

Design and Responsible Innovation. Ethics and Caring as Keys to Addressing Contemporary Crises

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Abstract

Current global crises have generated profound environmental, social and economic instability, exacerbating the so-called “North–South divide”. To cope with increasing uncertainty and complexity, design has faced profound structural changes and reviewed its approaches. Design has come to the Responsible Innovation concept to define perspectives on how to develop products and services with a positive impact and create new forms of individual and collective knowledge. Based on ethical values of caring, Responsible Design focuses on ideas and practices that enable designers to address complex eco-socio-political wicked problems. At the intersection between Responsible Innovation and design cultures and practices, several examples of local and global initiatives can be identified. To better understand the state of the art and envision possible developments of Responsible Design, a selection of case studies was analysed, and action research was carried out. Thus, two perspectives emerge: 1) Design for Responsible Innovation; 2) and Responsible Innovation applied to Design. In both views, design becomes ethically responsible, empowering people to take care of themselves, their communities and the environment.

Keywords

Responsible Design
Sustainable development
Ethical responsibility
Caring
Communities

Changes in Design to Address Contemporary Crises

Humanity, and more generally the planet, is facing multiple global crises of an environmental, social and economic nature (Bauman & Bordononi, 2014), which have generated profound instability, exacerbating the so-called “North-South divide” (Glenn, 2007), especially after the spread of the COVID-19 pandemic. However, crises are not necessarily negative and, if addressed appropriately, can become important opportunities for change, even when approached by Design (Scherling & DeRosa, 2020).

Indeed, while many authors place design at the heart of contemporary crises (Fry & Nocek, 2021), it could be argued that a more critical and speculative approach to “solving problems”, which has distinguished the discipline so far, can truly contribute to creatively reframe possible solutions, and envision new practices that problematize its engagement with complex issues. Examples of such issues include concerns about climate change and its negative effects, gender or income inequality, issues surrounding health and well-being such as the growth of the obesity rate or the treatment of mental disorders, social problems such as poverty or racism, but also coexistence between and within communities.

Over time, design has gradually been dealing with so-called “wicked problems” (Rittel & Webber, 1973; Sweeting, 2018). These problems are characterised by a strong social nuance and impact, the involvement of multiple actors in the decision-making process, a delayed achievement of solutions within short time frames, and often the presence of confusing information that makes their resolution difficult.

To cope with the increasing uncertainty and complexity of the current scenario, design has adapted through profound structural changes that have made it possible to redefine its perspectives and bring it closer to the economic, industrial, social and cultural realities of people, communities and organisations (Ceschin & Gaziulusoy, 2016); as well as change the approaches and objectives of designers, who in recent decades have been able to react — and, in certain situations, to anticipate and “pro-act” — to address these changes, in an attempt to transform critical situations into opportunities for change for people and the planet (Scherling & DeRosa, 2020).

Design has thus become more and more advanced in its methods (de Bont et al., 2013). Likewise, designers have assumed an increasingly strategic perspective (Zurlo et al., 2002; Zurlo, 2004; Verganti, 2009; Norman & Verganti, 2014), becoming facilitators and mediators in complex systems (Celaschi, 2008). Design is no longer conceived only as a creative activity that determines the technical, functional and formal qualities of objects produced by industry, but as a process that drives innovation and leads to a better quality of life through meaningful products, services and experiences (World Design Organization, 2022).

Along with the strictly material and tangible benefits of a project, design has recognized and enhanced its contribution to the individual and social well-being of people, through intangible services, experiences and meaningful interactions between people and the designed artefacts they use, as well as amongst people themselves.

As Heskett (2005) states, designing is the human capacity to shape and organise environments in a way that has no antecedent in nature, that satisfies the needs of its users and gives meaning to their lives. In this sense, design has established itself as a practice of caring (Vaughan, 2018), where “caring” is to be understood in the broadest sense of the term, referring not only to human physical health, but to a wider approach to design, aimed at improving people’s well-being and thus the environmental and social quality of life for all.

Ethics and Care as Keys to Responsible Innovation

As early as the 1970s, an attempt was made to address what the role of design might be within policies, production processes, and social and environmental emergencies (Maldonado, 1970; Papanek, 1971; Illich, 1973), with the aim of identifying actions and approaches capable of influencing change in individual and collective behaviours, and increasing designers’ awareness of the value of their role with respect to people and the planet. This effort brought to light the concept of design’s ethical responsibility towards all the subjects involved in a project’s process (Imbesi, 2009; Russ, 2010).

In this regard, the political scientist Weber (1919) argues that the so-called “ethics of responsibility” are antithetical to the “ethics of principles” or “ethics of conviction”, according to which we are only obliged to perform morally correct actions on the basis of principles defined a priori by a higher moral entity; if, on the other hand, we direct our actions according to an ethic of responsibility, we must respond to the foreseeable consequences of our decisions.

The “ethics of responsibility” and the idea of taking charge of the impacts of one’s actions were later taken up by Jonas (1979), who laid the foundation for the concept of so-called “Sustainable Development” (The World Commission on Environment and Development, 1987). The introduction of this concept and the organisation of the ten-yearly Earth Summits since 1972, emphasised the need to activate new ways of modifying the relationship between human beings and the environment, with the intention of creating desirable futures for generations to come.

Thus, a de-anthropocentric vision has gradually been asserted, in which groups of people re-appropriate their being as a community within an environment that has its own pace and rhythm, and where the concept of responsibility plays a key role in preserving the ecosystem and its relationships (Escobar, 2016; Formia, 2017), bringing to light not only individual but also collective acts (Iadarola, 2016).

In line with this vision, the European Community has affirmed responsibility to be one of the drivers to make innovation processes more inclusive, equitable and sustainable. In 2011, the concept of Responsible Research and Innovation (RRI) was introduced in the European Union’s worktables:

Responsible Research and Innovation is a transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view on the

(ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products (in order to allow a proper embedding of scientific and technological advances in our society). (von Schomberg, 2011, p. 9)

This definition has been implemented mainly within the Horizon 2020 projects (European Commission, 2014) since 2014, subsequently reaching the productive sector, local policies and learning models focusing more on ethics, on the involvement of society within the innovation processes and reconsidering the forms of responsibility within such processes (Long et al., 2020), while extending the concept of Responsible Innovation (RI) beyond research organisations and European projects.

The concept of “responsibility” is no longer viewed only through its legal dimension (based on Roman law) but also through its empirical, ethical and epistemic dimensions (Grunwald, 2019), as understood in the 18th century, when the term was directly related to solidarity and seen as an “application chosen by individuals for individuals” (Pavie, 2019, p. 250). Furthermore, the notion of “role-responsibility” (Hart, 1968) also referred to the idea of “looking after someone else’s interests” (Pavie, 2019, p. 251).

Responsible Innovation thus refers to a duty of care towards other people (Owen, Macnaghten & Stilgoe, 2012; Owen, 2019), which takes an interdisciplinary and collective form in order to be achieved (von Schomberg, 2013; Stilgoe, Owen & Macnaghten, 2013; Delgado & Åm, 2018). However, the concept of care goes beyond solidarity: according to Tronto & Fischer (1990) care is defined as a peculiarly human activity that includes everything we do to keep, preserve or adjust our world, with the aim of living in it under the optimal conditions (Tronto & Fischer, 1990, p. 37, cited in Gianni, Pearson & Reber, 2019, p. 254). This implies the need to take care not only of other human beings, but of everything that surrounds us, both material and immaterial in nature.

Furthermore, Responsible Innovation implies “taking care of the future through collective stewardship of science and innovation in the present” (Stilgoe et al., 2013, p. 1570).

In caring about the future, we extend ourselves beyond concern for those alive now to ‘anticipate’ the care of others for their world (Passmore 1974). The stronger this sense of participating in projects which connect us with future generations, and therefore the sense of sharing a narrative with them (Rolston 1981), the stronger our sense that near and distant futures both matter to us now. (Groves, 2009, p. 27)

Responsible Innovation Meets Design

In response to the current complexity, design disciplines have also embraced the concept of Responsible Innovation. They have established a different approach to the project — understood as Responsible Design — based on the ethical values of caring, with the aim of defining new design processes centred on the development of products and services with a positive relational, social and environmental impact, but also of creating new forms of individual and collective learning and knowledge.

According to Stahl et al. (2021), Responsible Innovation needs to overcome certain limitations in the application of its principles in real-life contexts and in the measurement of impacts. In that sense, while the goal is to promote desirable, acceptable and sustainable long-term processes and outcomes, the aim is actually to move towards a concept of Responsible Design, or “Responsibility by Design” (Stahl et al., 2021), which means taking into account the principles of inclusion, gender equity, open access, transparency and science education, among others, from the initial phases of a project.

According to Boehnert, Sinclair, & Dewberry (2022, p. 4), Responsible Design is a field without a fully defined theory or characterisation, which has emerged over the last five years as an extension of Sustainable Design, the roots of which can be identified in writings dating back to the 1970s including *Design for the Real World* (Papanek, 1972) or *La speranza progettuale* (Maldonado, 1970). Responsible Design focuses on ideas and practices that will enable designers to address complex eco-socio-political problems.

The approach of Responsible Design is closely related to the model of Socially Responsible Design which proposes that all designed interventions should be undertaken from a position of responsibility (Davey et al., 2005). Reed (2007) speaks of a trajectory of “Environmentally Responsible Design” consisting of levels of learning that lead towards a reconnection and interrelation between the human and non-human earth system, opening up to a vision of “Regenerative Design”.

Design for Sustainable Social Innovation (Manzini & Meroni, 2014) supports the activation of collaborative innovation processes and building a sustainable future. Finally, key foundations of responsibility-related design thinking and practice can also be recognised in works on Inclusive Design, Participatory Design, Design for Democracy (Eggink et al., 2020), Decolonising Design and Transition Design (Irwin, 2015).

Projects at the Intersection of Responsible Innovation and Design

To better understand the state of the art and envision possible developments of Responsible Design, a selection of case studies was analysed, and action research was conducted to put the principles of Responsible Innovation into practice within design-driven processes.

The case studies were chosen according to the following main criteria:

- on the one hand, the aim was to observe phenomena taking place both locally and internationally, comparing realities as distant from each other as Europe and South America, choosing Italy and Chile as exemplary countries;
- on the other hand, cases were identified that consider the role of Design and the application (even unaware) of the principles of Responsible Innovation within projects that directly involve and benefit communities;
- a further aspect was to observe how learning processes in design education are changing and how institutions and associations are promoting new educational models linked to values such as ethics and care.

Regarding this last criterion, action research was also carried out, in the form of an international cooperation project involving three universities, one Italian, one Chilean and one Mexican, to conduct a one-year training program specifically on Design and Responsible Innovation.

Based on the aforementioned criteria, the following case studies were selected:

SELECTED CASE STUDIES	TERRITORIAL SCALE
Consegne Etiche	Developed at the local level
Chilean Constitutional Process	
Cumulus Green	Developed at the international level

The following action research project was developed on the educational models oriented to design in connection with Responsible Innovation:

ACTION RESEARCH PROJECT	TERRITORIAL SCALE
Winter School: Design for Responsible Innovation	Conducted both at the local and international levels

Consegne Etiche: a Digital Platform for Ethical Home Delivery Service



- 1 <https://www.fondazioneinnovazioneurbana.it>
- 2 <https://dynamo.bo.it/>
- 3 <https://www.ideeinmovimento-coop.it/>
- 4 <https://www.almavico.it/>

Fig. 1
Consegne Etiche.
 ph. Margherita Caprilli
 per Fondazione per
 l'Innovazione Urbana.
<https://consegnetiche.it>

Consegne Etiche (literally “Ethical Deliveries”) is a platform developed in 2020 in Bologna (Italy) by the Fondazione per l’Innovazione Urbana¹ in partnership with the cooperatives Dynamo² and Idee in movimento³, with the support of the Municipality of Bologna and Almavico⁴.

The aim of the project was to set up a home delivery service offering people basic goods and services (groceries, meals, books on loan from the library system, medicines and home care), particularly during the COVID-19 pandemic, with the assurance of acting within a

chain of respect for workers' rights and environmental sustainability. In concrete terms, it operates as an alternative to the major platforms, pursuing objectives of inclusion, participation and the involvement of civil society in a public service.

Consege Etiche seeks to reinforce the emerging paradigm of using sustainable means for short-haul deliveries in the social sphere as well, but without neglecting the quality and safety of the conditions of those working in the delivery sector, well-aware that some people, such as the disabled and the elderly, have suffered more severely due to their condition from the effects of the pandemic and confinement/quarantine.

Sustainable and supportive home delivery becomes not only the answer to a logistical need, but an opportunity for relationships, encounters and the preservation of a social fabric that, especially in the suburbs, is increasingly in danger of disintegration.



Fig. 2
Plataforma Digital de Participación Popular, official digital platform of the Chilean Constituent Convention. <https://participacionpopular.chileconvention.cl/>



Fig. 3
Digital Platform Tenemos que Hablar de Chile. <https://www.tenemosquehablardechile.cl/>

In Chile, an exemplification of the role of design in promoting responsible citizenship is the development of digital tools to promote the active participation of the population in the constitutional process⁵, which is currently leading to the rewriting of the 1980 Constitution, dating back to the period of Augusto Pinochet's dictatorship.

The entire Constitutional process has been accompanied by both top-down and bottom-up initiatives aimed at involving citizens to make the project of the new Constitution as open and participatory as possible. In the context of the work conducted by the elected Constitutional Convention⁶, citizens' participation has been encouraged at different times and according to different modalities: public hearings, popular initiatives for legislation (including specific indigenous peoples' initiatives), town councils (the so-called "cabildos") and self-convened meetings⁷.

To support the participation of the people in these activities, a digital platform called *Plataforma Digital de Participación Popular*⁸ was implemented to simplify and make information related to complex legislative processes more accessible, and to promote democratic involvement in the constitutional process. A WebTV Channel⁹ was also created with the purpose of broadcasting all the Live Sessions of the Constitutional Convention.

Apart from the official websites of the Constitutional Convention, other digital platforms were developed to promote citizens' participation in the Convention process.

Tenemos que hablar de Chile (literally: "Let's talk about Chile")¹⁰ is a collaborative platform jointly developed by the Universidad de Chile and the Pontificia Universidad Católica de Chile, which aims to promote citizens' participation in decision-making by the authorities and in governmental deliberative processes. The aim is to promote social cohesion and the construction of a roadmap for the country in the face of the current uncertainty, and to help citizens imagine the Chile of the future, encouraging people to share what they have to say about the country they dream of for the new decade. Since April 2020, several initiatives have been organised and promoted through the platform. Among them, we may cite the "individual consultations" and the "citizen dialogues" on relevant topics of the new Constitution. A further development was the "Constitubot", an automated system that uses the WhatsApp chat platform to share relevant information about the Constitutional process.

With the same objective, the independent and non-profit project titled *C80*¹¹ was developed to bring the Constitution closer to non-experts by relating its contents to current conflicts and problems. In its initial stage (2015-2017), the project was supported by an open fund from the Embassy of Finland. Although it was developed around the 1980 Constitution (*C80* is a direct reference to that document), within today's context, in which the constitutional text is being rewritten, the platform has become even more relevant, because it offers useful content to help make responsible decisions in view of the upcoming plebiscite for the approval of the new Constitution in September 2022.

Finally, another similar project worth mentioning in relation to the development of digital platforms for the promotion of citizens' participation is *Plataforma Contexto*¹².

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The constitutional roadmap in Chile was promoted after the October 2019 mobilisations that led to the call for an "Agreement for Social Peace and the New Constitution", which was signed by the political parties on November 15th. What followed was a path of constitutional reforms approved by the Chilean National Congress to establish a proper constitutional itinerary. On 25 October 2020, this was submitted to the decision of the citizens, who voted through a plebiscite to approve the drafting of a new Constitution, to be written by a Constitutional Convention composed entirely of people specially elected for this purpose. Elections were held on 15 and 16 May 2021 for the 155 Constituent Convention members, which for the first time included gender equity and reserved seats for representatives of indigenous peoples. The work of the Constitutional Convention has been submitted to a plebiscite with a mandatory vote for approval or rejection, held in September 2022.

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At the beginning of its work, the Convention defined in its regulations a Commission for Popular Participation made up of 21 constituents, which established principles, channels of participation and selected support professionals for the secretariat of popular participation.



*Cumulus Green*¹³ is an initiative promoted by Cumulus Association, the Global Association of Art and Design Education and Research¹⁴. *Cumulus Green* is a biennial international competition open to students from all over the world, which focuses on issues related to contemporary social and environmental crises, with the aim of promoting solutions that are more responsible and intended for a more sustainable future. Projects are encouraged within three submission categories: products, services and systems.

The *Cumulus Green* competition began in October 2019 and since its first edition has been dedicated to the question of how to address and support the achievement, through Design cultures and practices, of the United Nations' Sustainable Development Goals (SDGs) with a focus on a specific SDG for each edition.

This year's edition, entitled *Cumulus Green 2022: Nurturing Our Planet*, focused on SDG 2: Zero Hunger. The international jury selected three award winners and acknowledged 35 honourable mentions among the 222 projects submitted from 60 universities and 27 countries, which show how to transform our food systems to end food insecurity, creating better conditions for a fair and ecologically prosperous world.

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Some of the citizens' meetings were also devoted to discussing the role of design in the mainstream process and to providing a space for democratic dialogue that would allow the development of collective and collaborative projects that would engage with the community in terms of a new national reality. These specific meetings were called "Cabildos de Diseño" (Design Town Councils).

8
<https://participacionpopular.chileconvencion.cl/>

9
<https://convencion.tv/>

10
<https://www.tenemosquehablardechile.cl/>

11
<https://c80.cl/>

12
<https://plataformacontexto.cl/>

13
<https://cumulusgreen.org/>

14
<https://cumulusassociation.org/>

Fig. 4
Cumulus Green International Student Competition. <https://cumulusgreen.org/>

Winter School: Design for Responsible Innovation: An Academic Project of International Cooperation



15
<https://adu.unibo.it/winterschool/>

16
Project financed by the University of Bologna's fund *Promozione di iniziative innovative dei Dipartimenti nell'ambito degli accordi quadro di Ateneo e degli accordi di settore* (Promotion of Innovative Initiatives by Departments in the Context of University Framework Agreements and Sector Agreements), within the framework of International Cooperation Agreements with Higher Education Institutes.

Fig. 5
Overall group of participants from the three universities in the project *Winter School: Design for Responsible Innovation*.

The international cooperation project *Winter School: Design for Responsible Innovation*¹⁵ is a one-year educational program carried out in 2020-2021¹⁶, led by the Advanced Design Unit of the University of Bologna (Italy)¹⁶ and developed in cooperation with the School of Design of the Pontificia Universidad Católica de Chile (Chile) and the School of Architecture, Art and Design of the Tecnológico de Monterrey (Mexico). The Winter School program consisted in a series of teaching activities (mainly workshops and lectures) and involved a group of academics and a selection of students from the three partner institutions.

The project addressed the way in which design relates to Responsible Innovation in two forms: by seeing it as an object of exploration, relying on the development of transnational forms of learning and reflection, to verify if and how the interconnection between the two fields leads to a change in the design process for the creation of products and services; secondly, by co-constructing, through a shared international vision, responsible and inclusive interdisciplinary learning models to be applied in quintuple-helix contexts (Carayannis, Barth & Campbell, 2012).

The main objectives common to the two versions were: to disseminate a form of collective knowledge on a local and transnational level, both among research groups and students from different parts of the world, and in the productive, social and political worlds, on issues related to ethics, gender equity and open access applied to different contexts, from the city to the design disciplines; to create an open shared language for responsible design and innovation, seen through different cultures and needs; to experiment with reflective thinking in action, by prototyping products and services that can integrate concepts of ethics, responsibility and transparency from the initial stages, by transposing them into product systems capable of improving people's ways of living towards a just transition.

To achieve the desired results, a specific methodology was applied, itself the result of cooperation between the three universities and a doctoral research project, in the perspective of a non-hegemonic process. The methodology was mainly articulated through

“three fields of action related to the concept of Design-driven RRI: Thinking, Education and Production” (Succini et al., 2021, p. 240).

The cross-fertilisation between skills, disciplines and territories has led to each region understanding the complexity of current emergencies differently, but at the same time imagining the same principles for overcoming them, to the point of imagining the figure of the designer as an agent of change in the construction of a co-future.

Towards Responsible Design-Led Innovation

Based on the above-mentioned projects, together with the analysis of the state of the art, two perspectives seem to emerge from the encounter between Design and Responsible Innovation, although not explicitly mentioned in the examples considered:

Design for Responsible Innovation

On the one hand, design practices, seen as a set of approaches, tools, definitions in continuous transformation and adaptable to contexts (Maffei, 2021), can make Responsible Innovation principles and dimensions operational within real scenarios; and make individual and community involvement in economic, social, environmental and cultural development processes collaborative and tangible (Deserti, Real & Schmittinger, 2021).

Responsible Innovation applied to Design

On the other hand, the theoretical systems of Responsible Innovation can be integrated within design processes (from critical thought-building to practical experimentations) to lead them to open up to an ethical, just and inclusive responsibility (Bailey et al., 2016; Salamanca et al., 2020), which can change the way we design by considering the impact of design actions at each stage of the process; and to educate society to adopt more responsible and sustainable behaviour and consumption (Costanza-Choc, 2021).

In both perspectives, design takes responsibility for individuals, society and the planet, while at the same time empowering people to take care of themselves, their communities and the environment in which they act. Moreover, the combination of design approaches with those of other disciplinary fields, enhance a “pluriverse” intervention (Escobar, 2018) in conflicts involving relations between the global north and south, the local and the global, the real and the virtual.

Referring to the concept of “Buen Vivir” (literally, “Good Living”)¹⁷, Escobar (2018) emphasises the importance of reworking forms of knowledge and collaborative practices that connect communities, both internally and with the territory, to create, through the project, a harmonious and non-hegemonic link between people and the context in which they operate.

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The concept derives from the ancestral wisdom of the indigenous peoples of Central America (*Sumak Kawsay*) and is already an integral part of the Constitutions of countries such as Ecuador and Bolivia and was included in the draft of Chile's new Constitution.

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