Entrepreneurial Ecosystem and Sustainability as catalysts for Regional Development: proposition of a theoretical framework

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Abstract

The demands for a development model that considers the social, environmental and economic dimensions has become increasingly imperative, either by society at large or by the oversight and regulatory agencies. Therefore, the precepts of sustainable development have been gaining space in political agendas and civil debates. We propose here that this model of development, especially that linked to strong sustainability, would be ideal. Hence, the aim of this paper is to propose a theoretical framework that assumes that sustainable regional development can be reached from the articulation between the foment to entrepreneurship and the precepts of sustainability. Based on literature review, we formulate a theoretical model that combines sustainable regional development with entrepreneurship and sustainability; we also consider the entrepreneurial ecosystem as a catalyst for regional entrepreneurial activity and sustainable entrepreneurship as a type of business conducive to a more equal income generation, improvement of social structure and environmental preservation.

Keywords: Sustainable development, entrepreneurship, entrepreneurial ecosystem, sustainable entrepreneurship, sustainability.

1. Introduction

A number of studies show that entrepreneurship plays a key role in the development of a region (Audretsch, 2003; Kuratko, Morris & Schindehutte, 2015; Müller, 2016), both for their potential to create new employment and raise per capita income, as well as to enable the dissemination of an entrepreneurial culture (Szerb, Ács, Komlósi & Ortega-Argilés, 2015). Thus, the concentration in a given area of a relatively high number of entrepreneurs, development and research institutions (public or private) would enable higher rates of entrepreneurship and regional development (Morris, Neumeyer & Kuratko, 2015). In this context, the creation of a new type of local productive arrangement – democratic, by encouraging all types of new companies, not only technology-based firms seeking aggressive growth; and dynamic, as it is a system permanently open to new entrants – has been gaining greater prominence among practitioners and researchers: the **entrepreneurial ecosystem** (Stam, 2015).

However, one-dimensional models of development – i.e. those that only contemplate the economic aspect – have been increasingly outdated and inefficient, and their ‘serious limitations’ (p.9) should be considered (Brundtland, 2012). The exclusion of the social and environmental dimensions from development indicators was a relatively untreated subject

until the 1960s, when growing environmental problems and social injustices became increasingly flagrant around the world (Lu, 1996; Bandarage, 2013). What was seen, then, was the rise of the debate on the concept of 'sustainable development', a term formally coined in 1972 on the first United Nations Conference on the Human Environment held in Stockholm (Bolis, Morioka & Sznelwar, 2014). This terminology drew attention to the need to consider social and environmental issues when talking about development (Hopwood, Mellor & O'Brien, 2005).

Since then, the term has been widely debated and appropriated by different social groups: Bolis et al. (2014) point out that this dissemination of the concept allowed to arise different, and often divergent, definitions of what was sustainable development. Among them, two are highlighted: the **strong** and **weak** approaches to sustainability (Lu, 1996).

Acknowledging the bigger transformative potential of the strong sustainable development (Hopwood et al., 2005; Bandarage, 2013), we consider here strong sustainable entrepreneurship (Stål & Bonnedahl, 2016) as being the preferred to be encouraged within an entrepreneurial ecosystem (Morris et al., 2015, Malecki, 2018). This type of entrepreneurship would effectively serve as a lever for regional development by locally promoting the dissemination of a comprehensive entrepreneurial culture (Szerb et al., 2015), with real potential for transforming the socio-economic situation of a region while preserving its natural resources.

Thus, the objective of this paper is to propose a theoretical framework that contemplates a model of **regional development** that is, mutually, **sustainable** – therefore, mediated by sustainability – and vigorous, as it promotes the restructuring of its socio-economic context via a more democratic insertion of its local population in the productive cycle – thus, being also mediated by **entrepreneurship**. As supplementary constructs, but of fundamental value to our theoretical proposition, we add the **entrepreneurial ecosystem**, based on its capacity to fulfil the potential of entrepreneurship for regional development; and **sustainable entrepreneurship** as a preferable approach to the creation of new firms as it is aligned with the assumptions of sustainable development.

In addition to this introduction, the paper is structured as it follows: in topic 2, we present the literature review that supported the elaboration of the theoretical model. In topic 3, we present the proposition of the theoretical model and its discussion composes topic 4. Finally, in topic 5, we present the final considerations with the contributions of the theoretical model for future research.

2. Literature Review

In this section, we present a review of the literature relevant to the debates regarding the relationship between development and sustainability – hence, sustainable development; the contribution of entrepreneurship to the development of a region, highlighting the role of the entrepreneurial ecosystem as a local productive arrangement; and, finally, the possibilities of sustainable entrepreneurship within this context.

2.1 Development

The models of development that have dominated the mainstream of the economic thought since the twentieth century are those derived from classical and neoclassical economic theories (Bolis et al., 2014). They deal, mostly, with issues related exclusively to economic growth (Lu, 1996; Brundtland, 2012; Bolis et al., 2014). According to this approach, the increase of productivity – and the subsequent growth of the economy – would be the key element in achieving the well-being of mankind (Hopwood et al., 2005). Therefore, it is necessary to clarify that we consider development as a multidimensional concept, which involves more than just economic criteria to validate it.

2.1.1 Sustainable Development

The lack of consideration for the environment in the mainstream development models has led to ecological problems that have accumulated over the decades and have gradually gained repercussions since the 1960s (Lu, 1996; Bandarage, 2013). In other words, those widely diffused development models have been, since the twentieth century, segregating economic and environmental issues without showing interest in recognising the necessity to integrate both dimensions (Lu, 1996; Brundtland, 2012).

Hopwood et al. (2005) indicate that the concept of sustainable development derives from the awareness of the existence of global links between growing **environmental** problems and **social** and **economic** issues related to poverty and inequality, generating concerns about a healthy future for humanity. The articulation of these three dimensions (economic, social and environmental) in a development model characterizes the fundamental tripod that structures the concept of sustainable development (Bandarage, 2013). Thus, the main argument that serves as a foundation for sustainable development is that economic growth at the expense of "...uncontrolled depletion of natural resources is, by definition, not sustainable" (Lu, 1996, p. 3).

Since the 1980s, theoretical discussions about sustainable development have advanced, triggering the emergence of different lines of thought that addressed the interrelationships between the elements that make up the basic tripod of sustainable development (Hopwood et al., 2005; Bolis et al., 2014). These different approaches are based, for example, on a polarized relationship between an anthropocentric or biocentric conception of sustainable development (Lu, 1996); or by a relationship that combines beliefs about the ways in which environmental problems can be mitigated or solved (more technocentric or ecocentric solutions) with an active interest in reducing or maintaining social inequalities (Hopwood et al., 2005).

A model proposed by Lu (1996) categorizes four approaches to sustainable development, in a spectrum that goes from a more anthropocentric to a more biocentric view, based on the discussions that arose since the decades of 1970/80. The **anthropocentric** position holds that mankind is in a superior position in relation to nature and therefore has the right to subjugate it. This type of idea has contributed to a scientific-rationalist conception of the world in which the human and natural spheres are separated (Lu, 1996) and that served as a basis for the developmental formulations praised by the classical and neoclassical schools of economics (Stål & Bonnedahl, 2016).

The **biocentric** vision began to gain space in the 1960s/70s, questioning the primacy of anthropocentric conceptions of the world and arguing that humans and nature should be perceived in a more integrated manner; the idea of superiority and the right to subjugate nature would thus represent future threats to the preservation, ultimately, of the human species itself (Lu, 1996). This view, although not dominant, gained enough strength – especially in the 1980s and 1990s – as it began to "dilute" dominant anthropocentric conceptions and increasingly inserted the environmental concerns in the mainstream-based development models (Lu, 1996).

Thus, the model proposed by Lu (1996) would be comparable to a ladder, where at the top would be what the author called the "ecological approach" – within the spectrum, the ideal biocentric conception of the world. At the bottom rung of this ladder, there would be the "treadmill approach", where environmental issues would be completely overlooked in the debates about development and economic growth – a purely anthropocentric approach. Between these two extremes, closer to the biocentric current, and on a second step of the metaphorical ladder proposed by Lu (1996), would be the approach of "strong sustainable development"; in the third step and closer to the anthropocentric conceptions, would be the "weak sustainable development" approach. These approaches would not be mutually exclusive, but rather represent a spectrum of schools of thought that overlap in one or more aspects.

Because they present no environmental concern and virtually no commitment to reduce socio-economic inequality, we could consider that those actors identified with the "treadmill approach" would effectively find themselves outside the debate on sustainable development (Hopwood et al., 2005). On the other hand, Lu (1996) considers the "ecological approach" utopian, which would also alienate it from much of the debate. Thus, in this paper, our focus will be the **strong** and **weak sustainable development**.

Members of the strong sustainable development approach argue that economic development is not a precondition for environmental protection, but rather the opposite: environmental preservation would be an inexorable condition for economic development (Lu, 1996). In this approach, economic and public policies should focus on ways of guaranteeing the maintenance of the productive capacity of certain unique-value environmental assets that are, therefore, priority in the preservation order (e.g. tropical forests) or that can be improved or recovered (e.g. degraded soils). The achievement of these objectives would involve market regulation and, to some extent, state intervention; on the other hand, it would call for the involvement and participation of local communities in order to develop local economies that make sustainable use of the surrounding environment (Lu, 1996).

The strong concept of sustainable development recognizes that there are certain natural resources that are unique, finite, and in no way likely to be reproduced by mankind ingenuity and technological development: the ozone layer, photosynthesis and the water cycle are examples (Hopwood et al., 2005). This position derives from the school of ecological economics, which would oppose the precepts of the orthodox schools of economics (Bolis et al., 2014; Stål & Bonnedahl, 2016).

The main points considered by this economic school would be: the need for sustainable management of the flow of resources through equitable distribution and efficient allocation (without exceeding the ability of natural systems to metabolise discards/wastes); valuation of ecological aspects such as biodiversity conservation and maintenance of eco-evolutionary dynamics; considering the carrying capacity – the maximum population size that the environment can sustain (Hui, 2006) – of the Earth in relation to the human population; the need to measure the welfare and wealth of our society more fully and comprehensively; and, finally, the impossibility of making trade-offs between human and natural capital (Bolis et al., 2014).

The third step would be "weak sustainable development", whose focus is to integrate classical conceptions of economic growth with environmental concerns. For those in favour of this approach (i.e. the "school of environmental economics"), the neoclassical principles of economics could be applied to the solution of environmental problems, keeping economic growth as the main focus (Lu, 1996). Hopwood et al. (2005) and Bolis et al. (2014) point out that, within this weak vision of sustainable development, natural and manufactured capital are perceived as interchangeable, since technology would be able to fill any potential man-made gap in the natural world, such as resources scarcity. Environmental economists considers the environment as part of the economic system, since human well-being depends on good ecological conditions; however, environmental resources are seen in this model only as commodities and therefore can be priced (Bolis et al., 2014; Stål & Bonnedahl, 2016).

The main criticism of this conception of sustainable development lies precisely in the highly ethnocentric methods with which natural resources are approached, valuing the environment only in regard of their monetary value, while neglecting any potential cultural dimension (Lu, 1996). Hence, environmental problems would be reduced to mere managerial issues: from this point of view, difficulties could be overcome in a straightforward way, without the need to promote deeper and more radical changes in political and economic systems (Lu, 1996, Hopwood et al., 2005).

We consider that the most promising way to promote effective and lasting changes in the structure of society is through the integration of economic, social and environmental dimensions; thus, through a **strong sustainable development** (Bandarage, 2013; Bolis et al., 2014; Stål & Bonnedahl, 2016). In this integrated conception between human and natural systems, the components of economics – technology, property relations, market, finance – should be redesigned to serve the needs of environmental sustainability and human well-being (Bandarage, 2013).

The importance of local and regional dimensions to sustainable development (Lu, 1996) leads us to the next discussion in this paper: the relationship between development and entrepreneurship; more than that, it gives us the possibility to discuss which kind of entrepreneurship would be more adequate and capable of producing positive results in a broader context.

2.2 Entrepreneurship

2.2.1 The contribution of entrepreneurship to regional development

Entrepreneurship is the result of the interaction between individual attributes and the surrounding environment, the structural context in which the individual is inserted--what Müller and Korsgaard (2017) call the "spatial context of entrepreneurship". This 'spatial context' of entrepreneurship puts it as a phenomenon encased in individuality, but inexorably inserted in local and regional aspects. This is what, according to Audretsch (2003), makes entrepreneurship a complex and multifaceted phenomenon.

More specific and structured studies on the relationship between entrepreneurship and local/regional development--valuing their respective contextual factors – began to appear in greater volume from the 1980s onwards (Fritsch & Storey, 2014; Müller, 2016). For Kuratko et al. (2015), entrepreneurship represents the most important source of economic growth in several countries, since the impact of entrepreneurship can be felt in all sectors and at all levels of society. For Szerb et al. (2015), the multidimensional interpretation of development (contemplating the social and environmental spheres) would favour the recognition of the benefits brought by entrepreneurship, a phenomenon capable of disseminating changes in the regional context beyond the creation of new jobs or the increase in GDP, for example, penetrating also social and cultural structures. This broader idea of development allows capturing the **quality** of the entrepreneurial activity, such as the promotion of creativity and innovation, the generation of knowledge, the diffusion of technology, the creation of added value or even the diffusion of a local entrepreneurial culture that would multiply the effects of the entrepreneurial activity (Szerb et al., 2015). Kotey (2006) considers that the region is the most important context for understanding the potential of entrepreneurship.

Morris et al. (2015) argue, however, that analysing the benefits of entrepreneurship for regional development should not only take into account technological start-ups as catalysts for economic growth. According to the authors, all types of new ventures must be considered if the long-term welfare of a region is sought. New firms, from all sectors and different growth rates, contribute to the levels of competition in the economy, create value for consumers, employ people, pay taxes, and ultimately contribute to the reduction of socio-economic inequality (Thurik & Wennekers, 2004). Lyons (2015) adds that the general focus given to these technology-based start-ups with high growth rates may have been excessive, which could contribute to the discouragement of potential new entrepreneurs that would be interested in entering different market niches.

According to Lyons (2015), the promotion of entrepreneurship with the aim of developing a region must then be approached in a "strategic, systemic and systematic" (p. 458) way: the regional context must be considered, its local stakeholders and the relationships and connections that are established between them. Thus, Morris et al. (2015) propose a typology of four types of firms that would serve as drivers of entrepreneurial activity and should coexist in a region if it is to develop adequately: **survival ventures**, firms dedicated to the subsistence of the entrepreneur and his/her family; **lifestyle ventures**, companies with some formal structure, hired employees, and capable of providing the entrepreneur with a steady stream of income; **managed-growth companies**, those that seek structured growth, entering

new markets periodically; and **high-growth ventures**, high-tech companies with strong innovative capacity, seeking aggressive growth. For the authors, each of these types of companies would have a fundamental and specific role to play in the economic landscape of a region, interacting with each other in an organic and correlational way (Morris et al., 2015).

This kind of systemic vision of entrepreneurship, highlighting the interconnections between stakeholders and structures of a region, allows us to understand how complex is the process that will ultimately culminate in local development: entrepreneurship is affected and, at the same time, affects the local context (from) where it develops, in a recursive dynamic (Müller, 2016). This means that the regional spatial context (*R*) conditions, to some extent, the progress of entrepreneurship (*E*) in that locality, which will affect the regional development (*RD*) indicators; this will ultimately contribute to modelling the spatial context of this region (*R*) (Müller, 2016; Müller & Korsgaard, 2017). For Müller (2016), the understanding of this recursive mechanics ($R \rightarrow E \rightarrow RD \rightarrow R...$) would be the most complete way to understand how regional aspects and entrepreneurship combine to leverage development – but at the same time the biggest gap in the research that deals with the relations between regional aspects, entrepreneurship and development.

The comprehension that local factors are fundamental in the different levels of regional entrepreneurship and that the intensity and quality of the entrepreneurial activity is capable of bringing social and economic benefits to a region, operating in a recursive mechanics (Müller, 2016), is at the heart of the question we seek to address. Furthermore, the interest of Morris et al. (2015) in a systemic view of the relationship between entrepreneurship and regional development, emphasizing the roles of the different local stakeholders that act in the creation and exploitation of an entrepreneurial environment, are the basis of our next discussion: the **entrepreneurial ecosystem**.

2.2.1.1 Entrepreneurial Ecosystem (EE)

Alvedalen and Boschma (2017) carried out a bibliometric survey in Business publications, covering the years between 1886-2016 and found 392 publications related to the term entrepreneurial ecosystem (EE). The first occurrence appeared only in 1999, meaning all the researches on this field was produced in just 17 years. Nevertheless, it was only in 2011 that the term came to appear more frequently in publications.

The definitions of EE are diffuse, since they are constructed by researchers from different fields of knowledge (Business, Economy, Economic Geography...), each with its own methods and epistemological approaches (Stam, 2015; Brown & Mason, 2017).

For Brown and Mason (2017), a territory conceived in the form of an ecosystem would give the participating stakeholders an effective way to unite resources with the purpose of generating economic wealth and prosperity at the regional level. Thus, EEs can be considered catalysts for economic progress in countries with a stable economy and a driving force for the development of economies in crisis or transition (Boutillier, Carré and Levratto, 2016).

Both Brown and Mason (2017) and Alvedalen and Boschma (2017) point out that the most complete and hitherto widely accepted definition “entrepreneurial ecosystem” is the one given

by Mason and Brown (2014):

> A set of interconnected entrepreneurial actors (both potential and existing), entrepreneurial organisations (e.g. firms, venture capitalists, business angels, banks), institutions (universities, public sector agencies, financial bodies) and entrepreneurial processes (e.g. the business birth rate, numbers of high growth firms, levels of 'blockbuster entrepreneurship', number of serial entrepreneurs, degree of sell-out mentality within firms and levels of entrepreneurial ambition) which formally and informally coalesce to connect, mediate and govern the performance within the local entrepreneurial environment (p. 5).

This definition of EE emphasizes the systemic correlation between individuals, organisations and institutions (Alvedalen & Boschma, 2017) and anchors such relationships in a spatial context, with geographic boundaries established to some extent (Brown & Mason, 2017). The focus of the entrepreneurial ecosystem still remains the external business environment, but what differentiates it from other approaches that consider spatial concentration or geographic proximity as important variables for the creation of companies (e.g. clusters, industrial districts or national innovation systems) is that in the EE, the entrepreneur, at the individual level, plays a central role in the construction and survival of the ecosystem (Stam, 2015). In other words, in the EE the role of the individual is taken into account while the importance of the entrepreneurial context that surrounds him is also emphasised (Stam, 2015), taking into account the local infrastructure and recognising that the construction of successful entrepreneurial regions "...is not simply a function of firm-specific attributes, but is mediated by the wider context within which ventures operate" (Brown & Mason, 2017, p.13).

According to Morris et al. (2015), one of the cornerstones that support the systemic conception of entrepreneurship – where firms of different sizes, backgrounds and rhythms of growth coexist and correlate – as a condition for the development of a region is the existence of an entrepreneurial ecosystem. The crux of this argument is based on the premise that high-growth (HG) ventures will only develop in an environment where non-HG firms are also able to thrive.

Thus, the four typologies of companies identified by Morris et al. (2015) would compose a good sample of the types of firm that could be found – and would enrich – an EE; Brown and Mason (2017) endorse the idea that is a "myth" (p.15) that entrepreneurial ecosystems are formed predominantly by start-ups. Malecki (2018) even raises the question whether ecosystems composed mainly of high-growth companies would not conform only a sort of 'sub-ecosystem' in a more comprehensive EE, also populated by "ordinary firms" (p. 14).

As it was shown in this sub-topic, the importance (and strength) of adopting the approach of entrepreneurial ecosystems involves the understanding that both the structure that shapes the regional context and the individual capacity for action can – and should – be analysed together (Stam, 2015; Alvedalen & Boschma, 2017; Brown & Mason, 2017). Admitting this possibility allows us to understand the complexity of the dynamics that involve entrepreneurial activity in its most varied contexts, rendering it possible to establish cause/effect relationships that sustain and shed light on the recursive interaction between regional context, entrepreneurship and development (Morris et al., 2015; Müller, 2016).

Moreover, the desirable variety of business types present in an entrepreneurial ecosystem (Morris et al., 2015, Brown & Mason, 2017; Malecki, 2018) opens the possibility for us to talk about entrepreneurs who act sustainably, often even beyond the traditional market limits, prioritising companies with environmental and social ends, and considering profit only as a means to achieve such objectives (Parrish, 2008; Stål & Bonnedahl, 2016).

2.2.2 Sustainable Entrepreneurship

According to Gast, Gundolf and Cesinger (2017), the field of sustainable entrepreneurship is relatively new within Business, being a sub-branch of the broader field of entrepreneurship and still in theoretical consolidation, presenting a serious need for a better definition of its core concepts. The authors indicate that 114 papers were published about sustainable entrepreneurship between 1996 (first publication) and 2016.

Muñoz and Cohen (2017) consider sustainable entrepreneurship as one of the most vibrant sub-domains of entrepreneurship studies in the last decade, precisely because it recognizes – and values – the importance of entrepreneurial solutions to social and environmental problems. The fundamental idea behind sustainable entrepreneurship is that the activities developed by entrepreneurs in pursuit of opportunities should not debilitate the ecological and social environments in which they operate (Shepherd & Patzelt, 2011); sustainable entrepreneurs should seek to restore the balance between nature, society and economic activity, in conformity with the integration between human and natural systems, as discussed by Bandarage (2013). For Muñoz and Cohen (2017), sustainable entrepreneurship has the potential to create radical changes in the relationships between socio-economic and natural dimensions.

For Shepherd and Patzelt (2011), sustainable entrepreneurship would be of particular importance because it allows the creation of commercially viable enterprises which, concomitantly, would contribute to environmental protection and social justice. By using their companies as vehicles to the improvement of environmental quality and social welfare levels, besides meeting their own interests, sustainable entrepreneurs can generate impacts on a broader scale, promoting structural changes in our society towards a more egalitarian and sustainable future (Parrish & Foxon, 2006).

Stål and Bonnedahl (2016) show that, due to the incipient nature of this sub-area, publications on sustainable entrepreneurship are not necessarily cohesive, and depart in essence from the mainstream positions of sustainable development: basically dealing with traditional business models that seek to incorporate a weak sustainable discourse based on the monetisation and pricing of natural resources (Stål and Bonnedahl, 2016), anchored in the precepts of environmental economy (Bolis et al., 2014).

Within this perspective, sustainable entrepreneurship would address social and environmental problems using solutions that operate within the market failures inherent to the economic system and which would, thus, serve as opportunities for new business. Therefore, environmental and social problems would be considered only as a consequence of the entrepreneurial activity, which would be, initially, concentrated in the economic sphere as

being both the means and end of a business (Parrish, 2008; Muñoz & Cohen, 2017). This understanding of entrepreneurial opportunity would, according to Stål and Bonnedahl (2016), make entrepreneurs overly dependent on market mechanisms. For Stål and Bonnedahl (2016), this weak perspective of sustainable development, and hence the weak sustainable entrepreneurship, has been "...slow or even inappropriate to address the pressing [environmental] issues [...] and satisfaction of basic human needs" (p. 1).

According to Stål and Bonnedahl (2016), the type of sustainable entrepreneurship that could best contribute to overcoming socio-economic and environmental issues would be based on a strong sustainable development, constructed over the premises of the ecological economy. For the authors, an approach that does not view the economic and social dimensions as being intrinsically linked to the environmental sphere would put the future of the planet under serious threat: environmental stress, collapse of ecosystems, and global warming are some of the issues that calls for the consideration of strong sustainable entrepreneurship (SSE). Thus, SSE would depend on entrepreneurs' ability to envisage new ways of defining value that, at least in part, would be separated from "market demands" (Stål & Bonnedahl, 2016); in such cases, value creation could be achieved, for example, using sustainable business models that operate beyond conventional markets (Parrish, 2008).

Stål and Bonnedahl (2016) argue that is fundamental, if sustainable development is to reach its full potential, to assume that human and natural systems are integrated, implying that the economy could not work without the resources provided by the biosphere and that economic activities leave, inevitably, imprints on natural resources. SSE would then emerge as a "creative problem-solver" (p. 10), making it possible to conserve and improve the conditions of the available critical natural capital, and thus be effectively aligned with the objectives of development beyond the economic interest of serving the demands of the market (Stål & Bonnedahl, 2016).

Finally, sustainable entrepreneurship is a promising field with the potential to recognise and analyse both the systemic interactions between socio-economic and environmental spheres and the relevance of regional contexts (in their social, economic and natural dimensions) as facilitators or barriers to entrepreneurship actions concerned with sustainability. Moreover, the concept of sustainable entrepreneurship allows to encompass and bring to the discussion a broader perspective of the idea of value creation, capable of recognising ecological, social and economic systems where sustainable entrepreneurs are embedded and operate (Muñoz & Cohen, 2017).

3. Proposed Theoretical Framework

3.1 Dependent variable: (Sustainable) Regional Development

We start from the basic premise that the mainstream development model – based on the precepts of classical / neoclassical economic schools – focuses merely on economic metrics and does not contemplate other primordial dimensions to achieve well-being, namely: environmental and social (Lu, 1996; Hopwood et al., 2005; Bandarage, 2013). In other words, we consider here that the development model more aligned with the global context of the 21st

century, when ecological degradation and social inequalities are mounting, should present a sustainable character. Thus, we formulate that:

- **P1: Regional development, in the 21st century, needs to be sustainable.**

Additionally, we consider that the attribute that exerts the greatest transforming power on the socio-economic and environmental scenario is the **strong** sustainable development (Hopwood et al., 2005, Bandarage, 2013, Stål & Bonnedahl, 2016). Based on this position, we posit that:

- **P1a: Strong sustainability contemplates in a more balanced/egalitarian way the economic, social and environmental dimensions.**

3.2 Independent variables: Entrepreneurship and Sustainability

Entrepreneurship. Based on the literature review presented in this paper, it was possible to verify that the entrepreneur's role in regional development has been considered of impressive relevance and has been receiving systematic attention since the 1980s (Fritsch & Storey, 2014, Müller, 2016). Thus:

- **P2: Entrepreneurship is an important lever for regional development.**

Accepting this premise, and supported by the literature, we can say that the conformation of entrepreneurial ecosystems can be of fundamental value in mobilising local stakeholders and fostering entrepreneurial activity with sufficient robustness to have an impact at the local/regional level (Szerb et al., 2015; Morris et al., 2015; Müller, 2016; Alvedalen & Boschma, 2017; Brown & Mason, 2017). It is worth mentioning that this virtue of the entrepreneurial ecosystem is based on the recognition that companies of all types benefit from this kind of arrangement and can, therefore, contribute systematically to the development of a region (Morris et al., 2015; Brown & Mason, 2017; Malecki, 2018). Consequently:

- **P2a: Entrepreneurial Ecosystem would have a prominent and strategic role in fulfilling the potential of entrepreneurship as a lever for regional development.**

Sustainability. The precepts of sustainability contribute to mediate the dependent variable (regional development): with attention to social and environmental indexes, including qualitative ones, **sustainable** development will be achieved. Within this scope, and considering the strength of entrepreneurship to foster development, we believe that the most appropriate kind of entrepreneurship would be **sustainable entrepreneurship** (Parrish & Foxon, 2006; Muñoz & Cohen, 2017). Thus:

- **P3: To better comply with the precepts of sustainable development, the most appropriate type of entrepreneurship is, therefore, sustainable entrepreneurship.**

Admitting that sustainable entrepreneurship is the one that better complies with the sustainable development guidelines, we highlight the importance of the precepts of **strong** sustainability in the strategic planning of new ventures (Parrish, 2008; Stål & Bonnedahl, 2016); this could be especially interesting to promote a deeper structural change in the social and environmental dimensions of a region. Therefore, we propose that:

- **P3a: Strong sustainable entrepreneurship holds the greatest ability to**

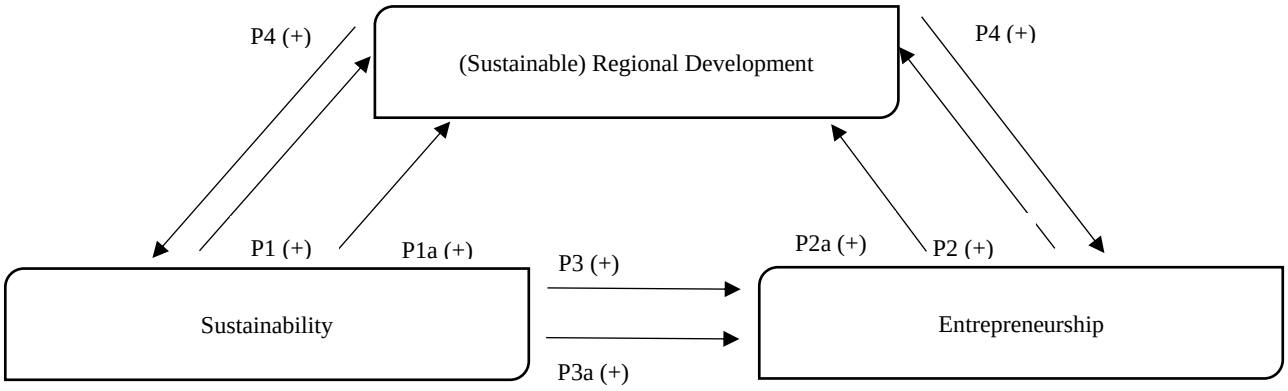
contemplate in a balanced/egalitarian manner the economic, social and environmental dimensions.

Recursive mechanics. Following Müller (2016), the understanding of the relationships between entrepreneurship (including sustainable entrepreneurship) and regional development (incorporating sustainability precepts) is only complete when contemplated in a recursive mechanics: $R \rightarrow E \rightarrow RD \rightarrow R...$, where *R* represents the regional context; *E* represents the levels of entrepreneurship; and *RD* represents regional development. That is, the spatial context conditions, to some extent, the levels of entrepreneurship in a region, which, in turn, will affect the levels of regional development. In a recursive mechanics, the levels of regional development will contribute to shaping the socio-economic and natural context of a region, which will affect entrepreneurship and so on. Therefore:

- **P4: The relationship between the socio-economic and natural aspects of a region, its levels of entrepreneurship and regional development occurs under a recursive mechanics.**

Thus, the theoretical model presented (Figure 1) displays the relationships proposed above:

Figure 1: Theoretical framework of the research



Source: elaborated by the authors

4. Discussion

The demand for greater attention to environmental issues in economic debates gained momentum especially since the end of the twentieth century (Lu, 1996; Hopwood et al., 2005). There has also been a growing understanding that regional levels are determinant and strategic for the development of the global economy while considering the preservation of local natural ecosystems and traditional communities: Hopwood et al. (2005) consider that small and local is more sustainable than large and global; for Bandarage (2013), sustainable development would allow the insertion of the local and regional levels, via entrepreneurship, in the route of global economy. The search, then, is for a more sustainable and socially responsible globalisation that allows a fairer relationship between the global and local levels of economic activity. Stål and Bonnedahl (2016) consider that a strong sustainable entrepreneurship has a fundamental role to play both in the socio-economic (regional development) and in the environmental front (ecological preservation), integrating the two perspectives. The attention

to natural resources may even be a differential for the entrepreneurs' business, serving as a potential competitive advantage (Muñoz & Cohen, 2017).

Entrepreneurial activity is particularly important in this context, since it has been a driving force for regional economic and social development (Audretsch, 2003; Kuratko et al., 2015), both in more developed regions and in the so-called "peripheries" (Boutillier et al., 2016), because of their capacity to create jobs and disseminate a certain "local entrepreneurial culture" (Szerb et al., 2015). The strength of entrepreneurship in articulating regional and global levels, promoting a regional development that contemplates the improvement of the living conditions of a population in a given territory, comes precisely from the entrepreneur's ability to uniquely combine resources available in a region and to generate profitable activities that ultimately have their dividends (re)invested locally (Müller, 2016). The creation of entrepreneurial ecosystems can serve to leverage entrepreneurship as a catalyst for development by proposing the mobilisation of the local stakeholders in joint efforts to establish an environment conducive to the growth of the entrepreneurial activity of a region (Brown & Mason, 2017).

It was precisely this relationship between development, entrepreneurship and sustainability that we proposed to articulate in the theoretical framework presented. The aim of the model is to explain how sustainable development can be achieved, improving the quality of life at large, by articulating the (strong) sustainability precepts with the increase of entrepreneurial activity in a region. Entrepreneurship would enable greater involvement of the local population in the global economic cycle; moreover, in being sustainable, entrepreneurship would enable greater attention to the need for environmental preservation, allowing new eco-based businesses and serving as an instrument of environmental education for the population. Additionally, the inherent recursive mechanics between regional context, entrepreneurship and development would guarantee the evolution of the territorial dynamics of a given region (Müller, 2016; Müller & Korsgaard, 2017).

5. Conclusions

The objective of this paper was to propose a theoretical framework in which sustainable regional development is the dependent variable, mediated by entrepreneurship and sustainability as independent variables. Our main goal was to show how entrepreneurship is increasingly responsible for improving general living conditions in a region (Szerb et al., 2015, Morris et al., 2015, Müller, 2016); proof of this is the dissemination of the concept, among practitioners and policy makers, of entrepreneurial ecosystem – a kind of dynamic and ever-evolving productive arrangement, constantly open to new entrants (Malecki, 2018), involving different local stakeholders (Mason & Brown, 2014, Boutillier et al., 2016) – in order to promote the creation of new companies, whether they are high-growth, moderate-growth, lifestyle or survival ventures (Morris et al., 2015).

However, in order to promote sustainable development, sustainability precepts should be taken into account (Lu, 1996; Hopwood et al., 2005; Bandarage, 2013), even when talking about entrepreneurship (Bandarage, 2013); we have emphasised a greater need to take sustainable entrepreneurship into account, a niche with great potential to be explored (Muñoz

& Cohen, 2017; Gast et al., 2017); we believe that the strong sustainable entrepreneurship approach holds the greatest capacity to bring deeper and lasting changes to the socio-economic and natural structure of a region (Stål & Bonnedahl, 2016).

Considering the literature review conduced, as well as the theoretical model proposed, we believe that this research can contribute to: (i) the progress of studies on sustainable regional development, especially that of a strong character; the research on sustainable entrepreneurship, a still incipient branch of entrepreneurship studies; and, finally, the studies on entrepreneurial ecosystem, another concept still in incipient phase and that lacks theoretical maturation; and (ii) serve as a theoretical basis for researchers seeking to undertake empirical studies involving the relationship between development, sustainability and entrepreneurship, since it contemplates a link between factors that has not yet been fully realised in theoretical terms.

One limitation of this theoretical framework that can be addressed in future research is the clarification and discussion of potential indicators to guide and measure the constructs involved in this model, namely **sustainable regional development**, **entrepreneurship** and **sustainability**. This would facilitate the application of the model, since it would establish in a clear and objective way what kinds of data would be related to each one of the indicators, aiding their collection and analysis procedures by the researchers that eventually become interested in the framework.

Thus, we believe that the model presented here may be useful for future research that focuses on the results of sustainable entrepreneurship for the effectiveness of achieving a more egalitarian regional development, attentive to social, environmental and economic issues. In this sense, this framework can be useful for public managers, research institutions, investors and entrepreneurs who envisage the potential to act locally in a sustainable way; that is, any stakeholder who might be involved in an entrepreneurial ecosystem.

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