Sustainable and Collaborative Innovation for the Territory

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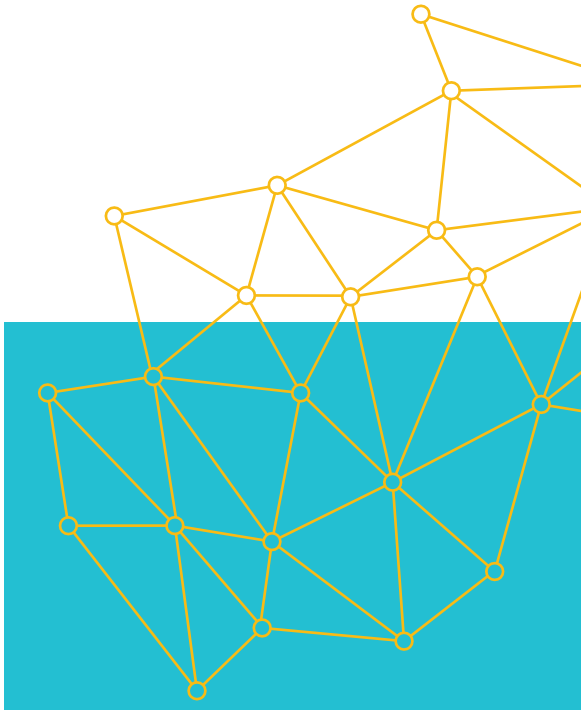

Systemic Design Method Guide for Policymaking:

A Circular Europe on the Way

volume 1

Edited by
Silvia Barbero

Allemandi

Retrace
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Preface

Erwin Siweris

As Europe is moving towards an accelerated global economy, it is vital to adopt proper governance actions to achieve a sustainable future. In this context, it is necessary that new policies come from the effort and commitment of multidisciplinary teams. Interreg Europe helps regional and local governments across Europe to develop and deliver better policy. Supported by the European Regional Development Fund with 359 million euros from 2014 to 2020, the programme fosters regional policymakers through cooperation projects and policy learning platforms.

In 2016 we introduced the RETRACE Project (A Systemic Approach for Transition towards a Circular Economy)[1] which was financed under the first call for proposals of the Interreg Europe ETC Programme, 4.2 Specific Objective: Improving resource efficient economy policies. This project is a coordinated work between universities, local authorities, government offices, associations and public administration whose main aim is to address the EU challenge of transitioning towards a Circular Economy following the priorities set up by the "Flagship Initiative for a Resource-efficient Europe" for a shift towards a resource-efficient, low-carbon economy to achieve sustainable growth as enshrined in the Europe 2020 strategy and the EC Communication "Towards a Circular Economy: A Zero Waste Programme for Europe".

The outcome of the project over the first 16 months has been remarkable, facing stimulating challenges and achieving brilliant results by the eight partners of the project from Italy, Spain, France, Slovenia and Romania. Among the main achievements are:

6 field visits in the five partner regions and in The Netherlands;
48 good practices of Circular Economy and Systemic Design exchanged;
5 Holistic Diagnosis assessing the state of the art of the 5 partner regions in relation to Circular Economy related policies;
5 regional dissemination events, one in each country, with more than 250 attendees;
5 stakeholder groups formed in the partner regions, involving more than 70 entities;
4 videos showing the good practices encountered during the field visits;
2 newsletters sent to over 700 contacts.

This volume entitled *RETRACE Systemic Design for Policymaking: a Circular Economy on the Way* is addressed to regional policymakers and policy managers and is the first of a three book series that the RETRACE Project will deliver across a four-year period (2016–2020). Its main purpose is to illustrate to policymakers the Systemic Design as a tool to define sustainable activities based on Circular Economy.

The Systemic Design methodology and the results achieved in this first phase of the project constitute the main focus of the book which also offers a glimpse on what is expected in the next years with the definition of five Regional Action Plans focused on the development of Circular Economy policies in all partner regions. Eventually, the second phase of the project, from 2018 to 2020, will be devoted to the implementation of these policies.

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[1] www.interregeurope.eu/retrace

Table of Contents

9 Introduction
SILVIA BARBERO

1. Transition Towards a Circular Economy

14 1.1 The Circular Economy Package. Beginning of the Transition towards a more Circular Economy
DANIEL CALLEJA CRESPO

16 1.2 Circular Economy: Definition and Evolution. Principles and Development
EMANUELE BOMPAN

24 1.3 The Transition of European Countries Toward a New Economy and the Role of Regions
TIZIANA DELL'OLMO

35 1.4 Evolution of Interreg Europe Projects on Circular Economy
MARJANA DERMELJ

43 1.5 Elements of Novelty: Designer as Policy-Maker
JOCELYN BAILEY

51 1.6 Sustainable and Collaborative Innovation for the Territory
PAOLO TAMBORRINI

2. Systemic Design: A Tool for An Emerging Sustainable Future

58 2.1 A Complementary View on Complex and Systemic Approaches
MARION REAL, JEAN MICHEL LARRASQUET AND IBAN LIZARRALDE

68 2.2 Systemic Design: A Historical Perspective
PIER PAOLO PERUCCIO

75 2.3 Systemic Design: Methodology and Principles
LUIGI BISTAGNINO

83 2.4 Systemic Design as Effective Methodology for the Transition to Circular Economy
SILVIA BARBERO

3. The RETRACE Project

92 3.1 Overview of the RETRACE Project
RAMONA TANASĂ

101 3.2 Involved Actors
CYRIL BALDACCHINO AND BENJAMIN TYL

4. The Methodology of the RETRACE Project

112 4.1 Exchange of Experiences
CHIARA BATTISTONI, CAROLINA GIRALDO NOHRA, AGNESE PALLARO AND ANDER MUÑOZ URBIZU

135 4.2 Communication and Dissemination
ESTIBALIZ PLAZA ELORDI, MARION REAL AND MIKELE LARRONDE

140 Conclusion
SILVIA BARBERO

143 Annexes

179 Glossary

185 Authors' Biographies

1.6 Sustainable and Collaborative Innovation for the Territory

PAOLO TAMBORRINI

Innovation as manifold energy that must incessantly redefine itself and daily infrastructures, respect the planet and produce social effects.
The focus on the potentiality of territories based on the transformation of existing infrastructural, economic, human, cognitive and cultural resources, is the aim of contemporary innovation.
This essay focuses on the collaborative role that different players of a territory must have in order to launch and pursue innovation processes with the goal of environmental sustainability.

1.6.1 THE THEORETICAL CONTEXT

The first step in adopting a systemic approach to innovation is to identify the potentialities of a territory which puts at the centre of a project the transformation of existing resources (territorial heritage), infrastructural, economic aspects, humans characteristics, cognitive and cultural resources into a widespread system of relations.

Cradle to Cradle, Green Economy, Industrial Ecology, Industrial Symbiosis, Blue Economy and Biomimicry are the most important economic-productive theories which, over the past 45 years, though not with the same names, have been alternated, supported and sometimes confused with each other. Since July 2014 in Europe — but also globally — strategical political actions concerning the environment have been based on the principles of Circular Economy with the aim of producing — according to a zero waste economic model — with continuously reusable and recycled raw material within a closed loop. This political choice has been rapidly pushing companies towards a greater environmental awareness and to undertake concrete actions, with inevitable effects of media propaganda.
By 2030, a more efficient use of resources could reduce about 17% to 24% the demand for material inputs (Meyer, 2011), with savings for the European industry of around 630 billion euros a year (Europe Innova, 2012). Producing according to the Circular Economy principles would save considerable costs for materials and potentially raise the European GDP up to 3,9% through the creation of new markets and products (Ellen MacArthur Foundation, 2015). These would be important results both for the economy and the environment.
However, the innovation model that is being promoted is incremental rather than radical. Technological innovation is focusing on material recycling and the research on the partial or total replacement of tools and techniques in the production and distribution processes of materials and products.
The concept of territoriality remains in the background as well as design and production which takes into account social and cultural identities and the diversity of resources in a specific geographical area.

This is a kind of territoriality that we can find, for example, in the Industrial Symbiosis assumptions and in the Blue Economy model. Symbiosis assumptions are based on the resources exchanged between two or more specific industries located in a very close area. Therefore, Pauli's Blue Economy model relies on the imitation of natural systems, which attributes to the territory a central role in the development of local economies. Based on this rich panorama of cultural approaches, models and different methodologies, emerges the discipline of design. Starting from the theme of sustainability — equally complex — the discipline of design, with its different methods for products, processes and services, is currently considered one of the most active fields and is able to define radical innovations also regarding environmental sustainability. The design discipline with its intrinsic flexibility is enriched by systemic logic and innovative processes in order to develop a specific methodology called Systemic Design (www.systemicdesign.org). This methodology involves the design of relationships between the people, the activities and the resources of a territory, thus produces development and well-being for the individual and the community (Tamborrini, 2009). The Systemic Design process has a close connection with the context in which it operates. Hence, Systemic Design has the task and the responsibility to recognise and enhance the potential of the territories focusing on the transformation of infrastructural, economic, human, cognitive and cultural resources (territorial heritage), exploring innovation as a multi-faceted energy that has to constantly redefine daily infrastructures while respecting the planet and producing positive social effects.

1.6.2 The Value of Innovation

For many years, the word "innovation" has been associated — by those who pursued and enjoyed it — with frenetic research in material and technological disciplines. In a classic and accepted meaning, innovation is defined as the implementation of a new product or a substantially improved one, whether a material, a semi-finished product, a service, a process, a new marketing or business model.

Today, "to innovate" means, according to a common belief, to provide pragmatic and, above all, functional and efficient answers to specific requirements. There is no innovation without a necessity or a request to satisfy it: the constant dialogue and correlation with real needs are a strategic element able to define form, functionality, social effects and market of innovation as well as to determine its success or failure.

This vision and methodology shift is the consequence of the change of specific models which economic recession and environmental awareness have caused during the last twenty years worldwide.

However, the answer to a globalised vision, which is still very rooted, has triggered a series of cultural rethinking processes and brought attention to what surrounds us, gaining a new strategic importance with local territories and communities (Bistagnino, 2011).

The contamination between global and local features requires on the one hand, to continue to think globally while enhancing planetary dynamics among people, their cultures and markets, on the other hand, to preserve local differences of identity, products and services.

Territories which are extremely characterised by particular traditions and specific symbolic-identity elements, evolve while communities enrich themselves, new urban poles arise, and historic spaces are abandoned, as they constantly require new ways of interaction and com-

munication. These features constitute new challenges that can be addressed only by enabling a process of innovation and requalification through collaborative research and with the constant dialogue with the actors involved in the system (Pironti, Remondino, Pisano, 2011).

Sustainable innovation requires to settle its roots into a wider network of relationships within the context in which it operates with the aim to elaborate the territory's complexity and with the responsibility to give value to the emerging potential. The latter may not always be manifest but possibly transformed into new design opportunities which reinterpret and amplify relationships and strongpoints, while introducing values such as social equity, economic accessibility and systemic resource usage (Corbetta, P., 1999). Sustainability should be considered the key factor for new and innovative scenarios: a variable according to the process. Not a fixed ideal, but a dynamic process able to improve the system management thanks to better comprehension and knowledge (Nidumolu et al., 2009).
Based on these assumptions, innovation can be defined as a dynamic multi-faceted force constantly responding to new challenges of the territory. In this process, it is crucial to allow design assume the role of mediator (Celaschi, 2008), thus becoming an interface in a multidisciplinary team.

1.6.3 Tools to Make Sustainable Innovation

According to a Systemic Design-oriented approach acting triggers a continuous and constructive collaboration which is able to provide a complete view of the complexity of the investigated phenomenon, creating a common language for different knowledge meeting in the constant research for solutions to innovative challenges (*www.innovationdesignlab.it*).
Multidisciplinarity generates a kind of design able to constantly redefine its way while responding to new changes of cultural, social and economic paradigms. It follows that the fundamental question is no longer "How is it done?" but "Why are we doing this?" as it is not just a matter of exclusively measuring the economic response but also about quantifying factors such as the value of design, the effects and benefits generated by it on a social level.
The continuous development and dissemination of new information and communication tools as well as new services offered by the city, its mobility and commerce, have already determined radical changes. These changes are related to forms of work organisation, production and distribution of goods and services, of knowledge, but above all, of social relations. Information is no longer only the most important resource in social organisations, but it is the asset that also defines them globally. The consequences of the information society are visible to anyone.
Quantitative change has produced — and continues to produce — qualitative change. Data are no longer considered a static asset whose use ends when the purpose for which they were collected has been accomplished, hence a raw material, a vital input, used to create new forms of value as well as a source of innovation and new services (Gaiardo, Tamborrini, 2015).
The ability to collect, analysis and compare quantitive and qualitative information about the context has become strategic for the success of a project and its application.
Big data analysis is completely changing the economy, society and people's perception. Due to these reasons, a more oriented methodology to the analysis of this informative asset is essential in order to analyse complex phenomena and exponentially amplify design boundaries.

In a world where things are being consumed faster than ever, it is crucial to translate such information into something visual, making simple what is complex. Data visualisation becomes a fundamental medium to explore phenomena, encourage critical thinking, memorisation and the interpretation of information. In other words, it allows making a complex system more accessible through visual methods.
However, the transformation from data to information is not easy as it requires an ongoing process where data are collected, categorised and appropriately contextualised in a specific ecosystem.
The practice of innovation involves many aspects, from technical and economical to cultural ones. It requires a specific cultural approach, the employ of time and resources and a strong demand for coordination and collaboration.
The Systemic Design Methodology supports this process by becoming the fundamental driver for collaborative and aware design to support and promote innovative and sustainable projects, leading the territory to assume the role of a real platform for mutual exchange and knowledge.
To innovate in a sustainable way and become true domain experts, it is necessary to have a holistic view of the object of study. As a matter of fact, the research phase satisfies this need by collecting, interpreting and categorising data, information and knowledge with the aim of offering a broad, complete and detailed overview of the object, thus enabling a better understanding of it.
Different tools can be used to support an adequate quantitative and qualitative analysis and outline what can be defined as a holistic approach through instruments ranging from participatory survey methods — typical of the sociological research — to the remote access of databases.
At a pragmatic level, the holistic dimension is a cyclical and virtuous process able to fully describe the context of action, delineating a real state-of-the-art from its socio-economic and cultural resources to the identification of its strengths and weaknesses and its history. The relationship between these aspects, reinforced by the visualisation according to the guidelines of information design, can reveal patterns and insights useful to activate the design process.
To maximize the complexity of the subject that is being investigated, the designer must draw on different disciplines, from those closer to liberal arts education such as sociology and anthropology to those which share a more scientific background such as engineering, statistics and economics, in order to define, in the most objective way, the nature of the needs of the context, defining all those aspects whether natural, anthropic, social or economic. More specifically, various types of statistics, reports, critical analysis of case studies, articles and scientific papers in the field, newspapers, magazines and books that deal with the subject as well as online resources, are some of the useful tools that can provide a general overview and a first survey on the subject.
Today open data and accessible databases can be considered as a key element to promote greater transparency and actively engage communities throughout the design process, thus triggering innovation from the bottom.
Practical activity is real field work; direct observation allows to investigate all non-verbal aspects otherwise difficult to record. If, on the one hand, it allows a quantitative level which fills the gap over the previously analysed data, on the other hand, it offers the possibility to use all available senses, thus creating a perceptive-sensorial map that takes into account all those unique qualitative and experience-based aspects which include odours, sounds or the total absence of them, and show the 'metabolism' of the territory with its cities.

At the end of this phase, as a result and an input for the following step, a data report has to be drawn up in which all the collected data and information are appropriately organised, interpreted and visualised; this becomes a fundamental support for the designer who will then define the guidelines and start the concept phase.
Making ideas visible and accessible, and translating them into concrete facts through techniques and skills, drawing directly from individual and collective creative culture, becomes strategic in the process of sustainable innovation.
The collected information is an asset able to communicate the potential of a territory, to deliver new messages of sustainability and integration to a wider audience and all those involved in the design.
The design phase aims to generate the first solutions based on the results that emerged from the analysis and the interpretation of the information gathered in the data reports before defining the final concept and organising the following more pragmatic and operational developing phase.
Collaboration and sharing throughout the process are at the same time a method and a goal. If, on the one hand, collaboration helps sharing collective knowledge, on the other hand, it becomes a leverage for new good policies in the interest of entrepreneurial and sustainable innovation.

Such scenario is included in the RETRACE Project, which through the Systemic Design tool fosters a constant dialogue between the five Regions and their needs. The Systemic Design provide the strategic tools able to determine an accurate holistic diagnosis of each territories. The project aims to the visualisation of a wider network of relationships between geography, demography, culture, and economics, within each context in which it operates.[1] This methodology offers the possibility to elaborate a visual mapping on the complex elements of each territory and is responsible for giving value to the emerging potential assets which will foster the transition of the Regions into the Circular Economy.

The RETRACE Project shows how the Systemic Design Methodology is becoming a fundamental driver for collaborative and aware design and is changing the role of the designer in our society into a policymaker. This role, surrounded by an interdisciplinary team, leads the territory to assume the role of a real platform for mutual exchange and knowledge. This collaboration is increasingly becoming the most effective approach not only to global challenges but, above all, local ones: the driving strategy for a glocal culture.

1.6.4 New Collaborative Model

Open innovation, sharing economy and partnership between public and private sectors all adopt a collaborative model. At the base of Systemic Design projects launched and developed to achieve the common goal of sustainability, there is, in fact, a constant sharing of knowledge and skills. A collaboration focused on creating territorial networks is now a strong point in pursuing competitive business results, not only from an economic point of view but also regarding environmental sustainability and social inclusion (Mortati, 2013).
Today design is becoming increasingly important in the field of innovation, while adapting and transforming itself. It is becoming an indispensable feature in the design process of any product or service, shifting its focus from the mere design of the product to the whole process:

from data analysis to the implementation and final development, increasing the appearance of design complexity and exploring new business models (Brand, Rocchi, 2011).
Bottom-up organisation coexists with "social networking", creating new relationships between the different actors that are part of the context. Users constantly redefine their roles by moving from economic subjects to social ones, actively participating in an innovative and bottom-up design phase which is able to aggregate the community with companies, foundations and universities and to establish a network where everyone is actively involved in the creation of new values leading to a real change of paradigm.
The application of Systemic Design allows to generate real change: reaching the important and expected turning point of making sustainable and innovative products, services, behaviours and processes. Hence, the Systemic Design Methodology is a tool to achieve the goals of Circular Economy not only by making the use of resources more efficient but also by changing lifestyles, dematerialising, digitising, enriching traditional aspects and acting in a socially innovative way while meeting new needs and highlighting values such as responsibility, cooperation and sharing.

[1] See Chapter 4, The RETRACE Project's Methodology.

References

Bistagnino, L. (2011). *Systemic Design: Designing the Productive and Environmental Sustainability.* Bra, Italy: Slow Food Editore.

Bistagnino, L. (2017). *MicroMACRO: The Whole of Micro Systemic Relations Generates the New Economic-Productive Model*. Milano, Italy: Edizione Ambiente.

Brand, R., Rocchi, S. (2011). *Rethinking Value in a Changing Landscape: A Model for Strategic Reflection and Business Transformation.* A Philips Design Paper. Available https://pdfs.semanticscholar.org/c34a/3e300f1b9d1d4eb45e2af3cf7e2aa3d0344b.pdf (Accessed 4th August 2017)

Celaschi F. (2008). Design as Mediation Between Areas of Knowledge. In Germak C. (2008). *Man at the Centre of the Project*. Torino, Italy: Umberto Allemandi, 40–52.

Corbetta, P. (1999). *Metodologia e tecniche della ricerca sociale.* Bologna, Italy: Il Mulino.

Europe Innova (2012). *Guide to Resource Efficiency in Manufacturing: Experiences from Improving Resource Efficiency in Manufacturing Companies.* Brussels: Greenovate! Europe, 2012. Available http://www.inovacaovalorpneu.pt/assets/downloads/Report_macroeconomic%20modelling_EC_2011.pdf (Accessed 4th August 2017)

The Ellen MacArthur Foundation (2015). *Towards a Circular Economy: Business Rationale for an Accelerated Transition.* Available https://www.ellenmacarthurfoundation.org/assets/downloads/TCE_Ellen-MacArthur-Foundation-9-Dec-2015.pdf (Accessed 4th August 2017)

Gaiardo, A., Tamborrini, P., (2015). Systemic Innovation Design Methodology: The Comparison of Two Cases Studies. In *The Value of Design Research, 11th European Academy of Design Research*, Paris, 22–24 April 2015, 1–14.

Meyer, B. (2011). *Macroeconomic Modelling of Sustainable Development and the Links between the Economy and the Environment.* Osnabrück: Gesellschaft für Wirtschaftliche Strukturforschung mbH. Available http://www.inovacaovalor-pneu.pt/assets/downloads/Report_macroeconomic%20modelling_EC_2011.pdf (Accessed 4th August 2017)

Mortati, M. (2013). *Systemic Aspect of Innovation and Design: The Perspective of Collaborative Network*. Milano, Italy: Springer.

Nidumolu, R., Coimbatore K. P., Madhavan R. R. (2009). Why Sustainability is Now the Key Driver of Innovation. *The Harvard Business Review*, 56–64.

Pironti, M., Remondino, M., Pisano, P. (2011). Diffusione dell'innovazione ed evoluzione dei sistemi locali complessi: un'analisi attraverso la simulazione ad agenti. *Sinergie*, 83, 139–158.

Tamborrini, P. (2009). *Design sostenibile: oggetti, sistemi e comportamenti.* Milano, Italy: Mondadori Electa.

This volume aims at clarifying the role of Circular Economy according to a sustainable development and how policymakers can target it effectively in their activities. It is a guide to Systemic Design as a key methodology to establish sustainable regional action plans towards a Circular Economy.
As the result of an intense dialogue between people who present different perspectives and seek for a common language in the current complexity of policymaking and designing, this is the first of a three book series published across a four-year period (2016–2020) as part of the RETRACE Project funded by the Interreg Europe Programme.

Preface by Erwin Siweris

With contributions by
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