rapidly understand the context of use and the complexity of the interactions made possible.

Thanks to its designed identity, the new technology can enhance the diffusion of good design practices in the project phases such as designing the invisible aspect (Ferreri & Scarzella, 2009) of Product Sound. Specifically, it defines new perspectives on the future of experiences, opening to a regeneration of education in the direction of a more collaborative, inclusive, transdisciplinary, and collective learning system: a new responsible knowledge that aims not only at improving the discipline, but also at an internal and external wellbeing of the ecosystem.

This future focused practice appears finally to be in line with the words of Raynold Murray Schafer, soundscape theorist, who affirmed that

> It devolves on us to invent a subject which we might call acoustic design, an interdiscipline in which musicians, acousticians, psychologists, sociologists and others would study the world soundscape together in order to make intelligent recommendations for its improvement. [...] The final question will be: is the soundscape of the world an indeterminate composition over which we have no control, or are we its composers and performers, responsible for giving it form and beauty? (Schafer, 1977).

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Conclusion

From the snap of a chocolate bar to the rustle of a luxury silk shirt, the sound is becoming increasingly relevant. The goal of spreading sound design culture is now becoming more possible thanks to a tool at the service of designers, whose disruptiveness was difficult to understand. Bringing SounBe and its identity back into the world of sound design, investigating its key traits with respect to colors, typography and visual elements was necessary to increase its accessibility. This operation could be seen as an example of a way to "educate" the designer to future focused practices and reconnect the technology to potential users, with the overall goal of spreading the new practice of Product Sound Design within the design community for the future.

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DIGITAL SPECIAL ISSUE 1

The 8th International Forum of Design as a Process, themed "Disrupting Geographies in the Design World" was held in Bologna from 20 to 22 June 2022. The event was organised by the Advanced Design Unit of the Alma Mater Studiorum – Università di Bologna, Department of Architecture, in collaboration with two partner universities: Tecnológico de Monterrey (TEC) and Pontificia Universidad Católica de Chile.

The Forum engaged speakers from the Global Design community, expanding the original vocation of the Latin Network for the Development of Design as a Process to include researchers and designers of the Mediterranean Area, Middle East, IOR (Indian Ocean Region), and Global South regions. The goal was to share new perspectives on imagining design futures in a responsible and just perspective, at the forefront of change, while building strategic partnerships and creating accessible knowledge.

Structured around three pillars — seminars, workshops, and exhibitions — the Forum hosted meetings, reflection opportunities, networking activities. It involved designers, scholars, young researchers, design entrepreneurs, in an experimental format.

Speakers' contributions not only inspired the practices of the designers' community, but also resonated with students and the broad audiences. The presentations explored intersections of materiality and culture, post-coloniality, decoloniality, gender studies, and other areas of human thought and action which seek to analyse, question and challenge the disruptive geographies in the world, today.

The papers submitted to the five tracks proposed are published in the Digital Special Issue 1 of *diid. disegno industriale – industrial design*, celebrating during those days its 20th anniversary and serving as the fourth partner of the event.

The Editors
Erik Ciravegna, Elena Formia, Valentina Gianfrate, Andreas Sicklinger, Michele Zannoni

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