POLITECNICO DI MILANO

PhD in DESIGN - 39th cycle

THEMATIC Research Field: TACKLING THE PARADOX BETWEEN FOOD WASTE AND FOOD AND NUTRITION INSECURITY THROUGH DESIGN PRACTICES

Monthly net income of PhDscholarship (max 36 months)
€ 1195.5 In case of a change of the welfare rates during the three-year period, the amount could be modified.

Context of the research activity	
Motivation and objectives of the research in this field	Eating is a biological necessity and an essential socio-cultural practice, but the current food system is making people and the planet sick: the impact of the food system affects most of the United Nations Sustainable Development Goals (SDGs). More than 820 million people do not have enough to eat, and many consume inadequate diets that substantially increase obesity and diet-related non-communicable diseases (Willett et al., 2019). Apart from being inequitable, the food system has a very high level of waste: Italy ranks first in the percentage of food waste according to the Food Sustainability Index (Economist Impact, 2022). In particular, urban food systems are the most exposed to multiple socio-economic challenges, firstly, food and nutrition insecurity. Cities produce one billion tonnes of solid waste per year, about half of which is food, and these numbers are expected to double by 2030 (FAO, Daviers et al., 2018). Tackling the paradox between food insecurity and food waste requires a systemic change among the different levels and actors of the entire food ecosystem and involves public and private actors, the third sector and citizens. It means innovating (also through the support of technologies) products, services and policies to support a social and cultural change towards sustainability that can influence individual and collective habits and behaviours (Leicht et al. 2018).

	The discipline of design is expanding into heterogeneous areas of intervention within complex socio-technical systems (Norman &Stappers, 2015) in a risk/threatening and unpredictable global context, which sees the emergence of a mission-oriented innovation model (Mazzuccato, 2018). It is where Transition Design (Irwin, 2015) and Circular Design (Ellen MacArthur Foundation, 2017) are developing as emerging approaches to design research and practice that propose a design-led integrated social transition towards more sustainable futures. The research aims to investigate the methodologies of Transitional Design, Circular Design and System Change through integrated design practices for food systems and explores the possibilities of hyperlocal product-system (Manzini, 2015), bottom-up strategies for capacity building and policy-making belonging to participatory design, research through design and co-design (Sanders &Stappers, 2008), as a feasible approach to empower civil society actors to be collaborative agents for systemic change (Wilde, 2020).
Methods and techniques that will be developed and used to carry out the research	Starting from an initial exploration of the research field, the first objective will be that of building a solid theoretical foundation, identifying relevant information on the topic that will allow to define and focus the relationship between food waste and food insecurity, and identify ways in which design practices can be used to address this paradox. In order to carry out this research, a range of methodologies, actions, and process tools will be developed. Thus the first step in this research will involve a comprehensive literature review of existing research on food waste and food insecurity, as well as design practices that have been used to address these issues. This will provide a strong foundation of knowledge on which to build the research study. The research involves the identification, mapping, and analysis of a series of case studies, including fieldwork and a specific data collection process, in order to gain a deeper understanding of the peculiar challenges and opportunities related to food waste and food insecurity in different contexts.The data collected through these case

	studies will be analyzed using a range of qualitative and quantitative methods to identify patterns and themes that will inform the development of design practices. The research will also involve a series of workshops with stakeholders, including designers, policymakers, and community members, to co-create and test design practices that can effectively address the paradox between food waste and food insecurity. These workshops will utilise a combination of process tools, including design thinking, co-creation, and participatory design methods. Finally, the research study will involve a dissemination phase, in which the findings and design practices developed through the research will be shared with a range of stakeholders, including policymakers, designers, and community members. The dissemination phase will be based on a range of communication tools, including reports, presentations, and social media, to ensure that the findings and design practices are widely accessible and can be utilized to address the paradox between food waste and food insecurity.
Educational objectives	We imagine expanding the traditional disciplinary approach and the skills required for the action research process including innovative use of a systemic design approach (ex. developing explorative data layers) and reflecting also on an interconnected design practice which involves future studies, design justice, speculative approaches and critical making. Expanding the traditional disciplinary design approach requires a shift towards a systemic design approach that recognizes the complex and interconnected nature of the challenges and reflects on the skills and knowledge required to engage in interconnected design practice. The first step in expanding the traditional disciplinary design approach is to recognize the importance of future studies. This involves thinking beyond the immediate problem and considering the long-term consequences of our design decisions. Future studies help designers to anticipate and plan for future scenarios and to create designs that are resilient and adaptable to changing circumstances.

	Design justice is another crucial aspect: this involves designing with and for marginalized communities, and recognizing the importance of equity, diversity, and inclusion in the design process. Designers must work to understand the social, cultural, and economic contexts in which their designs will be implemented, and to create solutions that are responsive to the needs of all stakeholders. Speculative approaches are also important in expanding the traditional disciplinary approach to design as this allows designers to explore new possibilities and push the limits of what is currently considered possible. Finally, critical making is an important aspect of interconnected design practice. Critical making involves using the act of making as a way to critically examine the assumptions and values that underpin our designs. By engaging in critical making, designers can question their own biases and assumptions, and create designs that are more responsive to the needs of diverse communities. Designers must also be able to work collaboratively and engage in co-creation with stakeholders from diverse backgrounds. By engaging in interconnected design practice, designers can create more equitable, resilient, and adaptable solutions to the challenges we face. The ultimate goal is to develop design researchers with a remarkably open mindset toward investigating and coming up with forms of innovation that can benefit society, the economy, and the environment.
Job opportunities	A design Ph.D. with this kind of expertise in innovative use of systemic design could have various job opportunities in different sectors and industries. Some of the job roles they could cover include: - expanding the traditional disciplinary approachcould work in academia, think tanks, research institutions, or consultancies to conduct research anddevelop new methods to address complex societal issues; - helping organizations and businesses todevelop a long-term strategic plan by considering future studies, design justice, speculative approaches, and critical making to create equitable and sustainable outcomes;

	working in industries such as fashion,architecture, and product design to reduce waste,promote circular design, and develop sustainable products and systems; - working in nonprofits, NGOs, or social enterprises to design innovative solutions to complex social problems that require an interdisciplinary and systemic approach; - using a systemic approach to design and improve service delivery for a range of industries,including healthcare, transportation, and public services; - helping public institutions to design policies thatare grounded in future studies, design justice,speculative approaches, and critical making to create equitable and sustainable outcomes. In conclusion, a design Ph.D. with this expertise has a wide range of job opportunities across sectors and industries, as their expertise is needed to address complex societal issues that require an interdisciplinary and systemic approach.
Composition of the research group	1 Full Professors 2 Associated Professors 1 Assistant Professors 2 PhD Students
Name of the research directors	Stefano Maffei

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Additional support - Financial aid per PhD student per year (gross amount)	
Housing - Foreign Students	--
Housing - Out-of-town residents (more than 80Km out of Milano)	--

Scholarship Increase for a period abroad	
Amount monthly	597.75 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
Educational activities (purchase of study books and material, funding for participation in courses,

summer schools, workshops and conferences):
financial aid per PhD student per year
max 4.872,90 euros per student (total for 3 years)
Teaching assistanship: availability of funding in recognition of supporting teaching activities by the PhD student there are various forms of financial aid both for research and teaching activities. The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations.
Computer availability: 1st year, 2nd year and 3rd year: Each research group will supply PhD student with a computer, if necessary.
Desk availability: 1st year, 2nd year and 3rd year: Each research group will supply phd student with a desk.