

ITCILO World of Work Series

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Vincenzo Fucci

**SOCIAL INNOVATION
AND SUSTAINABLE
DEVELOPMENT:
A NURTURING RELATIONSHIP**



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INTRODUCTION TO THE BOOK

This book is intended to present in their entirety and complexity two intriguing concepts, such as social innovation and sustainable development. If it is true that they are often questioned, it is also true, that, nowadays, they have great relevance. It is not another attempt to find the winning formula for progress and well-being, rather it aims to represent the themes analytically and shed light on some nuances of these concepts and the intense relationship that exists between them. As a result, while on the one hand, it wants to provide a clear and well-defined introduction to social innovation and sustainable development, on the other hand, it challenges the static idea about their relationship by leveraging the peculiar features and the qualities that foster this interconnection.

The representation of both social innovation and sustainable in this book follows a similar trajectory. To frame them appropriately, each concept is examined first of all without the adjective that gives it such criticality and significance. Successively, we move on to the definitive vision of the concepts by adding the adjectives “social” and “sustainable”, that give a final result of interdisciplinarity and make them so demanding today. Thereafter, the attention is on the most practical aspects, that is, how these phenomena take place, their processes, the multitude of actors who take part in them and the key instruments.

From this study, not only the various nuances and the analytical distinctiveness of these concepts will emerge, but also and above all their relevance in practice. Finally, the importance of the interaction between them will be highlighted. It means that today we can speak of a nurturing relationship between social innovation and sustainable development. This makes the former an essential tool that meets all the necessary requirements to achieve the objectives set by the latter.

To guide the reader through this composition, here is a brief summary of all the arguments examined and discussed in each chapter. In the first part, the object of study is social innovation. Chapter 1 starts with an introduction to the idea of innovation, its evolution across time and how it has contribut-

ed to human development in different centuries. The Chapter ends by remarking the need for giving a shape to new forms of innovation that are able to respond to current societal needs. Chapter 2 begins with a systematic exploration of the concept of social innovation. In this chapter, we look at some of the key debates ongoing as concerns the definition of social innovation, to conclude with an historical excursus across the different meanings of the concepts. In Chapter 3, the key drivers that prompt social innovation are examined at first. Therefore, the Chapter spotlights the process of social innovation, how it comes about and, eventually, the main actors involved in such good practices. In this case, not solely we try to give a sort of identikit of the social innovator, we consider the role played in this field by several actors from the public, the private and the third sector. Some examples are offered to the reader to give greater factuality and concreteness to the arguments.

In the second part, the emphasis is on sustainable development. Chapter 4 isolates the economic aspect of development. It looks at the current debate in development studies and covers the 20th and 21st century economic theories over development. At the end, a brief contextualised definition is provided. Chapter 5 shifts the focus to sustainable development. After a concise introduction to the concept, the Chapter discusses the idea of sustainability, how it has stand out and which the main considerations in this respect are. Successively, how sustainable development has emerged and the long path towards the adoption of its main plan of action, the 2030 Agenda for Sustainable Development will be at the core of the investigation. Chapter 6 concludes with a specific focus on the 2030 Agenda. It addresses the current state of affairs in achieving the Sustainable Development Goals in light of the impact of COVID-19 pandemic.

In conclusion, we connect all the dots and analyse the evidences that prove the existence of an alliance between social innovation and sustainable development. After evaluating the analytical interconnection that holds these two concepts together, we end this journey by presenting the functional relationship between them in all the three spheres of sustainable development and in the modalities under which they take place. It aims to argue that putting social innovation into practice is a fundamental step for improving our future and ensuring one for the next generations.

PART I

Social innovation

INTRODUCTION TO PART I

Social innovation, as is often the case with emerging phenomena that have not yet been fully codified, elicits conflicting assessments: while there is widespread agreement about its importance to the public good and in the policy arena, its analytical indeterminacy and theoretical vagueness have triggered harsh criticism. One of the few points on which scholars agree without reservation is that the concept of social innovation is “elusive”, “vague”, “opaque” and “a buzzword”. Indeed a systematic analysis of the plethora of definitions may not exactly leave a bitter taste in the mouth, but the impression is certainly one of blandness; just like tofu, in fact. Nor do the misgivings disappear if we turn our gaze to the array of actors and concrete practices that refer, more or less explicitly, to the concept. Social innovation initiatives have taken place in many areas, from the cooperative economy, social impact start-ups and fab labs, down to the implementation of new organizational models in social services, culture, local development and education. Social innovation today is like a meatloaf, with a pinch of new welfare solutions, a dash of citizens’ empowerment, and varying amounts of participatory urban regeneration, sustainable local development, and the social use of technological innovation platforms. Social innovation is an idea with an increasing public relevance, but not equally defined from an analytical point of view. It is actually closer to a quasi-concept than to a true concept. As such, it connects and overlaps analytical, regulatory and practical objectives. As Fucci’s book shows, the history of social innovation has a karst trend, which brings out the idea in conjunction with turbulent historical conjunctures, characterized by demands and needs that are not fulfilled by the existing institutional structures. Social theory addresses the topic of social innovation in a rather generic and not particularly useful way, while the field of innovation studies bring it back more precisely to the field of collaboration economy. The two most influential contemporary narratives are the critical-movementist one and that of social entrepreneurship; they emphasize different purposes and priorities that are only partially reconcilable. The methodological debate is not, at least for the definition of the indicators, particularly mature, while the

one on the conceptual dimensions appears more promising. In this regard, Vincenzo Fucci's book aptly illustrates how social innovation presents risks and opportunities, which must be addressed without indulging either in defensive battles or in "managerial enthusiasms". Its nature of a quasi-concept configures social innovation meaning as an object of negotiations among actors on a cognitive, regulatory and practical level. It is key to remember that quasi-concepts and hybrids social objects did not emerge within of the perimeter of the scientific community to solve an analytical problem: their purpose is primarily practical and normative.

Sociology, and the social sciences in general, are more and more today called to deal with these objects, that is, with topics and objects that are not born with analytical purposes and pure knowledge aims. Social scientist thus are forced to work with "maps of borders" that create their own objects – often mixing political priorities, worldviews, empirical data and analytical models – more than with "maps of objects" with clear and defined boundaries. Fucci's book shows how today the sociology research agenda is more dependent on external priorities defined by funders (see Horizon 2020 et similia), and/or government agencies, either in relation to the role increasing of the "third mission" of the Universities. For these reasons, quasi-concepts such as that of social innovation are in all probability destined to occupy increasing spaces in the research agendas of social scientist. Here is the point. The applied implications of social research are certainly not new, what makes the difference in this scenario is the fact that problems, topics and objects on the research agenda are increasingly configured as "borderline objects" that function as connectors between cognitive, normative and practical dimensions. This certainly entails the risk of severing the relationship between pure research and applied research, based on their relative autonomy. At the same time, the challenge posed opens up new opportunities and scenarios, which must be faced without indulging neither in defensive battles that reject all contamination, nor in managerial enthusiasms that trade the autonomy of the research agenda in exchange for a handful of economic resources and a status in the policy networks.

In an attempt to bring this standpoint into sharper focus, Fucci's book proposes an encompassing view on the topic in connection with the idea of sustainable development as a wicked problem. These are problems involving complex, multidimensional challenges on a tangle of different scales, and which do not have simple, straightforward solutions. They involve conflicting interests and negative-sum games that – at least in the short term – result in winners and losers. Accordingly, solving these problems is not possible through a technocratic, social engineering approach, but calls for building political consensus and agreeing on long-term timeframes that are not based

on calculating immediate costs and benefits. Fucci shows how to avoid the trap to to apply the “wicked problems” label indiscriminately, in a “one-size-fits-all” approach that discourages attempts to devise workable solutions. Moreover, precisely because of the scope and complexity of the issues they involve, wicked problems are regularly associated with dramatic, transformative solutions, with little attention paid to experiments – often on a small or medium scale – such as those illustrated in the foregoing pages. They encourage approaches to interpretation where an initiative is either a complete success or entirely unsuccessful, without considering incremental improvements and small wins as indicators of the action’s effectiveness. Lastly, the amplitude of these problems tends to create an air of urgency that makes it difficult to lay out priorities and rational, balanced plans of action. The point of interest of Fucci approach is that different routes to social innovation, based on distinct combinations of the market, public action, technology, collective empowerment and social entrepreneurship, carry a different weight according to the type of wicked problem they seek to tackle. In addition, the same problem may belong to one type rather than another, depending on the scale at which it is addressed. For instance, the transition from fossil fuels to renewable energy, and environmental problems in general, offer a wealth of examples of positive local solutions for a “good anthropocene” at the level of major cities, regions or states, as well as failures on the global scale. As regards social innovation practices, the diverse nature of wicked problems thus calls for flexible and adaptive organizational formulas, far from the usual prescriptions that see the “market-friendly” mobilization of civil society as a sort of broad-spectrum antibiotic, good for all ills. The epic storytelling that surrounds social innovators notwithstanding, it is perfectly reasonable to doubt that problems like hunger in the world, the gender gap, infant mortality, poverty and destitution, immigration and child labor can be solved without a guiding role on the part of public institutions. At the same time, this role calls for innovative public action. As this book aptly shows, the solutions afforded by social innovation practices must draw on mission-oriented models of public intervention.

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CHAPTER 1

A preliminary journey into innovation

Summary: 1.1. What is innovation? – 1.2. Evolution and features of the innovation process. – 1.3. New scenarios of innovation.

1.1. What is innovation?

In order to understand what social innovation is, we need to start from the analysis of the concept of innovation. Indeed, we cannot proceed with our study of social innovation if we do not deal with the noun of this new emerging trend first. What exactly innovation is and its peculiarities will be briefly the subject of our first investigation for better understanding our main topic later on. Only after having completed a careful examination of this concept, we can add the adjective “social” that makes up this new captivating term.

There are many practical examples of innovation. But when we hear this word the first things that come to our minds are mostly material items that represent the apogee of technological innovation or maybe the market ones too. We do not consider the ways in which community members cooperate with each other to face intricate social questions or the way in which local policy-makers work with citizens to find new solutions to longstanding problems. We are too much absorbed in technical invention or new products on the market that we very often neglect that there are intensity and power also in forging new human synergies.

At present innovation is widely recognised as a concept of great and current importance. It is the result of centuries in which new systems and criteria have been introduced into our daily life. Actually, innovation has always interested the history of humanity on the planet. The evolution of human being and that of the whole planet in general has been accompanied by this endless process.

As we will see in the next pages, the intensity and the practical and theo-

retical implications of innovation have been different across time. Throughout history innovation has been conceived, understood and explained in dissimilar ways. Over the time, it has been analysed through the lenses of technological and managerial evolution, ending in the spotlight of economic and development studies. Only since the First Industrial Revolution it has become a highly topical concept contextualised at the centre of many studies.

All these premises could worry the reader by presenting innovation as something extremely complex and difficult to comprehend. Whether in some ways the complicated nature of the innovation process cannot be denied herein, in other ways, it should also be said that the term can be treated in a more rational and simpler way. The primary intention of this composition, especially in its first pages, is to go beyond preconceived ideas and address this topic in a more structured and in-depth way. Therefore in this chapter, we approach innovation as a notion and a process rather easy to discern, that has been observed and interpreted from many diverse perspectives.

Trying to start from the roots of the concept, many scholars attribute to Schumpeter its origins. In particular, this authorship is due to the theories elaborated with Schmookler on the forces leading to innovative activity. As analysed, authors' credit is not attributable to the design of the concept but rather to their study on the entry of new technologies into the market. Schumpeter was the first to suggest that business cycles operate under waves of innovation (Staudenmaier, 1985; Alter, 2000). So, it would be more correct to say that Schumpeter noticed the importance of innovation already in the 1930s (Taylor, 2017).

In this historical trajectory to identify the deep roots of the term, we must mention the work of Godin, who is well-known for his attempt to outline the analytical origins of innovation. Godin detects that 'innovation has become the emblem of the modern society, a panacea for resolving many problems, and a phenomenon to be studied'. He starts his investigation on the intellectual chronicle of the concept by looking at the genealogical history of innovation as category. In this inquiry he offers three hypotheses. In the first hypothesis, he advances that innovation is about novelty. As such, it arises from human artistry and refers to any forms of innovation, not only material or technological. Secondly, he supposes that innovation derives from the tension between imitation and invention. In this case, it materialises as the resolution of this dichotomy in the 20th century. Finally, in the third hypothesis he suggests that innovation has surfaced as a break with the past and is aimed at giving value to the practices and principles on which modern society is founded. It would represent both continuity with the past, in the sense of an idea already present before taking on a concrete representation, and the break, pointing out that invention alone is not enough (Godin, 2008).

Then, Godin has conducted an interesting research in which he analyses the different thoughts on innovation across centuries that have led to the current concept. He starts from the Ancient Greek concept of *kainotomia* that had a revolutionary political connotation. Then, the term, as we know it today, first appeared in the 4th century when the word *in-novo* was coined to represent the Christian concept of rebirth and regeneration. As time went by, during the Reformation it was then labelled as a derogatory term by the Catholics to indicate the reformers. The meaning expanded eventually embracing a political sense in the 17th and 18th century to accuse the republicans. After that, gradually it has assumed a positive connotation from the 19th century on when it started to be conceived as conducive to the political, social and material progress of society. The final turnabout occurred after the Second World War when those who had challenged innovation over the centuries, namely governments, started considering it an essential political tool. As a consequence, it was adopted by states and international organisations to express a basic economic concept that represents a solution to economic problems, such as economic lags or gaps in productivity. In this extraordinary work, Godin shows how in the past for many centuries the idea of innovation had a negative acceptance and was criticised by opponents of change until before having the positive undertone of today (Godin, 2015).

To open up our cognitive analysis with a basic definition of the present day, it would be useful to look at what is written in the main dictionaries. According to the *Oxford English Dictionary* innovation is ‘the introduction of new things, ideas or ways of doing something’.¹ In the *Cambridge English Dictionary*, innovation refers to ‘a new idea and method or the use of new ideas and methods’.² Although these definitions can sound unarguably as neutral and quite general descriptions of the concept, their clearness and simplicity are very important to start this journey into the universe of innovation. In fact, both of them include two essential preliminary components of innovation. Firstly, the newness, and secondly, the intellectual and applied change.

Geoff Mulgan (2007), a very high-profile interpreter and scholar over both innovation and social innovation, describes innovation as new ideas that work. In so doing, he emphasises the differences among innovation and improvement, and innovation and invention. In the first case, he points out how improvement is an occasion entailing only an additional and gradual change, usually. In the second case, instead, he starts by recognising the absolute pertinence of the concept of invention, as well as that of creativity, in

¹ *Oxford English Dictionary*, Oxford University, Oxford, online at <https://www.oed.com/>.

² *Cambridge English Dictionary*, Cambridge University Press, Cambridge, online at <https://dictionary.cambridge.org/dictionary/english/innovation>.

the early stages of the innovation practices. However, both of them – invention and creativity – miss out to trigger that process of implementation that makes it possible to transform a promising idea into reality, which is typical of innovation.

Dawson and Daniel (2010) contend how this concept can have a lot of nuances and can be very helpful in science and technology. They provide a few of acceptations of this term, although they seem to agree on the Mulgan's proposition of the concept.

Taylor (2017) identifies the two main component of the innovation process. These are creativity and the development of ideas. Focusing on the first aspect, he looks at the many interpretations of the idea and provides a brief and sharp sample of them, ending up accepting the composite definition of innovation as “the creative process whereby new or improved ideas are successfully developed and applied to produce outcome that are practical and of value” released by Seaden and Manseau (2001).

Fagerberg and Verspagen (2009) consider innovation as ‘the attempt to try out new or improved products, processes or ways to do things – that has always been with us’. They examine its growing importance in the present and explore the main characteristics of this new emerging field of social science, “innovation studies”. They argue that its strong relevance is given by the interest in the subject that companies, politicians and scholars are showing like never before. In introducing this new field of knowledge, they show that several thousand academics worldwide are currently researching such issue.

Bessant and Tidd focus more on the relevance of the process than on the outcomes. They argue that innovation is ‘the process of translating ideas into useful – and used – new products, processes and services’. As acknowledged by Dawson and Daniel, their idea is not so far from that of the Department of Trade and Industry, according to which innovation can be reduced to ‘...the successful exploitation of new ideas’. In any case, this vision aims to shed light on the methodologies implemented, highlighting how this procedure can appear complex. They warn that coming up with new good ideas can be simple, but taking these forward is hard. Beyond any doubt, this definition pays more attention to the market dimension, comprising the ideas of new goods and services (Bessant & Tidd, 2007).

In this respect, a big step forward has been taken by the OECD, which is one of the most highly proficient international actors in providing policy orientations for government and sharing good practices at transnational level. In the OECD's view innovation is ‘a key source of long-term growth, both in traditional and high-growth, high-value added sectors. It can provide crucial contributions to higher productivity and confront global and social challenges’.

This definition shows an inter-sectoral nature, ranging from the pure eco-

conomic feature to the social one. The OECD goes further in this examination of the concept by stressing a fundamental characteristic on which the innovation process is based. It discloses that innovation is a broad phenomenon involving multiple actions and procedures. This definition provided by the OECD paves our way towards a more focused analysis on the economic and social dynamics, both of which are affected by the incessant innovation practices.

Economics theorists are used to distinguish two forms of innovation, following two separate directives and its concomitant outcomes. It is precisely the case of process innovation and product innovation. Process innovation relates to the experimentation and implementation of new production techniques and methodologies, new work organisations and innovative business models. By contrast, product innovation purely refers to the creation and the development of original and enhanced outputs, which can produce feasible externalities on new industries and sectors (Nubler, 2016). Although this first distinction can appear definitive, some product innovations can turn out to be process innovations in other stages of the economic cycle. Some other theorists have sustained that all innovations can be classified as process innovations, because of the higher productivity generated, ending with neglecting the form of product innovation as a procedure leading to a systemic economic change on the market (Vivarelli, 1995).

Notwithstanding the interchangeable relation between these two forms of innovation, the feasible outcomes on the economic structure and, in particular, on the labour market can be significantly divergent, as enunciated by the traditional economic theory. In a nutshell, whereas product innovation is usually perceived as a form of innovation able to generate a positive impact on the labour relations, and hence a possible job creation, the debate appears heated on the effects of process innovation.

Indeed, theorists from the First Industrial Revolution up to the era of digitalisation have opposite standings on it. Some analysts have been forecasting a job destruction scenario caused by this ongoing quest for productivity aimed at enhancing labour-saving technological process innovations (Ford, 2015). As occurred in the past, when large industrial robots have replaced many jobs, this trend towards the automation of tasks and standardization of goods will culminate in a tendency to complement human tasks by mobile robots. Some others have adopted a total divergent viewpoint as opposed to the jobless future, by arguing the feasibility of a transition towards a golden age of job creation. They claim how historical experiences have showed exactly an opposite reaction and each phase of job destruction was followed by a new era of job creation. It was an adjustment process determined by the aftermaths produced by the development of new technologies on productivity that resulted in the

creation of new jobs, after that a new market equilibrium in which demand meets supply and full-employment would be achieved (Perez, 2002).

Therefore, it appears as clear as it is natural that the economic theory has been gradually focusing on one of the social outcomes deriving from the innovation practice, specifically its repercussions on the labour market. Many authors have been debating for years the extremely controversial issue of technological unemployment. The economic thought in this area came to the light with luddites, then it has been scrutinised from all angles by many economic currents, from Marxists, to Keynesians, to Marginalists, ending with the two extant tendencies. Until the early 2000s, the mainstream trend was the theory of compensation, according to which automatic mechanisms, such as the flexibility of prices and wages and the natural increase in employment in machine-producing sectors, would have compensated for the loss of jobs in certain sectors, keeping the level of employment stable. Since the 2000s, instead, the theory of substitution, that envisaged the replacement of humans by machines, got a foothold in the academic debate. In particular, this theory has predicted a decoupling in the short to the medium term between productivity growth and employment expansion (Brynjolfsson & McAfee, 2011). This data has been confirmed in further empirical studies carried out by other illustrious academics such as Acemoglu & Restrepo (2020).

When we look at the concept of innovation in business theory further insights come to the surface. In business theory, innovation has been subject of study of various scholars. One of the most apt propositions for describing some likely effects of innovation has been provided by Christensen and Bower (1995). They accentuate the contribution given by the innovation process in altering an existing market and the related value network by creating new ones. They have coined the term of disruptive innovation, in opposition to that of sustaining innovation.

The concept of disruptive innovation refers to a process that occurs so quickly that it manages to bring about a drastic change in a specific field and in the modalities that operate within it. It concerns disturbing proceedings in which a smaller firm with fewer resources is able to successfully confront and replace the market-leading firms in that industry. These firms are too much focused on the more affluent and demanding segments of the population, seeking greater profit among these groups. The new emerging firm instead faces with disruptive intentions of satisfying those groups of consumers hitherto ignored, offering them products at a reduced price. While the bigger firms remain concentrated on those sectors of the population, the outsider is increasing more and more its share of consumers on the market. Finally, when even those segments of the population on which the dominant firms have focused up to that moment leave them and become customers of

the emerging company, at that point the disruptive process has been triggered. The drastic change in the market is then imminent. The existing firms, outputs and value networks are forced out.

An example of disruptive innovation can easily be found in the transportation market. The debut on market of the Ford Model T at the early 20th century disrupted the existing market and displaced all the existing networks. The introduction of the first low-priced cars, more easily accessible to large sections of the population, unlike the first existing car models already on the market, opened the way for mass car production. This is the most shining example of a disruptive innovation happened in human history (Christensen & Raynor, 2003).

There are many other different examples closer to us on the time scale. For instance, the introduction of digital music downloads which have completely replaced compact discs (CDs) within a few years. But an even more striking example is represented by smartphones that are in the process of or have already managed to wipe out entire sectors of the economy. It all started with the enormous worldwide spread of smartphones and the connected possibility of offering a very high variety of functionalities in the most diverse areas through the app mechanism. So, this is how that our mobile phones can be transformed into portable GPS navigation systems with a destructive impact for those leading companies in the satellite navigation market, such as TomTom. Or again, our mobile phones offer the possibility of taking digital photos at a cost that is perceived as zero and at a quality level that continues to grow. This has led to the collapse of giants like Kodak and drastically reduced sales of Nikon and Canon, for example.

Naturally, not all the innovations can be classified as disruptive. Indeed, there are also other innovations that are classified as sustaining. They are distinct types of innovation that take place without generating an upsetting fallout on the existing markets. Christensen divides them into two further forms. On one hand, we have the evolutionary innovation that consists in the improvement of a product in an already existing market according to the expectations of the current customers. On the other hand, there is the revolutionary innovation. In this case, although the innovation introduced in the market is unexpected from the customers, it does not engender any kind of disruptive impact on the existing markets. Both these types of sustaining solutions spawn an enhancement of the services or the products on the existing markets taking into consideration the known needs of the actual customers (Christensen, 1997).

We can once again make use of the transportation market to have a clear evidence of both these forms of innovation. A good case in point of evolutionary innovation was the fuel injection for gasoline engines, which did not

alter the market. Whereas a discontinuous revolutionary innovation was the first automobiles at the end of the 19th century. Despite the fact that the latter introduced a profound change in the modes of transportation, these first models were too expensive and meant just as luxury items, without affecting and changing the horse-drawn vehicles market, unlike the Ford shortly afterwards (Christensen & Raynor, 2003).

Again, we can look at good contemporary examples of sustaining innovation. These can be found in the entry of tablets into the marketplace. These devices have responded to some consumer needs, brought incremental changes to existing products and services and certainly were not the first in their respective markets. Despite the added value, they have not significantly affected other sectors or their internal mechanisms.

In any case, this dichotomy between disruptive and sustaining, well explained by Christensen, is a further step onward to better understand the concept of innovation and the structural and pervasive changes that it can carry out on the market but also on the society as whole.

1.2. Evolution and features of the innovation process

Innovation is inherently a constantly-evolving activity. It is characterised by ever-changing features and patterns. Naturally, there are many ingredients marking this process. One of these is the pace at which innovation has taken place throughout the human history. This aspect cannot be ignored and is extremely relevant to figure out the non-linear essence of the innovation process.

There is no doubt that the speed of innovation across time has been following separate phases and generating varied outcomes. The rapidness of change occurring in society is a shifting variable and has experienced exponential growth rates over the past two centuries. Although innovation has been the key driver of human progress since the dawn of civilisation, as David Landes (2003) has diagnosed in his study, the time-frame between the two biggest revolutions in the human history is huge. Indeed, the Neolithic Revolution, also known as the First Agricultural Revolution, which is considered as the earliest substantial transition from a way of life based on gathering and hunting to a new one founded on agriculture and settlement, occurred in the geological epoch of the Holocene. The second greatest shift in our history, the First Industrial Revolution, took place only about a couple of centuries ago. Thus, there was a rather long time-frame of ten thousand years between these two epochal events. From the transition to agriculture to the advent of the industrial sector, the history of humankind has seen the materialisation of trailblazing and far-reaching novelties, but the rate of innovation maintained an extremely

slow pace. Afterwards, in the last two centuries, we have passed from the steam engine, to the atomic energy and, lastly, to the automation. The pace of changes has rapidly speed up in each sector (Landes, 2003).

Human society has lived millenniums without being affected by colossal and real drastic advance, then it has experienced a wide-scale transition over the four industrial revolutions in two centuries. The first leap forward was with the appearance of the steam engine. This attractive new invention provided for the first time an opportunity for pushing the boundaries of human and animal muscular strength. At the present, by dint of new technologies the Fourth Industrial Revolution goes far beyond and permits us to deal also with the limits of our cognitive skills (Bentivoglio, 2019). Industry 4.0 is something knottier than simple automation. Technology is now playing an even more basic role. In the Industry 4.0 the ambitions of achieving improvements in automation, communication and monitoring and developing smart apparatuses able to replace human intervention are pursued through new shattering means. Wide-scale machine-to-machine communication, also known with the acronym of M2M, cloud manufacturing, cybersecurity, the internet of things (IoT), augmented reality systems and Big Data are the major instruments and mechanisms to make a breakthrough in Industry 4.0.

Naturally, what has never changed across the centuries is the reason behind the introduction of all these innovations. The main goal is still the pursuit of productivity, as always complemented by the steady storytelling of enhancing labour conditions and improve the quality of our life. Nonetheless, we are now experiencing an offbeat transition, no more based only on routine skills, and that presents a certain discontinuity with the previous ones. This is definitively a form of disruptive innovation, probably the most radical ever lived before.

This relentless and overwhelming pace of innovation, also due to its changeable nature, has led many scholars to talk about a ‘paradox of innovation’, turned in a stormy debate. Although it can refer also to changes already happened, it has become only recently a concept of great actuality and in the public eye. To some extent, the paradox refers to the externalities – outside the simple economic sphere – originated by this process, especially on the natural environment. Innovation has been conceived, on one hand, as the key element able to foster human progress across centuries, while on the other, as the main cause of human interference with the environmental and planetary processes. Moreover, innovation is now at the core of human agenda for providing sustainable solutions for a healthful future for the humankind and the planet (TWI2050, 2020).

As well as the astonishing speed of innovation, also the model of innovation, another peculiar element of this process, has been subject to substantial

changes across time. A model provides a conceptual framework to figure out how in practice the process works. It describes the trajectory of translation of new ideas into new marketable solution and the interaction among the stakeholders. Although a widely accepted orthodox literature in this respect is still missing, we will refer to one of the most appreciated and articulated study. It has been theorised for the first time by Etzkowitz and Leydesdorff in the 1990s. Their work has triggered a specular study in this context, by formulating what has been defined the triple helix model of innovation (Etzkowitz & Leydesdorff, 1995) in the frame of the evolutionary economic approach of the knowledge-based economy (Foray & Lundvall, 1996), which in turn is an innovative metaphor in knowledge economy.

It is worth to go in order for not getting confused. First, knowledge economy refers to a modern economic system in which the knowledge-intensive activities are the main backers of the production of goods and services, allowing advances in technical and scientific innovation (Powell & Snellman, 2004). The knowledge-based economy inversely emphasises codified knowledge with a more urgent focus than the previous approach on knowledge workers and the increased importance of organised R&D in shaping innovation systems (Cooke & Leydesdorff, 2006).

In this scheme, the triple helix model of innovation came to light in order to represent a set of interactive activities in the innovation procedure adopted by actors from various sectors. Each sector is represented by a helix. This model identifies three main interacting institutions, namely universities, industries, and governments. Universities and industries, in particular, have started dealing with tasks that prior were outside their original scope. Following this thesis, both universities and industries are required by policy makers to work together with the purpose of generating a benefit for the whole society through the commercialisation of this new knowledge.

It has been rightly considered as a milestone in the evolution of the innovation process. Etzkowitz realises how the capacities of modern universities had changed with an increase in both their functions, teaching and researching. They offer a new space for integrating several functions, such as learning, theorising and practicing. In addition, an increase in industrial research, industrial laboratory experimentation and the scientification of industrial production has provided a fertile ground for academicians (Etzkowitz & Leydesdorff, 1995). A sort of new social contract between the larger society and the academia world was signed (Etzkowitz, 1994). Add to this, the rising assistance of the nation states in endorsing the higher-education system, the more and more competitive international economy and the emergence of new patterns of knowledge-based economic development. In this view, the triple helix relations among these actors ended up being the crux of the na-

tional or multinational innovation strategy at the end of the 20th century. This advanced interactive relation transformed the position of state in academia, that of corporations in innovation and that of university in the evolutionary economy (Etzkowitz, 1983).

This archetype had to cope with further changes, challenges and progresses occurring in the global context. The combination of wicked problems, renewed knowledge paradigms and pressing claims from the bottom of the society eventuated in the upgrade of this engaging interaction. The triple helix model was drastically reshaped and a new network of relationships appeared with the inclusion in the innovation context within the realm of the knowledge economy of an indispensable stakeholder, the civil society.

The quadruple helix model was introduced by Carayannis and Campbell in 2009. In the model they present an extension of the triple helix and theorise an adjusted version of the innovation paradigm. The denouement is a new configuration integrating the perspective of the media-based and culture-based public in the innovation ecosystem. Their insightful analysis to incorporate the public within this process is based on the assumption that every national innovation ecosystem is affected by culture and values, on one hand, and the public reality construction, on the other hand. The intermediation of media turns out to be necessary in conveying and interpreting a public discourse for the whole society. In so doing, the society would prioritise innovation and knowledge and the political system would obtain public support for new strategies. The result is a co-evolution process in which unlike knowledge modes and a mosaic of agents, actors and organisations are involved. It would transpire as “democracy of knowledge”, led by different knowledge, innovation and paradigms (Carayannis & Campbell, 2009).

This evolutionary process has culminated in the theorisation of a further model, the quintuple helix model of innovation. It has implied the addition of the natural environment as further component in this framework. This is the last and contemporary variant on which the debate and the process of innovation has been focusing on. The binding problems of the 21st century needed to be addressed in a more sustainable way. That is why Carayannis and Campbell in 2010 formulated a new sequence, in which they have started by the constitutional assumption that the natural habitat could no longer be set aside and had to be framed in this scheme. The time was ripe to recognise it as an active partner of innovation and not just a resource to be exploited.

In this new adaptation, both the biological and ecological system have become the prime sources of this evolutionary innovative process. Humanity has been facing each new test and bringing innovations in the economic, technological and social fields, always drawing inspiration from what had previously been done by Mother Nature. At present the entanglement of the

environmental facet can work especially in addressing those existential dares on the horizon, such as climate change, food insecurity and demographic explosion. Ultimately, the quintuple helix model points out the need for a socioecological transition of both the society and the economy in the 21st century. Once for all natural environments, societal dynamics and economy must be seen as determinants for knowledge production and innovation (Caravannis et al., 2012).

When we will go into detail about the main topics of this reflection, that is social innovation and sustainable development, we would find out how both the quadruple and quintuple helix models of innovation are strongly interconnected with these concepts. First, it has been observed that social innovation – by virtue of its innate features and modus operandi – has powerfully advocated the inclusion of civil society as the fourth innovation institution. As indicated by Jeremy Millard (2017), this pivotal function of social innovation in this sense is witnessed by the fact that all these non-profit groups, social organisations and civic associations have been considered a new innovation source at the same time that the concept of social innovation has become highly topical among the scholars and within the political debate. With regards to the quintuple helix model, the role of the United Nations in guiding the evolution of sustainable development not only has put the spotlight on the risk of environmental catastrophes and the limits of the Earth's biosphere to absorb our footprint, but it has also raised awareness on the important interposition by the environment in this process. Thus, it should be acknowledged the notable function of the UN in promoting the recognition of the natural surroundings as the fifth innovation source in the quintuple model.

1.3. New scenarios of innovation

The concept of innovation is an all-embracing activity, producing impacts on and interacting with diverse domains. In relation to technological progress and market access, the concept has been reconsidered and augmented. As a consequence, over the last decades we have been referring to an adjusted interpretation of this process, the notion of 'open innovation', coined by the American economist Chesbrough in 2003. This last version of innovation is now almost a quarter of a century old and is becoming more and more widespread all over the world. According to this new form of innovation, companies who want to grow up can use resources from outside, such as universities, or start-ups. It is a deep transformation that affects companies internally and in relations with the outside world.

The old paradigm of ‘closed innovation’, meant as the research carried out within the boundaries of the company, could no longer be enough. At the dawn of the new millennium, ‘closed innovation’ began to show all its shortcomings and limitations, thus becoming no longer able to follow the pace of change. First, knowledge and talents have been moving at an ever increasing speed thanks to new networks and the ease of moving people, goods and above all ideas around the world. This has in fact made it almost impossible to keep both the processes of research and development within the company boundaries. In addition, capital markets have also begun to focus on companies based on new business models and methods.

All these radical changes are of course the output of globalisation and in particular of what Baldwin (1999; 2006) defines the Globalization’s Second Acceleration, or the Second Unbundling. The concept of ‘open innovation’ is essentially ‘a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology’ (Chesbrough, 2003).

Currently, innovation system, as well as being considered as the dominant factor of the production process of a plenty of new goods and services and as a source of revenue and profit, it should be measured and intended also on its ability to produce a stream of high promising opportunities. On one hand, it cannot be denied that innovation has been the main driving movement of economic growth and has produced economic benefits for the entire society by spotting the right leverage-points. However, on the other hand, this process has also affected assorted spheres and very often in an inconsistent way. Indeed, although the economic profit has been the main objective pursued by innovation, the direct and indirect amounts generated by the innovation process have interested dimensions until then not implicated, such as the social, the political, the environmental and the cultural one. Obviously, not all the outcomes deriving from innovation can be deemed as positive. As mentioned previously, pushing the planetary boundaries for environmentalist scientists, job loss for luddites or the social question for Marxists, are just some of these contradictory externalities.

Notwithstanding, the process of innovation is something that cannot be stopped. It has been going hand in hand with the progress of humankind and, as seen above, it is at the base of many of its advancements. Today, it should be re-conceived in view of the global urgencies because of the ongoing reversals and mega-trends marking our epoch. For instance, we cannot expect to halt the digitalisation of the production system propelled by technological innovation. Industry 4.0 is already arrived, we are now living the second machine age, with the related automation of cognitive tasks. Thus, what we can do is managing this automation, by applying those human-centred tasks that can only be

performed by humans. Problem-solving and decision-making are two fundamental tools in this human-computing phenomenon. To some extents, we should humanize and civilised science and technology to avoid that our creations will end up being no longer accessible and suitable to human beings.

The appearance of new powerful forces have made the world more demanding and troubled. The final outcome of centuries of uncontrolled progress is a world of complexity and indeterminacy. The promises of development are still tempting but are accompanied by the condition of precarity characterising our society and the lack of the right means to escape from this situation. It has been envisaged a crisis of civilisation provoking unprecedented consequences for the whole planet. Consequences that hitherto remained outside the logic of endless accumulation are now affecting also the periphery of the world, putting at risk the survival of our civilisation (Lang & Mokrani, 2011). Individuals, communities, governments, public institutions and all the forms of representation struggle to find and implement new ways of interacting to tackle the most demanding socio-environmental arguments.

Looking ahead to the planetary problems that we are about to face it is clear that there is a need for a new paradigm of innovation. A paradigm that is well aware of the adversities surrounding us and is able to use all the resources and means at its disposal to get out of these precarious times, at once. In this sense, the fourth and the quintuple helix models could work as outstanding starting schemes to address these problems.

We utterly do not have to discard all the good points and progress that have been achieved so far. Indeed, these global transformations could be handled by having recourse to some of the traditional tools, but we need to adopt a dissonant approach. Correspondingly, there is an urgency to develop new resources, skills and ways of thinking able to incentivise a real systemic change. Investments in science, technology and innovation (STI) are imperative for economic and social development. The process of digitalisation cannot be ignored, rather it urges to be managed and directed towards the direction we want it follows. Research and development (R&D) could make a significant contribution in promoting a more inclusive and sustainable progress. But they should be used according to and steered towards a sort of social empathy.

Imminent planetary challenges call for a reinvigorated action in which innovation, be it scientific, technological, or otherwise, responds to social demands and does not focus only on generating an economic profit. It means a new form of innovation that forecasts and visualises long-term effects and avoids engendering negative unexpected externalities. There is a need for the development of new policies and processes at a systemic level. The new paradigm should be based on a multidisciplinary and emancipatory ap-

proach, in which social issues are tackled by collaborating with all the stakeholders. In this respect, when used appropriately, science and technology may anticipate social uncertainties.

At the same time, forceful transformations and new inclusive innovations can only be achieved and disseminated by means of an adequate comprehension of the present-day dynamics. We should address these enduring problems, such as environmental degradation, social injustice and incessant quest for the production of short-term monetary income and return, with a new alternative plan. Integration and interpretation of these dynamics are key to figure out reality and find efficient responses.

Because of the even more crumbled and unequal world, these propositions could be actualised only through a scrutinised analysis of the causes of the problem. There are deep-rooted problems that cannot be solved simply by considering how and what is the case of. We should investigate the why these problems even occur. They must be solved by adopting a critical theory technique, and no longer a problem solving approach. The latter accepts the fact as it has been presented and only tries to fix it. A problem solving attitude takes the world as it finds it. The result of this intervention would be a tenuous quick fix in the short-run. Critical theory, instead, is a broader intervention that stands apart from the prevailing order of the world. A critical look means rejecting the fact as it finds it and reviewing what the context factors that fire up this complication are. Critical theory allows an innovator to make a diagnosis of a problem and to figure out and interpret which the root causes of the problem are. We could also argue that critical theory is closer to social research, whereas the problem solving technique is suitable for management. Solving a problem and managing it are two opposite things. The difference is in understanding the real substance of a problem, in clarifying why things happen and in making sure that this situation does not happen again.

The needed foundations to start an in-depth journey into the world of social innovation and manage it properly have been laid. From a strict linguistic standpoint, to its intrinsic economic and social nature, with a brief historical and theoretical excursus, the concept of innovation has been presented along with the future challenges our society is about to cope with. All these presuppositions made in this first chapter will come in handy in the following pages in which the reader will explore the significance of social innovation.

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