

Green Energy and Technology

Grazia Napoli · Giulio Mondini ·
Alessandra Oppio · Paolo Rosato ·
Simona Barbaro *Editors*

Values, Cities and Migrations

Real Estate Market and Social System in
a Multi-cultural City

 Springer

Green Energy and Technology

Climate change, environmental impact and the limited natural resources urge scientific research and novel technical solutions. The monograph series Green Energy and Technology serves as a publishing platform for scientific and technological approaches to “green”—i.e. environmentally friendly and sustainable—technologies. While a focus lies on energy and power supply, it also covers “green” solutions in industrial engineering and engineering design. Green Energy and Technology addresses researchers, advanced students, technical consultants as well as decision makers in industries and politics. Hence, the level of presentation spans from instructional to highly technical.

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Preface

Wars, climate change, poverty, ethnic and religious persecutions feed incessant migratory flows generating real or perceived perturbations on the fabric and functional organization of the city, as well as on its monetary shape, sometimes also undermining the identity value system of a community.

The issue of immigration is well known in our country, which has experienced it over the last 50 years. Depending on the origin and the underlying reasons, immigration takes on different impacts, much studied in the countries where it first occurred: the United States, Australia, Great Britain, France and Germany. In Italy, immigration is much debated on the political level but still little studied on the substantive one.

The discipline of Appraisal and Valuation has been facing new evaluation challenges that are related to complex matters such as identity and otherness of a multicultural city, or changes in the social, spatial and economic systems caused by migration flows.

The encounter not only between Appraisal and Valuation and other social sciences, such as Geography and Urban Planning, but also Philosophy and Psychology, can be considered as a valuable opportunity to combine approaches expressing different points of view on the same phenomena. The interpretative paradigms and operational tools of Appraisal and Valuation are therefore questioned and should be revised to be adopted in the appraisal practice or to support decision-making processes related to real estate market and urban, territorial and environmental planning, according to a perspective of social inclusion and multiculturalism.

This book collects the best papers presented at a conference organized by the Italian Society of Appraisal and Valuation (SIEV) in 2020 to promote the interaction between Appraisal and Valuation and other social sciences with the goal of studying the effects of migration on real estate market and social systems in a multicultural city.

The book consists of two main Parts.

Part one, *Values and Relational Systems in Multicultural Societies*, is composed of seven papers and features how social sciences—including appraisal and valuation, urban planning, philosophy, psychology and geography—take different approaches

to studying various social values and their mutual relationships, converging to form a unified mosaic of complementary and interconnected knowledge.

Part two, *Permeability and Permanence of Values in a Contemporary Multicultural City*, highlights through ten papers the most crucial topics on which appraisals and valuation models focus to interpret the influence of migration on the real estate market in different urban and territorial contexts—from historical centers, small towns, to tourist cities—also taking into account the issues of sustainability, maintenance and regeneration of cities.

All paper topics show that the overall issue is complex; but for this very reason, it opens to many new interdisciplinary lines of research. This volume aims at contributing to the scientific debate between scholars and stakeholders on several issues—values and real estate market, cities and migration flows—with the hope, particularly heartfelt in these days, of living, working and studying in a peaceful world in which multiculturalism is synonymous with social wealth.

Palermo, Italy
Turin, Italy
Milan, Italy
Trieste, Italy
Palermo, Italy

Grazia Napoli
Giulio Mondini
Alessandra Oppio
Paolo Rosato
Simona Barbaro

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Acronyms

AMPL	A Mathematical Programming Language
ArcGIS	Aeronautical Reconnaissance Coverage Geographic Information System
BAI	Base Affordability Index
BEC	Economical buildings and council houses
BMB	Buildings in a mediocre or bad state of conservation
CA	Capability Approach
Cat-SD	Categorization by Similarity-Dissimilarity
CMC	Computer-Mediated Communication
CO	Cultural Offer
COMPAS	Centre on Migration, Policy and Society
CQI	Composite Quality Indicator
CSD	Construction Site Density
DRCM	Depreciated Replacement Cost Method
DSS	Decision Support Systems
ELP	List Price of Existing housing stock
EMV	Estimated Market Value
ESDA	Exploratory Spatial Data Analysis
FPI	Foreign Population Indicator
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIS	Geographical Information System
GISA	Global Indicators of Spatial Association
HAI	Housing Affordability Index
HC	Human Capital
HCT	Human Capital Theory
HUD	Housing and Urban Development
IBM-SPSS	International Business Machines-Statistical Package for Social Science

ICT	Information and Communication Technologies
INE	Instituto Nacional de Estadística (National Institute of Statistics)
INPS	Istituto Nazionale della Previdenza Sociale (National Social Welfare Institute)
INU	Istituto Nazionale di Urbanistica (National Institute of Urban Planning)
IRAP	Imposta regionale sulle attività produttive (Regional Tax on Productive Activities)
IRPEF	Imposta sul reddito delle persone fisiche (Personal Income Tax)
ISTAT	Istituto nazionale di statistica (National Institute of Statistics)
IV	Instrumental Variables
LEPI	Low Education Population Indicator
LISA	Local indicators of spatial association
LTV	Loan To Value
MCDA	Multi-Criteria Decision Analysis
MC-SDSS	Multi-Criteria Spatial Decision Support Systems
MEF	Ministero dell'Economia e delle Finanze (Ministry of Economy and Finance)
MIR	Monthly Payment-Income Ratio
NeSI	Neighbourhood Service Index
NLP	List Price of Newly built housing stock
OCSE	Organizzazione per la Cooperazione e lo Sviluppo Economico (Organisation for Economic Cooperation and Development)
OECD	Organisation for Economic Co-operation and Development
OICT	Osservatorio Immobiliare Città di Torino (City of Turin Real Estate Observatory)
OLS	Ordinary Least Square
OMI	Osservatorio del Mercato Immobiliare (Observatory on the Real Estate Market)
PCA	Principal Component Analysis
PCs	Principal Components
PIR	Price-to-Income Ratio
PRRPs	Populist Radical Right Parties
PSM	Problem Structuring Methods
RA	Retail Activities
RE	Real Estate
RI	Residual Income
RSI	Resilient Sustainable Inclusive
SDM	System Dynamics Model
SDSS	Spatial Decision Support Systems
SZ	Statistical Zones
TREMO	Turin Real Estate Market Observatory
UDHR	Universal Declaration of Human Rights

UKIP	United Kingdom Independence Party
UN	United Nation
UNHCR	United Nations High Commissioner for Refugees
UPI	Unemployed Population Indicator
VAT	Value Added Tax
WEF	World Economic Forum

A Chain of Words as an Introduction: Human Dignity, Language, Identity, Citizenship, Values, Human Capital and Urban Spaces



Grazia Napoli 

1 A Chain of Words

Cities are the outposts where society is facing the challenge of directing physical, economic, cultural and social transformation according to the Sustainable Development Goals and the three fundamental ethical principles of environmental justice, social justice and inter-generational justice (UN 2015).

Environmental and climate emergencies have been central issues in European and national policies for several years, and just in these months, for example, substantial funding is about to be disbursed to facilitate the energy transition that will significantly change the shape of cities and territories. It should be noted, however, that although the implementation of many of these policies meets the principles of environmental sustainability, it is not always necessarily functional in achieving the goal of environmental justice.

Instead, social emergencies, caused by huge disparities between people's living conditions both globally and locally, are addressed on the political agenda with great difficulty because they are affected by deep-seated, even ideological, resistance and opposition, rooted in the political systems and social composition, as well as in the economic systems of different countries and cities. Although, in fact, these two ethical principles and emergencies merge together, as environmental and social justice are at the root of major migration flows.

To properly analyze the issue of cities-migrants interactions, as well as social-monetary values interactions, it is necessary to place it in a "higher" context, in order not to risk losing the necessary connection with universal ethical principles, and in a "broader" one, in which understanding complexity on a global scale interprets local conditions.

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The study of migration flows and urban dynamics, as well as housing markets, through theoretical paradigms and scientific tools from different disciplines—only seemingly distant from each other—provides an opportunity to learn and compare, dialogue and interface with new keys to understanding the problem, or with alternative interpretations and unprecedented perspectives in the path of multiculturalism, which has become an inescapable premise for the formation of an inclusive society.

The scientific and methodological rigor of research is, moreover, a powerful antidote to neutralize some media communications that present migrants as “threats” endangering the welfare, jobs, security and even cultural identity of host countries.

Despite the authors’ different scientific and cultural backgrounds, many concepts emerge as transversal to the chaps and weave a network of connections that crosses supposed disciplinary “boundaries” and, at the same time, highlights the possibility of expressing different visions and interpretations.

This plurality of disciplinary expertise and cultural sensitivities, intellectual passion and willingness to confrontation can be represented by a chain of words and constitutes the connotative trait of this volume in which the science of Appraisal and Valuation “measures” and compares itself with other social sciences.

2 Global, Local, Glocal

Any interpretation of the effects induced by migration flows on social and economic values at the urban and territorial scale must be placed in the global context of sustainable development and traced back to fundamental ethical principles. Migration flows across continents are fueled by *global* environmental, social and political injustices, but at the very moment when migrants become citizens in a new host city, the city becomes the *local* place where respect for fundamental ethical principles must be ensured through a *glocal* model of a multicultural and inclusive city.

The frontier of inclusion tends to move further and further. Many cities use new forms of distributed structural community governance, making use of innovative and communication technologies and high knowledge skills, and this implies—as Patrizia Lombardi argues in her chap—that “community of migrants risks to be excluded if they don’t adequate their knowledge to such means”. The decision-making process of urban and land redevelopment projects can make use of many tools, such as Multi-Criteria Decision Analysis (MCDA) and Multicriteria-Spatial-Decision-Support-System (MC-SDSS), but in such a context they will need to be developed specifically to facilitate the social inclusion and participation of the multiple migrant communities, in order to fully recognize their “right to the city.”

Participation and social inclusion are closely linked to the concept of dignity. Recognizing every migrant as a citizen means recognizing his or her dignity and right/duty to participate in the processes of city management and transformation.

3 Human Dignity, Citizenship, Identity

A discussion on human dignity and global and urban inequalities can be developed using Antigone's ethical conflict in a Greek tragedy as a metaphor. It consists of a single meta-conflict between human dignity and the rule of law that also corresponds to the conflict between the "right to mobility" and the "right to the city".

As Francesco Lo Piccolo writes, human dignity should be considered as a bridge between past, present and future, but to make declarations of human dignity effective, welfare policies need to be implemented. Instead, the persistence of borders and barriers still limits transnational mobility, while the location patterns of inhabitants in cities reflect social polarizations based on income levels or ethnic or nationality bases, which can turn into areas of urban segregation, that is, physical and virtual spatial distances that hinder the right to citizenship.

Moreover, the multiplicity of actors, groups, institutions, and organizations operating in urban space causes a further proliferation of boundaries, often blurred, both at the micro level in urban areas and at the geographical level. "Borders change frequently in space and time including and excluding, from time to time, individuals and places, by choice or necessity" (chap by Lo Piccolo) and also condition social and economic phenomena.

Similarly, there are boundaries to the "right to the city" and social redistribution, which hinder many rights, such as access to affordable housing or environmental resources, the right to citizenship, and the right to work. "All of these phenomena can generate fragmented identities and/or change the identity of place by converting it into new forms of citizenship" (chap by Lo Piccolo).

4 Identity, Cohabitation, Public Space

"Who is the Other for me? And above all, who am I for the Other?" This is the concluding sentence of the chap by Maria Chiara Monti and Filippo Casadei from the perspective of ethnopscychology, which studies the phenomena of multicultural cohabitation.

The migrants who want to settle in the host city need first and foremost to regain a sense of home in the foreign land, but often, in order to do so, they erase the peculiarities of their own ethnic micro-group in favor of belonging to the national macrogroup: "specificities related to ethnic group, clan, language, ritual signs, even m belonging to a religion, disappear in the sense that they cannot be traced from the outside" (Chap by Monti and Casadei).

As a result, many urban places seem to be inhabited by homogeneous groups of migrants, although ethnicities and languages may be numerous. After all, the host community also tends to simplify, or fail to see, complexity, forming large and homogeneous groups of migrants because it is easier to name and locate them in a defined and circumscribed place in the city.

The sharing of spaces between different ethnic groups involves the emergence of relational phenomena that can result in power and prevarication dynamics, or mutual recognition. Moreover, the renunciation of ethnic identity cannot last long, and the host community must show willingness to fully recognize the identity of the other.

According to Monti and Casadei, square is the right place where it is possible to mediate a “non-risky proximity” with a “non-sidereal distance” and to facilitate an encounter with the Other. In the public space of the square “everyone, foreigners and hosts, find themselves in an equal condition (...) there is no possession of the place; there is no threshold, visible or invisible”. The square allows “dynamism of the movement, including that of the meeting (...) lends itself to being a place (...) for human connections” (chap by Monti and Casadei).

Filippo Schilleci also argues that “so-called new inhabitants that are bearers of new values and needs (...) can enrich the changing city” and produce new form of public space and change the identity of a space. Specifically, “urban public space may be the place of connection where cultures confront each other” and where the process of interpreting the value of a public space rebuilds pluralities of images instead of a unique dominant image: “Heterogeneity is the hallmark of cities, and migrants play a significant role in it” (Chap by Schilleci).

5 Language, Citizenship, Urban Spaces

Language plays a “crucial role in *shaping the world*, in the sense that the language does not limit itself to *passively describing* the world, but it actively *moulds* it” (chap by Di Piazza and Soare). Indeed, what might seem neutral representations of reality are instead always somehow narratives that *shape*, and—in some cases—even *build* a reality. The way in which we speak of the world already represents, in a more or less conscious way, a form of ideological positioning, but also a way of constructing reality itself (Piazza 2008).

So, the Manichean opposition between Us (the Good *people*, comprising the natives) and Them (the Evil *Aliens and Others*) (Mudde 2007) is a linguistic strategy used by contemporary populist radical right to promote criticisms that target the category of immigrants indiscriminately, despite an internal heterogeneity depending on many reasons such as length of stay, reason for migration, etc. The Others are associated with a multilevel and direct threat to native economic status and lifestyle, as well as to personal and national security.

This rhetorical strategy, that aims to discredit migrants, origins phenomena of ‘spatialization of fear’ (Katz 2007) at global and urban scale. Consequently, some actions aim at preventing access to national borders, whereas other actions establish distance between bodies and spatialize it by establishing boundaries or building walls and barriers—as Marco Picone and Chiara Giubilaro argue in their chap— even within the urban space.

The exasperated lexicon of the immigration narrative making is aimed at evoking a state of permanent threats and denying identity and dignity of the Other. Being

aware of the power of language is helpful in constructing an alternative narrative that is based on Other's values rather than Other's alleged disvalues.

6 Human Capital, Dignity

Many scholars and international organization, such as OECD and World Economic Forum, identified human capital (HC) as a key factor for the economic growth, development and competitiveness of a nation or a city, but also for its identity. HC may be classified according to different perspectives and measured by applying several approaches. But there are two main way "to consider people as a mean to produce health, or rather as an end, with regard to the dignity and the possibility to be an appreciated member of society without any kind of discrimination based on the country of origin" (chap by Maria Rosa Trovato).

By measuring HC in Italy, it emerges that values are lower for immigrants than for Italians with equivalent characteristics. That means that there are still unequal opportunities in labour markets, in which people are assigned to a job for reason of race, gender, class or cast, regardless their level of education or capabilities (Unterhalter 2009).

Because migrants are a cultural and economic resource for the host city, an axiology of value is proposed and should be adopted, also based on the Capability Approach, to recognize not only the merits, but also the potential that migrants bring to the collective sphere as citizens. This is also a way to recognize their identity and communicate their valuable social role.

7 Cities, Territories, Values

The numerous case studies presented in the Part 2 of this volume are focused on urban and territorial contexts with different geographical, social and economic characters, such as cities in northern and southern Italy, historic centers and suburbs, inland areas and tourist cities. Despite the wide variety of case studies, it should be noted that the discipline of Appraisal in Italy has not yet developed a consistent line of research across time and space on the connections between migrants, cities and economic values, as is the case in other nations with a well-established tradition of study, such as Great Britain, the United States, Germany, and France.

A particularly interesting element that has emerged clearly from all studies is that there are multiple migrant communities, each of which carries its own cultural and identity values. Each migrant community has its own way of using urban public spaces, living and working in the territories, expressing its needs for living spaces and interacting with the value system of the host communities.

This extreme diversification of social mixité opens up the development of cities to a wide variety of future trajectories, as each individual interaction between a migrant

group and a host community group may produce its own pattern of social inclusion, localization and contribution to monetary and real estate wealth, imagining potential outcomes yet unexplored and different from what has already happened in other cities and social systems.

The results of these studies also indicate that there are still unexplored areas and information gaps on the relationships between cities and migrants, social values and economic values. The science of appraisal and evaluation is now faced with the challenge of introducing the element of multiculturalism into its theoretical paradigms and evaluation models in order to recognize the role of foreign communities in the urban social and economic system.

Interpretive models and operational tools for housing market analyses should be developed to represent such multiculturalism and vibrancy in the spatial patterns of distribution and variation of property values. In recent decades, valuation models to support decision-making processes have been reworked and oriented mainly according to the principles of environmental sustainability. Social sustainability is usually introduced into participatory models to represent weak social groups, but without specific attention to multiculturalism.

Looking forward, the introduction of the element of multiculturalism and multi-ethnicity in real estate appraisals and evaluations of urban and land redevelopment projects should become systematic and systemic to enable representation of a plurality of migrants—different in nationality, ethnicity, religion, social structure, traditions, customs—fueling the cultural vibrancy that is the very essence of a city.

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Values and Relational Systems in Multicultural Societies

Environmental, Social and Inter-Generational Justice at Territorial Level: The Contribution of Planning Evaluation and Multicriteria Decision Theory



Patrizia Lombardi 

Abstract Three main ethical principles of sustainable development are crucial in the context of territorial processes: Environmental justice; Social justice and Inter-generational justice. These principles have not been completely met in current urban living. This paper argues that the above three principles should guide spatial planning practice and provides evidence of the wickedness nature of regeneration processes. In this context, the paper suggests the use of Problem Structuring Methods (PSM) for designing the decision process and the alternative options to be evaluated. Furthermore, the paper presents a number of recent advanced tools and approaches, offered by urban planning evaluation discipline and multicriteria decision theories, which can be used for tackling the above challenges. In particular, this study discusses the main strengths of some recent advanced interactive decision support systems in tackling the above challenges. These may assume the form of a web platform dashboard to be provided to the territorial administration that constitutes, on the one hand, a learning environment and, on the other, a decision support to local policy actions.

Keywords Wicked problems · Planning evaluation · Decision support systems · Ethics and justice

1 Introduction

In the recent history of mankind, starting from the first industrialization, there has been a fast process of urbanization and modernization which has led to a number of critical and complex problems, reflected in the 17 sustainable development challenges included in the UN Agenda 2030 (UN 2015). These challenges are based on the three main ethical principles of sustainable development: Environmental justice; Social justice and Inter-generational justice. Environmental justice refers to the right of communities to live in a clean and healthy environment, in harmony with their culture, without the risk of being damaged by economic or industrial activities of

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any kind. It is based on two interconnected assumptions: that of a just relationship between man and nature, and that of the right of access for all people to the common natural heritage: to drinking water, to food, to clean air, to a healthy environment and to an unpolluted land. Social justice deals with the difficulties society faces in the worlds of work, education, health care, economic need and adopts solutions to solve them. It aims to guarantee equal rights, opportunities and well-being for all human beings (without differences due to gender, ethnicity, place of birth, status, religion, sexuality, etc.). Intergenerational justice is based on the assumption that belonging to one generation rather than another should not lead to any kind of disadvantage, but rather to continuous improvement and evolution over time. It means that young people and future generations must have the same opportunities to satisfy their needs on an equal footing with other generations. To this regard, it should also be emphasized that there are major differences in terms of environmental and social justice between developing and developed countries, which are at the root of major migration flows, particularly to EU countries. Currently, the above three principles are not met in our urban living (Lombardi and Cooper 2018).

This paper discusses the above problems in the context of territorial processes, providing evidence of the wickedness nature of regeneration processes and presenting a number of possible tools and approaches, offered by planning evaluation discipline and multicriteria decision theories, which can be used for tackling them. The paper is articulated in four parts. The next one introduces both the concept of territory as the output of a social activity process and the wicked problem theory as necessary reference points. The third part introduces the decision theory and the multicriteria spatial evaluation analysis and discusses the main strengths of a new interactive decision support system in tackling the above challenges. It finally presents some recent advanced tools and approaches which are relevant. The last part presents some conclusions and way forwards.

2 Territorial Wicked Problems

The word “territory” comes from the Latin *terrae torus*, bed of earth, and originally meant that portion of land of which the ancient peoples appropriated, through the delimitation of boundaries. For a long time, the word territory was used almost exclusively to delimit the land space of land over which the sovereignty of one state over the sovereignty of others. Today, the term has assumed a different more comprehensive meaning and it “includes” the process by which human collectivities give an anthropological value to natural space and, in so doing, construct their life frameworks, their geographies (Turco 1988). For Magnaghi (2010), the territory is a “highly complex living subject”, as it is produced by the complexity, as it is the product of the long-term interaction between human settlement and the environment, cyclically transformed by the succession of civilizations; the soil, the land, the physical environment, the ecosystem, architecture, infrastructures are not yet the territory, they represent its physical and symbolic supports. Therefore, the territory represents

the outcome of a “process of territorialization”, i.e. the process in which the territory is produced through social action.

Territorial action results in an infinite variety of acts which can be traced back to a tripartite typology which makes it possible to distinguish three levels on which each process of territorialization is articulated: (1) Denomination; (2) Reification; (3) Structuring. Denomination concerns the shaping and intellectual appropriation of the territory through the production of representations—images and discourses—of the territory; through this action one “transforms” a point on the earth’s surface into a place. Reification occurs through the appropriation and material transformation of the territory; the concept derives from Marxist philosophy which indicates the process whereby an individual abstains from his/her abstraction from the sense of his/her humanity considering him(her)self as a simple thing among things. In this way he/she feels as if he/she is subject to the same market laws to which the objects he produces with his/her work. Structuring occurs when the production of territory calls into question the transformation of the territory in accordance with precise political, economic and/or other strategies aimed at some socially relevant program; the structuring directly involves the project-activity of the different actors and their power to transform the territory in accordance with these projects.

Territorial projects are intrinsically wicked problems, problems which are very difficult to address for a set of interrelated reasons (Allen and Gould 1986; Head 2008; Roberts 2000) as follows:

- the problems are characterized by incomplete or contradictory knowledge
- there are usually a very diverse and high number of stakeholders involved
- many different and often conflicting norms, values and perspectives exist on what the problem is
- the problem is often connected to high economic costs;
- the problem is often strongly interconnected with other problems.

Wicked problems are characterized by the multitude of perspectives which exist in relation to them, often not only based on “facts” but also on values and norms. Wicked problems are consequently often characterized by strong disagreements about both what the problem definition is, what kind of knowledge is valid, and what values are relevant. This fundamental element of wicked problems (i.e. the lack of a common problem definition) needs to be acknowledged, and dialogue processes should not be aimed at early consensus; instead, articulation of differences, particularly at the beginning but sometimes also right up until the end of such a process, is imperative. If this element of wicked problems is not acknowledged, the solutions which emerge end up being “one shot” design efforts which do not appreciate the myriad of norms, values, perspectives, problems and causes that actually exist. The complexity of spatial problems is further increased by the multitude of perspectives which, in multi-cultural cities, is amplified by the coexistence of numerous migrant communities with different values and cultures.

In the recent last century fast process of territorialization, modernization and urbanization developed by human beings, the natural environment, biodiversity and the ecosystems have been strongly threatened, treading fundamental sustainable

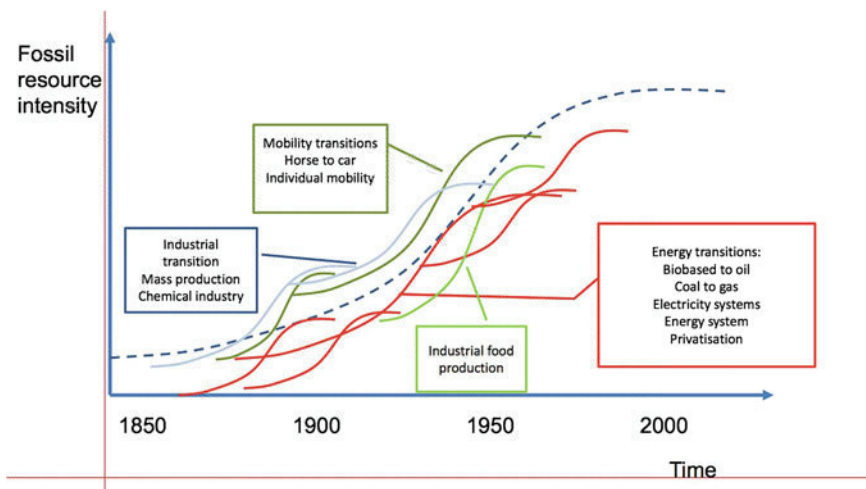


Fig. 1 The process of Great Transformation (Source Loorbach 2017)

development principles and particularly the principles of: Environmental justice; Social justice and Inter-generational justice.

According to Loorbach et al. (2017), the transition of modernization and industrialization, the Great Transformation, which has contributed to progress and growth of our western society, has been powered by central planning, fossil resources and linear thinking. This process, understood as the aggregation of underlying transitions, can be described as revolutionary systemic changes, and has completely altered society (see Fig. 1).

Currently, the main challenge our centralized, fossil resource based linear economy faces is its dependence on depleting resources as well as the negative effects of resource use and depletion on our society and economy. He argues that a New Transformation is emerging which is in essence a socio-economic revolution as it represents a fundamental power shift away from powerful elites controlling resources, money and power towards diverse and distributed forms of collaboration between professionals and citizens. This new transformation in our Western democracies is made up by individuals—both as citizens and as professionals—that do so by choice: they can increasingly decide to move their money to a sustainable bank or develop an alternative currency, produce their own energy, get their food from the farm, collectively organize care and set up a collective pension fund. Because of their growing numbers, such initiatives cannot be any more referred to just as “participation society” or “bottom-up”. This represents a new form of structural distributed governance which is powered by internet and communication technologies, knowledge and skills, and more massive use of renewable resources and systemic innovation. Unfortunately, in this new societal transformation process there is a major risk that weaker groups including migrants may be excluded if they do not have the appropriate knowledge and technical means.

The concept of “Net zero carbon emission” living has emerged from a rupture in the carbon-dependent urban system that has led to high levels of anthropogenic greenhouse gases (Lombardi and Gruenig 2016). It implies a paradigm shift about relationships between energy, climate change and city. Energy and climate are essential issues, at the same time as long-term targets, such as reduction of greenhouse gas emissions (GHG), and as short-term requirements such as resilience with regards to oil price rising and supply disruption. Cities are here understood as complex, adaptive, social-ecological ecosystems, involving inhabitants, companies, public utilities and local governments. The term “zero-carbon” emphasises a shift in paradigm, which is necessary to respond to the multiple challenges of climate change, ecosystem degradation, social equity and economic pressures. Zero carbon cities must reach a massive reduction of GHG by a factor of four in 2050 compared to 1990, a near self-sufficiency in carbon fossil fuels—oil, gas and coal—and develop the capacity to adapt to climate change. This implies the establishment of new types of cities that are low-carbon as well as environmentally, socially and economically sustainable.

In order to be sustainable, cities require to enhance their ethnic, cultural and identity differences. This is the concept of a multicultural city where positive interaction and peaceful coexistence are achieved in connection with personal integrity and a good life (Allam et al. 2004).

In order to build such a healthy peaceful green environment, citizens need to be well informed and educated and local authorities, as major decision makers, have to base their decisions upon sound and structured interactive participative approaches which involve new typology of evaluation methods compared with the utility-welfare-economy traditional ones. In the next sect, the paper is going to shortly present them.

3 The Contribution of Decision Theory

The theory of decision analysis is designed to help an individual or a group make a choice among a set of pre-specified alternatives. Decision analysis looks at the paradigm in which an individual decision maker (or decision group) contemplates a choice of action in an uncertain environment. The decision theory helps identify the alternative with the highest expected value (probability of obtaining a possible value).

Our values, beliefs and perceptions are the force behind almost any decision-making activity. Values are articulated in a goal, which is often the first step in a formal (supported by decision-making techniques) decision process. This goal may be put forward by an individual (decision-maker) or by a group of people (for example, a family, a firm, an institutional board, etc.). The actual decision boils down to selecting “a good choice” from a number of available choices. Each choice represents a decision alternative.

The problem structuring methods (PSM) are crucial for designing the decision process and the alternative options to be evaluated. The major purpose of PSM is

to support understanding the possible future trends of certain variables, planning new strategies, and adaptation. This family of methods include Futures studies. This comprises a huge number of approaches; it has been introduced in 1996 as a “very fuzzy multi-field”. One of the most basic concepts in this field is “scenario”. Future scenarios analyses can be defined as a way to create and predict the future alternatives and activities and their impact, providing policy decisions framework. The aim of future studies is supporting decision-making under uncertainty which is to be defined as indeterminacy. In the scenario literature various classifications exist. According to scientific literature (Börjeson et al. 2006; Banister and Stead 2004), classification scenarios can be distinguished as: i. Forecasting and backcasting scenarios; ii. Quantitative and qualitative scenarios; iii. Descriptive and normative; iv. Participatory and expert.

The decision-making process relies on information about the alternatives. The quality of information in any decision situation can run the whole gamut from scientifically—derived hard data to subjective interpretations, from certainty about decision outcomes (deterministic information) to uncertain outcomes represented by probabilities and fuzzy numbers. This diversity in type and quality of information about a decision problem calls for methods and techniques that can assist in information processing. In the multi-criteria decision-making context, the selection of alternative options is facilitated by evaluating each choice on the set of criteria. Criterion outcomes provide the basis for comparison of choices and consequently facilitate the selection of one, satisfactory choice.

Many solutions are today designed in a “green” context including saving energy, optimizing processes and enabling participation. Information and Communication Technologies (ICT) are recognized as being key players against those tasks particularly when dealing with energy: pervasive sensors, 3d modelling, visualization and interaction technologies can enable effective control as well as promote energy efficient behaviors. Unfortunately, visualization is often confined to showing the final results of projects, underestimating the benefits to the whole planning process applying visualization in real time. Therefore, new approaches to the visualization for decision making have been developed with the aim of building discussion and knowledge. Visual representation plays a key role in the content and process of collaboration, helping people involved to “get on the same page” (Vennix et al. 1996) and to have a collective insight (Andersen and Richardson 1998) about the issue involved. The visual products resulting from its application include tangible two-dimensional or three-dimensional shared representations that portray salient dependences and relationships among participants’ objectives, expertise, decision and actions. In addition, these representations can be modified by “on-the-spot” input from every participant (McKenzie and Winkelen 2011; Black and Andersen 2012). It is also necessary to have “good decision bones”, to structure the decision problem in a simple and effective way to capture the complexity of the reality. This is to help the actors involved to “choose in a strategic way rather than at a strategic level” (Friend and Hickling 2004). The visual images are a tangible representation of dependences across disciplinary, organizational and cultural lines that all participants can modify. If an object is “transformable”, then anyone involved has the possibility