

Innovacities

Impact of regional
innovation systems
on the competitive
strategies of cities

Carlos Scheel M.
Leonardo Pineda S.

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ON THE COMPETITIVE STRATEGIES OF CITIES

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Scheel Mayenberger, Carlos

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Carlos Scheel M.
Leonardo Pineda S.

With cases from:

Barcelona (Spain), by Josep Piqué
Medellin (Colombia), by Leonardo Pineda Serna
Monterrey (Mexico), by Jaime Parada
Bogota (Colombia), by María Andrea Contreras

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Carlos Scheel Mayenberger and Leonardo Pineda,
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*For whom we innovate with the principles
of our parents and the illusions of our children.*

PREFACE

The term innovation has been a concept excessively manipulated by government leaders, important businessmen, academicians, consultants and journalists, trying to sell a motive to those who want or need a change, whether they are accustomed to buying products in an exaggerated way with no other purpose than supporting consumer habits, or to those who practically do not need them.

Innovations are made in programs to gain votes in pre-electoral campaigns, to launch an important managerial strategy in search of alliances with powerful competitors, or procedures are innovated to introduce new products to new markets.

We have observed in innumerable cases of world stature that innovation is prompted by the desire to enter and remain in economies of marked consumer capitalism, and in all these cases it has been noted that if the entrepreneurs, companies, cities, regions or countries are not ready to promote and support innovation in a socially inclusive and democratic fashion, these efforts are useless and only superficial changes, not administered to democratize in any true depth, are achieved.

From these reflections several questions arise:

- If it is not innovation for truly innovating, at what is the aim behind it?
- What are the real consequences of this action?
- Is it necessary to innovate and to break with the traditional structures?

- How does a typical region transform by innovating without dying in the attempt?

In this book we investigate certain cities that broke with the paradigm of moderate growth and have turned into world-class players. For this reason the research was designed and applied using the *Innovacities* (innovative cities) methodology, which tries to determine from a systemic point of view the inhibitors and the drivers that change the course of the economic, political, social, technological and ecological development of cities.

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INTRODUCTION

Prosperity not only grows depending on creative spaces, economic units, infrastructure, communication roads or mobility; it grows principally from the capacity that a city has to accept new ideas, people from other places, create new spaces of intercultural and diverse ideas, and to innovate together with tolerance, talent and technology inclusively.

(Adapted from Florida and Gates, 2003)

In the last two decades it has been observed how some cities in the world have evolved transcendently. From being barely visible in the world indicators, they have managed to turn into highly attractive places to live, places where very favorable climates of business exist and where the synergies between economic growth, social development and environmental protection develop in a harmonious manner. In addition, these cities are recognized for their spectacular cultural and sport events because of their entrepreneurial environment, not only in technology companies, but also through a broad development of social entrepreneurships. They are cities that formed environments in which all the key elements are holistically articulated for the good of all their residents. As Leonardo da Vinci mentioned in one of his notes (adapted quote): "The systems are the constant flow of people, matter, energy and information, [...] the city is an 'open system' where materials, goods, food, water and residues need to be moved and to flow easily in order for the system to last and remain healthy."

Nevertheless, what happens when a current leader wants to turn a city/region into an attractive place of resources of high value? Successful cases can be observed; for example, Cambridge, Dublin, San Diego, Santiago of Chile, San Francisco, Lausanne, Foshan (China), Manchester, Boston, Quebec, Toulouse, Stuttgart or Munich, and the challenge has been to identify how they managed to be positioned as sites where there are established world-class players. Nevertheless, when attempts are made to transfer these cases, they mainly fail due to the fact that every zone is different. Each one has historical precedents, conditions, capacities and interconnections that, when articulated, generate results totally divergent from those that nowadays support the emblematic cities. We live in an increasingly complex world, with unprecedented geopolitical, energy and environmental conditions, and of current twenty-first century realities and contexts. The problem is that we continue with beliefs, structures and practices from the last century and, in many occasions, from nineteenth century.

There are neither short formulae nor strategies for rapid results. The complexity of cities/regions¹ cannot be managed with light handedly. Projects of change are usually initiated precisely by fleeting political decisions. In general, they begin with an economic activity that has been relatively successful in the country, leveraging certain companies of the productive sector, often favored; or based on some industrial, social, political and environmental conditions that have been used in the past to enable development of an activity in an ideal and competitive manner; or they are based on a traditional regional vocation, a copy of similar cases from other countries.

This has been the experience in innumerable attempts to support regions through their economic-industrial performance. Though these have been notably strained as result of following the standards of better organizational and administrative world practices,

¹ Region: an area, especially part of a country or the world, which has definite characteristics, but not always under fixed borders (*Oxford Dictionary*). An administrative area, division or district with a unit of government. A wide geographical area distinguished by similar characteristics (*Merriam Webster Dictionary*). In this study we consider a region as "a defined geographical area with a defined economic activity, under well-defined governance".

often their model of development is immersed in a macroeconomic environment of a country totally different from the emulated model's and this turns out to be hostile to the region's organizational structure, operations or even its own strategy of development for a city/region.

In today's world for cities/regions to manage to become world class according to some experts the key is to innovate, but to arrive to these level conditions, time and very special situations are needed. First, it is necessary to promote cities with suitable civil, industrial and regional conditions. Without these conditions, there is no equitable and competitive development for anybody. This is evident in emerging countries where commonly neither the elements nor the political or managerial will exist to take advantage of the impact of innovation on the economic and social development of these regions appropriately. Second, it is necessary to articulate all the players of the region in the same game, with known, precise and flexible rules so that the synergies among all of them develop in the most equitable and profitable way, since "insular actions are never beneficial for anybody."

If one wants to speak about innovation and its impact on holistic regional development, it is necessary to articulate innovation's complex dependence on the political structure, the ecological regulations, the social capital and the natural capital of the region where the implementation is desired.

Economic institutions and inclusive policies must be articulated simultaneously and harmoniously with the damaged models of the exclusive institutions. There must be a break with the paradigms of totalitarian and autocratic solutions, and employ a model which allows a win-win situation for all the members of the zones must be adopted.

If in all these initiatives there is not a policy of association followed by inclusive economic strategies, the less-developed regions continue to remain under a regime of extraction, under the curse of having excessive natural resources, such as oil, gas, coal and copper, among others. Nowadays there are notable cases; for example, what happened with Venezuela and its strong dependence

(more than 90% of its economy) on oil, which it exploits in the least-developed regions with a lack of administration and ethics of environmentally healthy public policies. As a result, on the one hand, there is an economic imbalance stimulating inequality and, on the other, an environmental impact of decline is produced for everyone (cf. Acemoglu and Robinson, 2012).

In general, these factors, that a few decades ago were totally unnoticed, now enormously influence managerial productivity and are crucial for regional competitiveness in industrialized countries. The same thing can be said about innovation as the key condition for regional development. It is not the same to create a bulb as to create a whole electrical system; or a plane, as a massive airport system and a country's air transport network. The innovation that was developed in the twentieth century with cheap energy and sufficient and abundant human and natural resources is not the same as innovating in the twenty-first century,² in a world with unstable geopolitics, in chaos, with expensive energy, with natural resources difficult to extract, with very vulnerable educational systems and enormous national debts, impossible to recover with the conventional financial tools. In addition, hovering above is the weight of large ecological footprints of water, air and land inherited from previous centuries.

Therefore, it is necessary to arrive at new ways of obtaining broad, equitable well-being. The response is a different kind of innovation, whose impact is a social and democratic phenomenon associated not only with the market which it affects, but also with the geopolitical and environmental conditions where it is generated.

The impact of innovation on a managerial economic activity depends on where it has been generated, proximity to its political (institutional), social and environmental system, on the democratization of the initiatives for development in the regional ecosystem (economic, social and environmental) and on the synergies among all the agents who coexist in the region.

² Cf. Heinberg (2011), where he proposes the creation of a new economy, to coexist with the economic and social practices of the twenty-first century.

This is the innovation of innovation. It is moving from the simple bulb to the system of electrification; or passing from the movement of the birds to the Bernoulli principle, which has allowed enormous machines to fly, and, from there, to the whole industrial system of airlifts. That is why the attempt has been made to find in every city the essential detonator that has served to leverage it in an extraordinary way towards assuming a current world-class positioning.

Here is our proposal for a change in strategic perspective, to refocus on the city/ region and transform it into an efficient *regional ecosystem of innovation*, articulated for the inclusive creation of durable sustainable wealth shared among the majority of the inhabitants.

This book is structured in five parts. The first explains why it is necessary to innovate in the structures of the regions. The second part presents the cities that were studied in detail and defines their preponderant characteristics. In the third part the key drivers these cities used to make the big leap are described. Later how these drivers can be used for turning a typical city of average growth into an innovacity with world-class standards is discussed in brief. Finally, four cases that we believe sufficiently emblematic to be reproduced in Latin America are presented.

PART ONE

**Why is it necessary to innovate?
What distinguishes the Innovacities?**

I. Why is it necessary to innovate around the structure of the regions?

The standard of living of a nation is constructed with small steps of globally competitive innovations.

C.W. Wessner (Director, Program on Technology, Innovation and Entrepreneurship, US National Academies)

The best way of evaluating the impact of the innovation is [...] through the wealth it generates for society.

Opting for innovation is not easy. A dilemma that in innumerable occasions arises for public policy decision makers, principally in emerging countries, is the following: why must a region (municipality, community) implement a costly, uncertain exercise of innovation with high risk of being politically incorrect while there are some other needs that have to be addressed to remain moderately stable, to satisfy the electoral terms or the historical political trends? On the other hand, there is the approach: why not make a leap towards world-class positions of high-performance breakthrough paradigms, towards opportunities that were never before presented, but filled with uncertainty and notable changes in the institutional structures? Is it worth the high investment in innovation and the risk that this leap entails?

In this dilemma some words of the notable George Kozmetsky (1986), academician and businessman, founder of the IC² Institute of the University of Texas at Austin, are worth considering. Leader and champion of large innovations expressed in the socio-economic and environmental development of the city of Austin, Kozmetsky said: *"The lessons learned from the utilization of technology in the past two (or more) decades are clear. Those who administer the technology (and the knowledge) creatively and innovatively obtain the benefits of sustainable economic growth. Also they will play a role of important leadership in what is related to the competence and cooperation leading to the solution of global challenges."*

The geo-economic and social situation of the world has forced notable changes on the typical ordering of the regions, already evident through the increasing migration towards the big cities that has been happening in recent decades. In a few years, more than the half of the world's population will be concentrated in medium and large urban nuclei, with serious consequences for all (cf. Jacobs, 2012). This number of consequences is striking: a) reduction in quality of life; b) financial instability and creation of high debts (impossible to recover by conventional means); c) frequent injustices of a weak and usually corrupt constitutional state; d) high rates of unemployment and high overcrowding; e) persistent poverty; f) a major labor inequality and of resources between poor and rich; g) reduction of the middle class (and of power of consumption); h) distressing ecological consequences caused by excessive growth; (i) global warming and all its implications in societies; (j) insecurity and social instability (migration impossible to control) and many others of equal importance.

We are facing, therefore, a new situation (cf. Romer, 2010), observable not only at the level of cities and urban areas, but also of national and international regions. The Club of Rome predicted 40 years ago: *"the scarcity of resources could cause a catastrophic decline in economic production and a dramatic increase in hunger of the population"*. This trend, however, has not been uniform. It was noted that some hyper-developed countries have generated wealth as never before in the history of mankind. Simultaneously, however, larger gaps of economic, social and environmental

inequality than have ever existed previously have been created. This terrible paradox has been caused largely by the development of exclusive and extractive policies and economies (cf. Acemoglu & Robinson, 2012) that have been in large part leveraged by technologies of extraction or exclusion, or others based on knowledge, which have been used disproportionately. In fact, the digital age has created an unfavorable gap of socio-economic development of high impact, mainly for several developing countries, creating, as well, situations that are not sustainable in the long term. In some countries they have even been the cause of chaotic and uncontrollable violence, insecurity and migration.

Faced with this challenge, which particularly affects emerging and underdeveloped countries, let us see now what can be drawn from the success stories of vibrant, attractive regions of talent and investment with a high degree of development. These stories show that progress has been focused on the effective and inclusive articulation of the four main axes of development, which are the dimensions of human, socio-political, environmental and economic scale (HSAE), forming *hyperspaces* that consider the synergies of these four dimensions in a systemic, simultaneous and harmonious manner. With these observations, we can consider a first premise:

Innovation has to be carried out because we have to create satisfiers for needs that have not yet been well identified and have been neglected, which implies breaking with the traditional paradigms of resource management. As someone said: "The problem of poverty and inequality in developing countries is not the lack of resources, but their poor administration".

To achieve this great leap, certainly to innovate is necessary, but it is indispensable to expand the approach in the way it is conceived and implemented. This is the great breakthrough of *innovation with a systemic approach*. Some cities or regions have managed to understand it, promote it and take advantage of it, with the result of a balanced development of the four subsystems (HSAE). If innovation is not carried out this way, any strategy or public policy ends up with a failed and unbalanced growth in the long term, and unfortunately we have innumerable cases of great political and economic investments that have not worked.

For example, a region can not make a great turnover in its political regime and leave the economy to be managed by markets that have been left without attention, or are unstable or decreasing, as happened in the Soviet Union under M. Gorbachev's *perestroika policy*. Or make only notable economic changes without exerting a political and social democracy that breaks up the exclusionary policies, as was the case with the creation of the North America Free Trade Agreement (NAFTA). Supported in Mexico by the strong political party of President Carlos Salinas de Gortari at the beginning of the 1990s, it started with good intentions on the part of the three signatories, but today, 20 years later, must be revised to be able to insert the eco-sociopolitical conditions that are completely different in the post-petroleum age of the twenty-first century. Or the case of North Korea, that after the war of the early 1950s established autocratic policies of exclusivity —only for the members of the communist politburo— and has continued with the dated militaristic ambitions that have sunk the progress of this people in a catastrophic hole.

Another example is the special case of the “Arab Spring” in 2012, strongly encouraged by networks and social media, that managed to mobilize millions of people in North Africa who were able to overthrow ancestral regimes. At the time of execution, however, in the absence of solid and sustainable proposals for the long term, these countries have again fallen into chaos. In Egypt, four years after the revolt, it is clear that the regime imposed for the change did not prove effective and was ousted again. There was no coordination between political-religious and economic systems, even with extensive networks of Internet “accessible” (with their restrictions) for all.

A similar phenomenon of disarticulation of HSAE dimensions is observed in regions where a hard fight occurs to try to solve global warming, exploiting the cane sugar or maize biomass to reduce carbon in the atmosphere, at the expense of reducing the flow of indigenous food, like maize in Mexico and Guatemala or rice in China, making significantly vulnerable the food security of people producing low added-value supplies. As a result, these countries have been forced to import products manufactured or refined at

higher costs for the population, for example, corn and refined petrochemical products.

The disarticulation in these negative cases confirms the hypothesis. Exclusive and monopolistic growth around niches of power is not sustainable and causes regions undergoing it without an articulated, harmonious and balanced system a tendency to disappear or to continue invisible and excluded from large global socio-political reorganization plans.

Innovation is to break with the paradigms of reductionist thinking and acting, isolated from its context, for achieving inclusive articulation of regional ecosystems of innovation, capable of generating wealth through synergy between the companies, organizations and individuals of the region.

For this reason, to “create” spaces to innovate in an articulated manner for all agents (stakeholders) within a community has become a key activity for cities and, in consequence, for regions and territories. It is not enough now to simply improve existing social or business processes to make them more efficient, or to reduce bureaucracy and public spending, or execute infrastructure (putting the population in debt) for electoral purposes. It is not sufficient to support industrial or social sectors just by improving conventional administrative practices, or train them in ordinary practices that operated in the twentieth century, but that today in the post-petroleum age (Heinberg, 2011) under harsh industrial conditions, limited resources, and public and social policies influenced by global factors, are totally inappropriate.

It is necessary then to articulate inclusively all the elements that are part of the regional ecosystem of value to assess the long-term impact of the needs of the population and of the environmental damage caused by the region’s economic growth strategies.



In the last two decades it has been observed how some cities in the world have evolved transcendently. From being sparsely visible to global indicators, they have become highly attractive places to live in sites where there are very favorable business climates and where synergies between economic growth, social development and environmental care are developed in a harmonic way. In addition, these cities are recognized for their spectacular cultural and sporting events since they are entrepreneurs not only of technology companies, but also of a broad development of social enterprises. Those are cities where environments were formed in which all the key elements are articulated holistically for the good of all its inhabitants. As Leonardo da Vinci mentioned in one of his notes (adapted from the source): "systems are the continuous flow of people, matter, energy and information, [...] the city is an 'open system' where materials, goods, food, water and waste need to be moved and flow easily for the system to last and remain healthy."