

Implementation of design culture as a strategic innovation through design-oriented industrial conversion and product diversification

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CONNECTIVITY
and **CREATIVITY**
in times of **CONFLICT**

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Preface

Connectivity and Creativity in times of Conflict - conference proceedings VI
 Cumulus president's message - Design for Adaptation in Times of Complexity IX

Track 1

Nature positive/design for transformation

Editorial 2
Design methodology
 Scenario-building through a systemic lens: a new perspective on tools and methods to design for sustainability transitions 4
 Intimacy/integrity: a framework for thinking about epistemological styles in design activity 9
 Democratizing design: the development of a 'Design for Do-It-Yourself' framework 15
 The power of imagination: immersive and experiential counterfactuals to engage with sustainability 20
 Applying human-centered system design to the development of a tool for service innovation 25
 Pulse approach: integral design project management to empower transformative processes 30
 Research on design sketch from different disciplines: overview and directions 35
 Researching the invisible: troubling qualitative research design through information architecture 41

Design education

T+ designers: a case for transdisciplinarity in design higher education by way of a South African case study 46
 Materiality, commons, and design education 51
 Representing and shaping regenerative futures: a context-specific approach to art and design education. 58
 Creative strategies for the learning spaces of the future 62
 Implementing SDGs in a product design curriculum, or: the value of tap water 67

Design materialization

Yutaka: how do we prototype the transformative change towards nature positive designs with soil 72
 Material experience: the future of material selection for product design 77
 Discerning modes of design in ecological restoration 82
 From visual to multisensory: how does intangible cultural heritage of traditional costume self-remodel in digital interactive environment? 87
 Designing sustainable furniture: guidelines to promote furniture life cycle design 94

Biophilic approaches in design

Biophilic design for remote studying environments: analysis of case studies involving a collaboration between ergonomics and environmental psychology 98

Bioreceptive interfaces for biophilic urban resilience 103
 Artificial nature: possibilities for mycelial composite material design 109
 Botanical design: exploring the application of parametric plants in furniture 113

Eco-social transitions

Systemic Design Oriented Leadership (SDOL) – a co-created play for eco-social leadership development with the methods of Systems Thinking 118
 Design for transformation: unlock competencies for coping complexity 122
 Change agents: designers interpreting 'the social' and 'social' interpretations of design 127
 The changing role of designers in transition processes 132

Fashion innovations

Fashion design matter: the role of design in guiding a sustainable transformation in Europe 137
 Convincing fashion consumers to go green: a brand communication problem? 142
 Prototype dialogues; re-balancing design thinking through negotiations with fabrics, form and future 148
 Future fashion: new and ancient systems at the intersection of anthropology, ecology and innovation. 152

Urban design & citizen inclusion

Design fiction localised 158
 Transit Oriented Development used to formulate design guidelines for an improved bus network in Malaysia 163
 Exploring sustainable ecosystems in the "15-minute" urban living circle—take Shanghai Urban Space Season 2021 as an example 169
 The Unified Citizen Engagement Approach: a design-oriented framework for involving citizens in the energy transition 174

Design & digitisation

Designing for Viral Infection Awareness through PLAYMUTATION 179
 Gamifying the low impact customer solution design 183
 Connecting to the future; using serious games and scenario development for responsible design 189
 About utopias, apocalypses, respawning and zombies and how understanding images of space and time may inform design for sustainable behaviour 194

Track 2

Digital futures/hybrid reality

Editorial 200
New crafts and craftspeople
 Fashion Craftsmanship 4.0. Learning experience about Industry 4.0 technologies for hybrid digital fashion-tech products, processes, and business model design 202
 Crafting hybrid workflows for the design of augmented textile artefacts 210

Distance: digital immersive technologies and craft engagement	214	Fantastical reality: designing virtual urban space through extended reality	333
Notions of hybrid craft production: conversations and small-scale experiments in digital fabrication	219	The Metapolis – cities between a ripple and a blur	338
Research through design in the cyber-physical era		Towards data activation and engagement within a smart city	345
Digital synesthesia in product design. Building a vocabulary of physical interactions for a sensible quantified self	223	Technology driven design education	
Digital content that offers experience of listening to crystallized music	228	Teaching design of technologies for collaborative interaction - an emerging pedagogical framework	349
The body can not be thought: the 'disabled body' as a catalyst to develop new paradigms for human-computer integration.	232	A mixed-method approach: virtual reality to co-create future higher education workspaces in a post COVID-19 academic environment	357
Metaphysical Instruments: prototypes for hybrid and live music-making	236	An attempt to integrate AI-based techniques into first year design representation course	363
Redefining the role of design(ers)		Digital fashion	
Virtual skin: co-creating 3D materials with synesthetic artificial intelligence	241	The emperor is naked: deconstructed materiality in fashion NFTs	368
Cabinets of curiosities for the postcolony II: tokens: collections I-V	245	Dematerializing fashion- improving design-led sustainable and hybrid retail experiences via digital twins	372
Speculating futures in an age of nostalgia	250	Fashion archive as a meta medium: unfolding design knowledge through media technologies	379
Computational thinking in design and fabrication for augmented and accessible museums.	254	Fashion and the metaverse: from omni-channel to direct-to-avatar	384
Usability and performance of innovations		Track 3	
Usability and UX evaluation of an online interactive virtual learning environment: a case study of Wales' Virtual Hospital	260	Handle with care/inclusivity	
Design perspectives for the future of work in Industry 5.0 environment: the digital and physical space in Augmented Reality uses	266	Editorial	
Assessing the impact of immersive versus desktop virtual reality shopping experiences in the fashion industry metaverse	271	Design for/as communication	
A pilot study with the Shaper Origin to determine the learning curve of augmented fabrication	276	Encouraging humanitarian assistance in conflict zones through animated public service announcements	392
Design for and with extended reality		The design of an engaging focus group discussion toolkit involving school-aged children following urotherapy	397
Introducing the material experience concept in the metaverse and in virtual environments	280	Inclusive Transformation of age-friendly communities based on digital technology support	402
Balancing authenticity and creativity: A VR system design for assisting in ceramic creation.	287	Taking care of the elderly through the tools of the animated communication design: a useful and ethical imperative	408
What is the furniture in the Metaverse for?	292	Pee poo period. Exploring the intersection between shame, bodily fluids, and sustainable design	413
Design for and with digital fabrication		Design for diverse users	
Craft in the age of robots	299	Feminist value sensitive design of self-tracking technology based on female body data	419
Light it up: designing electronic textile with a light as a design material	304	Spatial "mutual altruism" as a relationship of care for homeless people. How design impacts social re-integration	425
Strategy for knowledge transfer in AM as a hybrid process chain towards a transition from prototyping to commercialisation	309	I'll be there for you: exploring a sense of belonging to enhance student engagement	429
Speculative tinkering on circular design materials through 3D printing	317	Inclusive design in the context of performative gender through product form	433
Flaws as features, new perspectives for developing an additive manufacturing design language	322	Landing the internship: the role of gender in finding ID internships	438
The digital on urban scale		Object as the tool of recovery - Examining material culture of young refugees in Hungary for trauma processing	443
Designing smart product-service systems for smart cities with 5G technology: the Polaris case study	328	The food delivery industry and its lack of care in gender equality: the speculative case of 'GiGi'	448
		Winning at more than a game! A storytelling board game concept to raise awareness about refugees' language barriers	455

Care(ful) spaces

Cities for all: co-design interventions on urban features using inclusive technology	461
Separating Covid from non-covid: spatial adaptations in existing hospital buildings	466
Wayfinding is caring	471
Explore vacant public spaces regeneration to facilitate minor's activities and education under inclusive design principles	475
Human-space relationships as narrative processes for inclusivity	480
Urban darkness: human experience of atmosphere and fear	485
Daily social interactions of hawkers as a catalyst to actuating bottom-up spatial justice: experience from Hong Kong	489
The city of care through walkability and proximity. Researching on and with Generation Alpha on urban walkability assessment	494
Hinges, passages and comfort	499
Renewal of urban ecological transportation network based on inclusivity design — Take Sydney's "Livable Green Network" plan as an example	504
How to take care of the Antwerp modernist social housing of Alfons Francken? And how do this housing blocks take care of its changing population?	510
Inclusive innovation: a study of creative furniture design for urban community public space	515

Co-creating care(ful) design

Health, care and prosthetics: co-design methodologies in the case of autofabricantes	519
See the unseen: a co-creation design process for children with incarcerated parents	524
The power of photovoice: AI support provides voicing opportunities for children in sex education	529
Co-design for the common good: a holistic approach to workspace projects	533
Co-designing neighbourhood identities. How to share memories and experiences towards a common sense of belonging	538

Design(ers) & learning

Universal design for learning as an inclusive teaching methodology for an African art and culture course in Ghana	544
Material-led thinking as a practice of care: a strategy from art and design education	550
Artful care for self and others in daily design practice	555
Material metaphors: method for physicalising relations and experiences	560

Design ethos

A South African approach towards a caring design practice	565
Weighing the tensions of nostalgia, necessity, and care in contemplating the future of the Nigerian design-scape	570
Food as a form of care: designing social innovative processes and practices	575

Designing with posthuman kinship: from posthuman theory to human-non human collaborative design approaches	580
Beyond empathy: how curiosity leads to greater care	585

Inclusive approaches to intangible cultural heritage

Convention versus contemporaneity: the affordances of design-led mediation towards sustaining an ancestral cycle of linen making in Castelões, Portugal	590
Combining care for planet, people and culture towards circularity	594
Media art creation process using digitized archetype of Korean traditional dance movement	600
Envisioning design strategies for intangible cultural heritage activation	604

Sustaining traditional crafts and techniques

Craft for care, design for life. Heritage contemporary enhancement and communication design tools as a resource for social changes, fostering diversity and inclusion	610
Embroidered heritage: a design-led visual ethnography of traditional Palestinian motifs	615

Adaptation of the built environment

Design for Ukraine's heritage: engaging international students during times of war through design activism	619
The technical compatibility of vertical greening with built heritage	624
New design models for proximity retail and senior inclusion	628
Investigating spatial patterns of green infrastructure at built heritage sites in Antwerp, Belgium	632
From architecture to community: adaptive reuse as social practice	636

Participation and role of communities

Methodology and evaluation of digital assets reconstruction of cultural heritage with visitor participation in museum	642
Community heritage: an immersive approach to disaster resilience	646
Caring for human diversity and built heritage through design: a multiple case study enquiry	651

Poster abstracts

Adding value to the future through design and entrepreneurship: PLACE	657
A video game for emotion regulation of medical students	658
Video game design for ecological impacts	659
Dwell and move, change ensues	660
Transposing timelines	661
Artificial intelligence-aided type design for Chinese script	662
Design and reconstruction of the new interest youth community in china in the post-epidemic era	663
Sound E-scape: an interactive, digital application for music therapy and soundscape generation	664
Development of existing biophilic interior design definition	665

Design-driven approaches to human augmentation. An exploratory study	666	Human augmentation: the role of design in the design of on-body interfaces for cognitive-sensorial wellbeing	718
Designing with people: creating a multi-level interdisciplinary design education environment for more inclusion	667	A conception toward design narratives for innovation	721
Material connotations: meta-structure research of practice based projects with invasive species plant waste	668	Home away from home – The role of design methods in processing trauma of forced migration and loss of place	725
From collecting natural objects to presenting the future anthropocene: exhibition design for the anthropocene theme in museums	669	Decoloniality and healing: confronting inter-generational trauma/ideologies through architectural preservation and education	728
Catacombs: refuge on the border of the virtual and the real	670	The ephemerality of an organic material and its implications: a context specific study with invasive exotic species (Japanese knotweed) waste in Genk, Belgium	731
Hybrid specimens: Phygital artefacts at the intersection of analogue + digital crafts	671	Visual communication bridging intercultural barriers	734
Content management system in mapping movable objects	672	Feeling the future car: designing for driving pleasure in the era of co-driving	737
FlavourGame: interaction design in hybrid games	673	Mediterranean landscapes in emergency: nature and culture	739
Bibliometrics in circular design visual representation	674	Key Performance Indicators for measuring and evaluating users' sensory perceptions and behaviors in learning spaces in higher design education	742
Inclusivity as a hype phenomenon in advertising	675	Textile handcraft making and women creators' psychological well-being: a narrative review	746
Inclusion in recruiting	676	Cross-case analysis on the integration of extended reality (XR) with the design and planning of the built environment	750
Values, design and educational project: contemporary projections	677	Ecosystem services: an interpretive paradigm of urban and territorial heritage. Strategies, guidelines, and vision for sustainable cities	754
Project Hope : the creative revolution mural, a human singularity approach	678	Characteristic analysis of future-oriented design based on cognitive context theory	757
More-than-human ways of thinking through felting wool	679	Digital wellbeing and design	760
"Care strategies to strengthen heritage structures as a community asset during the pandemic: the case of Bahay Nakpil-Bautista"	680	Appropriation and appreciation of Austrian and Indonesian puppetry	763
A novel offloading insole system designed for healthcare	681	Reinventing the gastronomic experience: using interactive digital environments to raise awareness of food-related cultural heritage	766
Towards an embodied expression of pandemic nodes & networks in the age of social distancing	682	Developing cultural heritage sustainability from the perspective of participatory sentimental souvenir design	770
Cumulus Phd network	683	How does design intervention promote sustainable rural transition: an analytical framework based on the multi-level perspective model	774
Evolution of 'Mashrabiya' in the Middle East & North Africa - traditional wood carving technique revival	684	Designing future hybrid creative space using digital tools in educational institutions and organizations	777
Exploring the potential of material innovation to revitalize traditional crafts in Egypt	687		
An overview of design suggestions for contemporary theatrical VR productions	690		
Polymath interpolation in transdisciplinary open-ended design – design for conservation	693		
Implementation of design culture as a strategic innovation through design-oriented industrial conversion and product diversification	696		
Sustainable transformation of age-friendly community centres based on transition design	700		
Parametric Joinery. Development of a system of configurable joints	704		
Designing a ward inventory for a sustainable healthcare. Framework for healthcare providers of configurations among disposable medical devices, clinical procedures, and medical equipment in the neonatology department.	707		
A safe space of creativity-designing with vulnerable female communities	711		
The direction of wayfinding. From the identification of a place to the expression of its meaning.	715		
		Reviewers	781



CONNECTIVITY
and CREATIVITY
in times of CONFLICT

Cumulus Phd network



Implementation of design culture as a strategic innovation through design-oriented industrial conversion and product diversification

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Abstract

Italian manufacturing companies, SMEs in particular, are lately experiencing a context of great economic uncertainty. Therefore, achieving high levels of flexibility concerning changes in consumption and demand is necessary to increase competitive advantage. The discipline of Design can play an essential role in addressing the challenge of perceiving unexpected change and managing new market visions through new products. The doctoral research concerns a qualitative/quantitative analysis of design-driven industrial conversion and product diversification; both business strategies aim to share company risk in crisis, production inefficiency, or change in technological paradigms through updating and expanding the product portfolio.

The PhD research has adopted the Research through Design as the methodological approach, and in addition, a specific methodology is defined for guiding the experimentation phase. Indeed, the research includes a testing phase with two model companies of Turin and its province (as the Turin Chamber of Commerce founds the doctoral research) concerning a path to accompany a design-oriented production diversification or industrial conversion. The design culture and typical design methods, enriched with those of Innovation Management, create interdisciplinary support for reading the local and corporate production context.

The research is currently in the experimentation phase through the "Design in Progress" project, where two companies with different degrees of design orientation are encouraged to diversify their product portfolio through Design and technology-driven processes.

The final objective of the PhD research is to define good practices for efficient production diversification or, in more extreme cases, industrial conversion, adaptable and scalable according to company needs.

So far, the main results achieved in two years are 1. Five semi-structured interviews with companies; 2. A database with more than 60 case studies of Design-driven industrial conversion; 3. A classifying framework of case studies to display trends in common; 4. A collection of insights from interviews, preliminary desk research and the framework; 5. An analysis of the evolution of the manufacturing landscape in Piedmont, the region in the northwest of Italy, to explore possible new design-oriented sectors. 6. An interdisciplinary methodology to measure the propensity for design-led in-

dustrial conversion 7. The launch of the "Design in Progress" project, an experiment to bring two companies in Turin and its province closer to design 8. A literature review focused on: Research through Design, Design and territory, Territorial economy, Design and Innovation Management, Industrial conversion and product diversification.

In parallel to the "Design in Progress" project, a collaboration is underway with a Dutch university to test the path to design for manufacturing companies with young researchers and design students. In particular, a focus group with young researchers to test, expand, and modify the experimentation tools and a workshop with design students to simulate the experimentation path.

These results warrant further investigation with a larger perspective. The doctoral research is currently exploring the strategies of industrial conversion and production diversification towards new products; further research with more focus on the dematerialization of production through services, also in a circular economy perspective, is therefore suggested.

Author keywords

Industrial conversion; product diversification; strategic innovation; industrial design; competitive advantage

Introduction

The Design discipline was born with a solid strategic and pragmatic attitude to support change processes and realize visions and values through products. As it is considered the connector between creativity and innovation (Design Council, 2011), a design-driven industrial conversion or product diversification can be evaluated and used as a strategic lever to foster internationalization and as a tool for visibility and recognition in the territory (Parente & Sedini, 2018) in this period of significant external changes in the corporate environment. Over the last 20 years, numerous researchers working on new directions of design research have focused their studies on the strategic role of designers in firms through design management and design leadership processes (Borja de Mozota, 2003; Brown, 2009; Calabretta, Montaña & Iglesias, 2008). "For more than 175 years, the field of design has followed developments in business, technology, and culture" (Muratovski, 2015, p.119), but the study of the valorization of the figure of the designer in business strategy is still part of the debate in the scientific community in the Design field.

Thus, there is a strong need to enhance the skills of designers and bring them into play to go beyond the mere 'styling', the final form-giving stage (Danish Design Centre, 2001) or an operative tool to solve styling problems (Celaschi, Celi & García, 2011).

The research responds to this request by identifying industrial conversion and production diversification strategies as a means of implementing design culture as a strategic innovation that places designers at the center of business strategy. Specifically, the research proposes an accompanying design path for manufacturing companies, divided into several steps. This accompaniment path to design aims to encourage and simplify the transition from the intuition of research to its implementation and realization (Design Council, 2014), not only to create economic value for the company but to understand the changes taking place and identify future challenges.

Research methodology and working plan

The PhD research adopts the Research through Design as a methodological approach, namely project-grounded research (Findeli, Brouillet, Martin, Moineau & Tarrago, 2008). The methodology is divided into four chronological steps that follow the three-year doctoral path and includes several qualitative and quantitative methods (Figure 1).

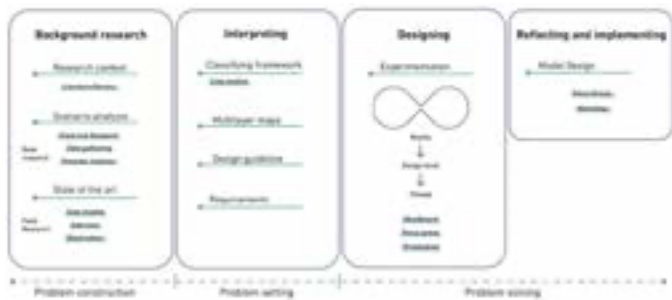


Figure 1. Research method

The first step includes the "Background Research", which aims to formulate the research statement and questions and analyze the topic and scenario. Within this step, the results achieved are manifold; firstly, the analysis of the research contest made it possible to create a PhD-specific literature review consisting of five different macro-themes: Research through Design, Design and territory, Territorial economy, Design and Innovation Management, Industrial conversion and product diversification.

More punctual research on the locution "industrial conversion" followed; in particular, the research investigated different contexts and historical aspects in which it is used, deepening its contextualization of the design debate and formulating a new meaning. The search for case studies helped in this regard, and the opportunity to interview five CEOs or managers of local companies that have implemented the strategies of industrial conversion or product diversification in the past made it possible to collect valuable suggestions and insights for the subsequent stages of research. The semi-structured interviews were conducted within the following ethics parameters: voluntary participation, informed consent, and confidentiality. The results will be communicated to the interviewees during the thesis writing to check the transcription's accuracy.

The keyword "industrial conversion" was rarely used as a password to access this information, making it more challenging to search for case studies. During the first and second years, the research involved a database of approximately 100 case studies of industrial conversion and product diversification to understand the strategic paths taken by companies. The case studies reveal several strategies, such as the exploitation of production assets, thus using different materials by exploiting or implementing the same technology; the achievement of a complete manufacturing process, therefore reaching the level of the assembled product, overreaching that of the semi-finished product or component; the acquisition of high levels of specialization using design strategies such as large format, off-scale, unique surface finishes.

Scenario analysis, which included field and desk research, made possible the construction and definition of the problem. To focus on the cited theme, the research defined the following research questions:

RQ1: How to explore and manage the process of industrial conversion and product diversification from a design perspective?

RQ2: How can designers participate in the processes of strategic business decisions?

RQ3: How to analyze the company's capabilities to identify new products/productive processes/futures strategies?

The second phase included interpreting previously collected data through desk and field research. An essential phase of doctoral research was defining a method for classifying case studies of enterprises implementing industrial conversion or production diversification strategies in mature industries to identify new strategic directions.

The tool built to address this purpose was a case study cataloguing framework (Figure 2).

The framework consists of two levels; the first, the base, consists of three macro areas that demarcate the framework and identify three different conditions: the condition prior to the strategy and a snapshot of the company's condition following a production diversification and/or industrial conversion strategy. Each area contains an additional indication, the life cycle of the technology.

The vertical axis indicates whether the change affected only the product, or whether it led to a production process.

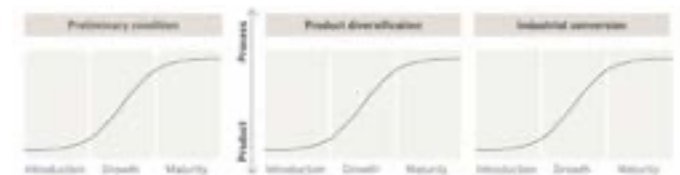


Figure 2. Framework: first level

Each company is then represented through a graph (Figure 3) containing additional information. It is also essential to indicate the company's design orientation in the framework. It can be null, overt, where design activity is active and present, or potential, where the design may be absent, but there is room to intervene (Germak & De Ferrari, 2001; Cantó, Frasset & Irene, 2019).

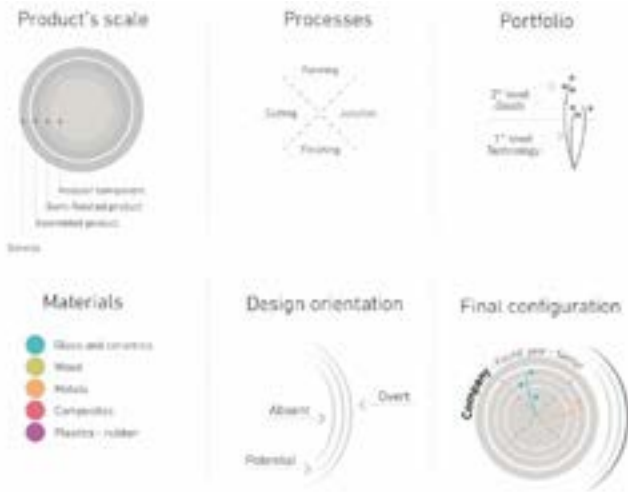


Figure 3. Framework: second level

Including case studies in the framework highlights trends and insights, namely project or managerial strategies, valid for the experimentation phase and defines requirements and characteristics companies must possess to be included in the testing.

The research included a territorial production context analysis through qualitative and quantitative methods to identify shrinking sectors and screen companies for the accompanying design-driven industrial conversion experimentation.

This phase allows for setting the problem and the focus of the experimentation, the implementation of design culture as a strategic innovation through design-oriented industrial conversion and product diversification.

The problem-solving phase begins with the action-experimentation step of the research that adopts and merges the version of the Double Diamond (Design Council, 2019) for Design for Social Innovation (Anderson, 2019) and the Exploring Design methodology (Germak & De Giorgi, 2008), defining a project methodology (Figure 4). It combines the convergence and divergence path typical of the double diamond methodology and the exploration of feasible scenarios with future products and innovative services of the exploring design methodology (Lerma, Dal Palù, Actis Grande & De Giorgi, 2018).

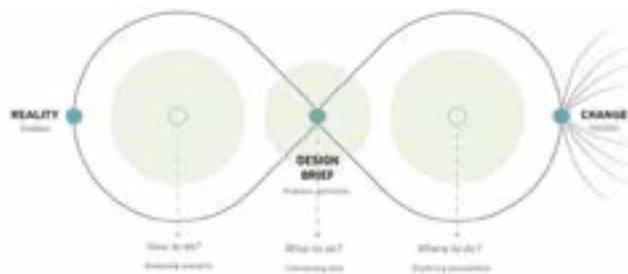


Figure 4. Project methodology

The project methodology defines the boundaries of experimentation, which starts from the business reality, widens the view with the scenario analysis, converges towards the definition of the problem and design brief, and diverges again to explore different possibilities and finally converges in the definition of the solution leading to change.

In detail, the experimental phase consists of the "Design in progress" project, which aims to accompany Turin's manufacturing SMEs on a path of a conscious approach to the design discipline, increasingly understood as a means of strategic innovation and opening up to new markets to increase competitive advantage (Björklund, Maula, Soule & Maula, 2020; Bianco & Rampino, 2017), by reconverting or diversifying production, starting from the company's history, know-how, skills and assets. This is the current stage of research. The final step includes the verification and implementation of the process through collaboration with a foreign university in the coming months, in which a focus group with young researchers in the design discipline and a workshop with design students are planned to simulate and implement the process of the "Design in Progress" project.

Discussion and conclusion

The research is currently in the experimentation phase with the "Design in progress" project, intending to demonstrate the ability of the design discipline to intertwine and strengthens entrepreneurship (Telalbasic, 2021), as a means of performance improvement of innovation (Borja de Mozota 2002) through the incorporation of new products or services that can exploit company skills and know-how. The project can be the starting point for other activities with companies that want to prevent a period of crisis and experiment with the inclusion of design activities.

Manufacturing SMEs, producing components or semi-finished products with a low degree of design orientation and at a time of business instability or economic distress, are the main target of the project into which to insert the design, according to Borja de Mozota (2010) as "good business" through industrial reconversion or product diversification.

The research fits into and enriches the scientific and industrial landscape dealing with design leadership as it enhances the figure of designers within complex business strategies.

Designers, capable of handling higher levels of complexity (Dorst, 2019), can be critical players in strategic decisions in companies alongside typical management figures. Considering that business strategies inevitably impact the surrounding area, shaping and changing it over the years, the design-oriented industrial conversion can be included in broader projects to enhance local production culture as a policy capable of conferring a new territorial production specialization; this is an important issue for future research.

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This book contains academic papers and posters of the Cumulus Antwerp conference, held in Antwerp on 12-15 April 2023. The Cumulus community, designers, artists, and educators were invited to submit contributions on how culture and creative industry can offer resilience, consolation, and innovation models on human scale, in line with the conference theme 'Connectivity and Creativity in times of Conflict'.

The contributions were double blind reviewed in the tracks

- 1) Nature positive/Design for transformation,
- 2) Digital futures/Hybrid reality,
- 3) Handle with care/Inclusivity, and
- 4) PhD network.

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