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Methological structure for the development of cities under uncertainty

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Methological structure for the development of cities under uncertainty.

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Abstract

Through the last year's global economical changes, population growth, and the need for allocation of resources towards population; have promoted the interest for the acceleration of economical regional development for the cities through new processes, some of which have to exceed the boundaries of the pre established paradigms, thus creative processes. The investigation presented in this paper pretends to apply administration models for the analysis and treatment of variables, which could exponentially rise the regional development of the Latin-American city of Morelia Michoacán, México. Accompanying the idea presented, we look forward to offer a proposal of investing economical resources towards the enhancement of the variables found, by assessing this action, we try to fill the gap that is found in the field of analyzing the process of optimal economic resource utilization for the development of cities. In order to achieve these tasks we will use tools for the treatment of fuzzy sets theory, evaluating related elements of the creative cities as a groundwork and economic impulse for the studied city. Results of the investigation are expected regarding the definition of the promoting activities, which will enhance the economical development of the city, and the replication in other cities is intended.

Keywords: fuzzy logic, forgotten effects, creative process, regional development, creative cities.

1. Introduction

The investigation about regional development of the studied city Morelia - Michoacán, México through creative elements will have as a basis the theory of Creative Cities, which, since the publication of "The Creative City" (Landry & Bianchini, 1995), other authors which that had argued special emphasis in the development of the cities through creative elements had appeared (Begg, 1999; Hall, 2000; Florida, 2002; Leslie, 2005; Scott, 2006; Mellander et al. 2006; Pratt, 2008; Costa et al. 2008; Evans, 2009) with the publication of diverse books and articles specialized on the topic. Although the efforts of these authors have been critical for the identification of boosting elements of regional development through creative processes, we have found a research gap in the field of analyzing the process of economic resource utilization for the optimal implementation of the variables analyzed.

In relation to the theory of decision under uncertainty, the investigation initializes with the theory of Fuzzy Sets (Zadeh, 1965), with the appearance of the article "Fuzzy sets. Information and Control", made by the professor Lofti Zadeh, instructor at the university of Berkeley. The theory of Fuzzy Sets has been applied in the field of the formal sciences, but in the past 43 years, researchers from all around the world have been publishing many research studies with applications in diverse fields of knowledge.

The relation that is established between the creative variables as economical promoters of regions start from the proposal of Kaufmann, A. Y Gil Aluja, J. (1988), where as a basis we try to find variables that can exert multiplying retribution in terms of regional development triggered by the use of optimal economical resource utilization to enhance them. The purpose is to analyze the current situation in which the studies of regional development of the

creative cities stand and in which way, the models taken from the numerical and no numerical math for the treatment of uncertainty apply and help us to analyze those variables.

2. Openings

This section tries to engage the reader in the basic notions of the Creative Cities and the impact they offer in development of a city. In order to do that we introduce some aspects of the origins of the theory, basic concepts, and key elements of the studied city, all of which is strongly related to the Creative Cities theory, the discussions and information that had been published through time by different authors in this field of knowledge.

2.1 Backgrounds

The concept of the Creative Cities was initially introduced in the earliest 1990's, by the author Charles Landry. His initial concept appeared from the need of an urban, economic, social and cultural transformation, which had to direct the roll that the cities could play around the dramatic changes that appeared in the new global environment. The cities therefore had to be transformed in wealth creation hubs (Landry, 2000), under the new global dynamics that were developing.

In other hand, since the appearance of the book "The Rise of the Creative Class" (Florida, 2002) the concept of a new social class was developed, it was defined as the "Creative Class", individuals whose talent and potential transformed the way goods and services were produced, employments and enterprises were created, and in general terms; wealth is created. The original idea resulted from the analysis of elements that detonated regional development; a key aspect is the retention and attraction of enterprises which main actions include the input of human talent to their companies. In practical terms the creative class detonates the appearance of enterprises, which by their activities generate wealth in the region.

The origin of the "creative city" can be approached and understood by these two key concepts and their authors, international researchers of regional competitiveness. Although in words of Landry we find an intrinsically more strategic approach to be applied by the city planners, and in words of Florida we find a more economic and social component in which the triggering factor for regional success is the human talent (Florida 2002), in the association and combination of their concepts we can establish common variables that in terms of this study, will be considered to develop the thesis and value added proposals.

2.2 Conceptions of Creative Cities

The basic concepts to understand the creative cities appear in different moments and through different authors in time, these elements will be presented chronologically in terms of offering a general theoretical basis in further topics to be discussed.

In the publication "The Creative City" (Landry & Bianchini, 1995), *creativity* is described as an alternative to the instrumental thinking, which breaks the preconceived concepts of order and logic focused to offer new opportunities through a divergent way of thinking; where the connections, analysis of diverse factors and generation of ideas transform the rigid and formal structure that creates dysfunctions in an environment that the only certain thing is the appearance of complex phenomena and events hard to reach. This orientation presents special emphasis when changes arise in terms of technological, structural, administrative and productive element combine. It is important to distinguish the difference between *innovation* and creativity, that in a first impression could have a related meaning, it is important to mention that the creativity is the generation of ideas by a mental and divergent process, and the innovation result of putting into practice those ideas towards the market.

In the article "Cities and Competitiveness" (Begg, 1999) the concept of *competitiveness* and its relationship with the city is analyzed. As the author describes, there are different definitions related to the concept, but what is a fact is

that “the capacity of a city to compete is made by the connections between attributes of localization, strengths and weaknesses of the enterprises that reside in it”. This idea leads us to understand the link that unifies the competitiveness of a city and starts the discussion of knowing and finding the differentials that cause the diverse capacity of growth, which has been shown, varies among cities.

A key element that is important for our study is the recognition of the roll that *culture* plays in the development and economic growth of the creative city. Sir Peter Hall in “Creative Cities and Economic Development” (2000) remarks the fact that there have been transitions that the global economy had suffered over time. All the transitions starting from the manufacturing economy, to the information economy up to the new cultural economy (where the concept of *cultural industry* is born) led the path to an economic restructure and regeneration. This is special true, as the author states, in the fact that the cultural economy provides the capacity of using spaces which where not used before to incentive the creation of an urban image of the city, which will not only attract investors, but also talented workers. In this view, the culture is seen as a bridge that connects the new creative class and the enterprises that supports them and incentives them to grow. Hall also identifies inside the creative industries those occupations such as publicity, architecture, arts and antiques, crafts, design, cinema, software production, music, publications, television and radio, among others. This publication helps our study to refine the analysis of the current situation of the cultural industry of the city, and the possible improvements through cultural industries inside the cultural economy.

Richard Florida in his book “The Rise of the creative Class” translates the *creative economy* as the fundamental economic motor which main inputs are knowledge and information to output innovations; the final product of creativity. The author gives special emphasis in the *creative class*; people which occupations, values and expectations have transformed the modern world that we live in and represent the main asset that allows the creative city to be sustainable. In words of Florida the creative class are counted by 150 millions. The concept of creative economy and the creative class are therefore two of the main drivers of economical development in our days and pillars that support the object of our study.

In the publication “The Creative Cities” Florida (2008) the concept of region and mega – region is described as a “new natural economical unit: it is not an artifact of political frontiers, such as the concept of State – Nation or their provinces, but the product of the concentration of innovation centers, production and consumer markets.” He also explains the technical considerations of the mega – region, which has to be an area of contiguous light with more than one city or important metropolitan region and produce more than 100,000 million of dollars in terms of LRP (Light Regional Production). This concept will be further taken to make reference on the strategic position that the city of study locates, and its possible influence in the decisions that can be taken in order to develop the city.

All these concepts represent great relevance for our study that pretends to use at maximum the theories and concepts so far conceived, to generate value added proposals relevant to our object of study.

2.3 Core Approaches

In this section we show the key approaches, which analyze and quantify the variables and the theories of the creative cities, we try to offer the methodology, processes and elements used in each of the approaches, which will give support and foundation for our investigation.

In the article “Cities and Competitiveness” Begg (1999) we find an initial approach to the analysis of certain variables that through the theory studied, generate that a city develop better that others, this better performance will be demonstrated by a better attraction of enterprises, which favors the creation of wealth in the region. The variables that are used to analyze the development of one city and the level of wealth creation and attraction of enterprises is represented in the combination of the following input elements: Sectorial Trends, Characteristics of the Enterprises established in the city, the business environment, and innovation and learning. The rate of employment, the productivity of a city and the quality of life also exert effects in urban development. The author puts special emphasis in the actions that the urban planners can take among the creation of policies that help “equip cities to adapt and to foster a dynamic economic environment” Begg (1999). This is one of the main statements that enforce the idea that knowing the factors and variables in which a city can develop, will help the urban planners to invest economic resources and obtain multiplicative retribution and effects in the development of a city.

One of the principal approaches of the measuring factors, which detonate the productivity of a region are explained in “Inside the black box of regional development— human capital, the creative class and tolerance” Florida (2008),

where the author uses a three stage model with economic, social and technological elements, variables that helps us to understand the roll they play in the development of a city. The main objects of study are focused on 1) finding a feasible approach to the measurement of human capital and 2) finding the factors that lead the distribution of human capital around different regions. The methodology used in the study is in a first stage to analyze how the factors: tolerance, universities and amenity services, affect the location of human resources. In sub sequential order there is an analysis of the effect that the concentration of human capital in a region exerts towards technology. And in the third stage the author explores how technology, tolerance and talent impact the economical capacity (salaries and wages) of a region.

The model and the methodology employed for the study offers various interesting results, at first instance they found that the creative class plays different but complementary rolls in regional development, the creative class exerts effects on the labor productivity and the human capital increases the salaries and wages of the region. In a second level they find that different labors produce major retributions in terms of regional development. Some detected labors are: technology sciences, engineering, financial administration and operation management. Lastly, the results demonstrate that tolerance is significantly related to the creative class and also to regional salaries and distribution of human capital. The main approach that this article gives is the existence of associations of variables, and quantifies from stated values the effect that those have on the development of a region. Precisely in our study we will use the same concept of associations in the analysis of the effects that certain variables with established values exert in the development of the city of study and its region.

One key study in the development of input variables for our investigation is found in “How to Support Creative Cities”. This study is financed by the European Union and it establishes the relations and results that different cities in the EU have had applying processes of creativity. The main objective of this study is to communicate the different experiences and real examples of the cities towards investment in creative industries and creative cities theories. The examples found in the study demonstrate how cities like: Barcelona, Oslo, Birmingham, Riga, Stockholm, Tallinn, Amsterdam, Helsinki, Berlin y Warsaw had experienced through the impulse that inputs of creative cities theories have had. This study will serve as a basis of the creation of variables that can affect directly in our studied city.

All the approaches listed above will have an impact on our study, the fact that there are variables that has been shown exert multiplicative effects in the development of the city (How to Support Creative Cities), the also existence of variables that helps us understand the level of impact creative processes have (Florida), and the fact that urban policy makers can exert decisions toward the effective use of economical resources to enhance changes through creative processes (Begg), leads us to our object of study, where we will try to find strategic approaches where investments could have a multiplicative effect towards an economical, productive and social retribution in the city of Morelia, México.

2.4 Evaluated City

In this section we present the most relevant figures and data concerning the city of Morelia México. The information is driven towards those elements, which are intrinsically attached to the theory of the creative cities. This perspective tries to give the current situation of the city as the impact that this study could have in different aspects of the region. Morelia is a city located in the center of the Mexican Republic; it is the capital of the state of Michoacán de Ocampo and citing “The Creative Cities “ Florida (2008), it is immersed in the Mega – region called “Greater Mexico City”, where approximately 45 million people live and generates \$290,000 millions in LRP, more than half of the whole nation.

Geographically Morelia finds itself 303 km from the capital of the country, México City. At 295 km we find the city of Guadalajara, Jalisco, city known because of the culture, industry and the attractiveness to diverse businesses. At 196 km we find the city of Querétaro, Querétaro, city recognized because of all the industrial activities that are held out, and at 387 km one of the most important ports of the country, the Lázaro Cárdenas port, Michoacán is found. The city also connects to different cities of México by its wide railroad infrastructure and the international Airport “General Francisco Mújica”.

In economical aspects, the city has an overall gross domestic product per capita of 7,774.5 dollars, when the mean in the republic is 9,980 dollars. The city raised its gross domestic product from the 2003 to 2008 by 15%. The main economical activities of the city are tourism, education and commerce. The city reaches 1,606,399 economically active citizens which 1,554,720 are employed.

In terms of tourism, the city of Morelia is one of the first touristic destinations in the country due to its architectural, cultural and historic legacy. The city also connects with a series of natural destinations, which increase the affluence of tourism. The city has over 110 lodging establishments and only in 2010 Morelia attracted 2,449,805 national tourists and 269,179 international tourists.

Referring to amenities, the city has a wide variety of theaters, museums, cinemas, bars and entertaining establishments, which nurture the popular culture and generate great attractiveness for the creation of micro and small enterprise that lead to the economic growth of the city. Today the percentage of SME's is about

In terms of education, the city of Morelia offers 882 educational spaces, 7,744 classrooms, 81 libraries, 103 workshops and 165 laboratories. Is in this city where one of the most important Universities of Mexico is established, the Universidad Michoacana de San Nicolas de Hidalgo where diverse ambits of science are studied such as health, administration and accountancy, legal, exact sciences, humanities, engineering and architecture, and bio agropecuary sciences, also there is a vast offer of postgraduate studies. In this university around 32,000 students are active. There is also an Institute of Technology, which around 4,650 students pretend to conclude their studies in technological fields of the knowledge. In general terms there are 9 public institutes of advance studies and 15 private ones.

In terms of culture, Morelia is a national exponent having some of the most important artistic, musical and cinema events, as well as diverse expositions. Morelia has a total population of 729,279 inhabitants, and by information of the National Statistics and Geographic Institution (INEGI) 94.2% of them are alphabets and the standards of human development are in the top ranked of the country. In the city we can find the "Conservatorio Musical" musical school founded in 1743, which provides the city of culture and artists in different specializations. In other cultural aspects, Morelia is named human heritage in 1991 by the UNESCO, association that also gave the city the title of "Sanctuary of the Monarch Butterfly", and sponsor of the "Day of the Dead National Celebration City", "La Pirekua Musical Heritage of the Humanity", and "Traditional Mexican cuisine - ancestral, ongoing community culture, the Michoacán paradigm".

If in general terms the city has a great cultural reservoir, great affluence of tourism, and attractive popular amenities, the development of the industrial tissue is incipient, this affects in terms of providing rewarding employments to the citizens of the city. In terms of industry, the city has over 16 mining economical units, where around 100 people work, 3143 manufacturing enterprises where 14,606 people work. In 2008 only 16 licenses for industrial land use, following that index for commercial land use there were 279 solicitations, and 4,412 solicitations for domestic land use. The city has an industrial park where 180 enterprises offer around 9,000 employments, most of the enterprises established in the industrial park have only distributing activity, and the small manufacturing enterprises are Small or Medium size companies. The slow industrial development of the city has historically been driven by the lack of adequate promotion of the city and a lack of strategic panorama on the creation of enterprises. One of the main concerns of this study is the reorientation of the economical development of the city and the impact it will create on the industrial attractiveness of the city.

3. Projected Variables

In this section we state the variables that will be used in our model, we pretend to generate results as identification of creative effects and relations that will identify the main paths by which the invested resources of the city could have a multiplicative impact.

3.1 Decision Variables

The variables that we will use to know the effect that creative factors could detonate the development of the city are:

3.1.1 Incentives to Promote Creative Enterprises: Promotion programs which give incentives for the creation, development and increase of the rate of survival of creative enterprises. Key cities examples: Oslo, Barcelona and Tallinn.

3.1.2 Strategic Finance for Creative Enterprises: Economical funds specifically targeted for the creation of enterprises with a high creative value. Key cities examples: Berlin and Birmingham.

3.1.3 Clusters: Development of enterprise clusters with similar interests that under the right interaction could offer development for the city and the creative industry. Key cities examples: Barcelona, Stockholm and Birmingham.

3.1.4 Interdisciplinary Cooperation Development: Promote the cooperation between creative enterprises of similar sectors, universities and enterprises in different sectors, which main driver is the creation of positive synergies. Key cities examples: Amsterdam and Berlin.

3.1.5 Coordination of Actors and Activities: Creation of institutions which coordinate the creative projects of the city, offering a link between those who are willing to contribute to the creation of creative enterprises and the ones who offer channels for this to happen. Key cities examples: Oslo, Amsterdam, Berlin and Barcelona.

3.1.6 Strategic Festivals: Support and promote creative industries by strategic festivals related to creativity. Key cities examples: Birmingham, Tallinn, Berlin and Helsinki.

3.1.7 Enhancement of the Creative City: Promotion orientated to the creation of adequate talent in the city to develop creative enterprises and balance the distributions of creative supply-demand forces in the labor market. Examples: Oslo and Birmingham.

3.1.8 Providing Space for Business Enhancement: Generation and occupation of the city ground for the promotion of creative hubs. Key city example: Barcelona.

3.1.9 Multifunctional Spaces: Develop and enhance of traditional businesses through creative spaces and creative job zones.

3.1.10 Developing Urban Districts with Creative Industries: Integration of living, educational, business and recreational zones, for the social development of the creative class. Key cities examples: Helsinki, Warsaw, Stockholm and Barcelona.

3.1.11 Science Research Park: Promoting a research park where universities and enterprises enhance the development of the city focusing on creative sectors. Key example city: Barcelona.

3.2 Variables Concerning the City

In order to analyze the possible effects of the Decision Variables, we must study how the economical and social elements of the studied city relate to the creative theory and will probably result affected. Those variables are:

3.2.1 Salary The capacity of acquisition, way of life, affordable products, luxury and demand will be affected by this variable that result from the labor indexes of the city.

3.2.2 Human Capital: Based on educational approaches, this variable will give answers to the first notions of the human resources installed in the city of study and will evaluate the development of a creative class. We find this variable by searching on technological and high value added careers.

3.2.3 Creative Class: Based on the people that work in creative enterprises, which are listed in the principal indexes of labor, focusing on creative enterprises.

3.2.4 Super Creative Class: High skilled people who live and work in the city and also lead an important roll in the development of the city as decision makers.

3.2.5 Technology: Technological resources and the support they give to the studied city. We find this variable in indexes of technology and productivity.

3.2.6 Tolerance: The tolerance index will give us the quantification of the disposition of a city to accept new ideas and the general reluctance for change.

3.2.7 Amenities: The nightlife, bars, restaurants, entertainment, parks and general amenities establishments that the city offers to enhance the attraction of the creative class.

3.2.8 Prices: Prices are a key factor in which the people's economy. This variable also exerts effects on the time people will spend in the city, mount an enterprise or live.

3.2.9 Security: The attraction of the creative class will be affected by this variable, which can be found in the criminal indexes of the city.

4. Model

In this section we introduce the model we pretend to use to identify the key variables, which exert multiplicative effects on the development of the city by the input of the decision variables. This model is the basis of our study and will combine all the variables we have stated so far by a profound analysis of each one of them.

4.1 The Model

Most of the phenomena that take place in our surrounding are part of a system or subsystem in which they act and have a cause-effect relationship with the elements that they interact. In this scenario, we can use models to abstract the complex realm of the nature, but generally when using models no matter how robust they are, we tend not to consider or forget voluntarily some causality relations that are not always obvious, or by trying to reduce that complexity we leave behind some useful associations. This concept is inherent to our study due to the complex reality that it tries to analyze, it is usually hard to establish the relations in which our variables interact and associate, thus trying to obtain feasible results we rely on our model, which is based on the knowledge of the occult cause-effect relationships when constructing a study of causality between different elements.

The model is based on the Fuzzy Sets Theory and starts from the proposal of Kaufmann, A. and Gil Aluja, J. (1988), of studying parallel valued elements in a matrix, which will give us the cause – effect relations that are produced with different graduations between elements from a subset A (causes) and subset B (effects). The model also gives us the indirect relations established by the subsets mentioned before.

Our model starts with a matricial process based in two groups of elements A Causes and B Effects. Through a combinatory process based in the composition of these two matrices we obtain all the direct and indirect causality relations between them, we make this study with the objective of knowing the multiplicative effect that each element (cause or effect) generates over the other ones. This model also gives us the level in which the relationships are produced. The model stands as a new line of investigation for the decision making process.

In our study, the analysis of the cause – effect relationships will give us the main drivers, which will be defined as enhancers of the creative city. With these elements we can target specific economic resources and investments that will probably lead the city to a creative development and attractiveness.

5. Conclusions

Through the investigation and the research stated in this work, we show that certain attitudes, values and technological developments foster the appearance of creativity, thus enterprises which main drivers rely on creative human talent. These kinds of organizations exert positive effects for the society and the economic indicators of a region. By knowing the creative enhancing factors that exert a multiplicative effect on the productivity and development on a city and a region, we should be able to target specific resources to promote positive social and economical development of cities and regions. This work is intended to be initially applied the Latin-American city of Morelia, México and its region. This analysis contributes to the improvement of emergent city's economies and could be replicated in other metropolises to stimulate regions towards the latest creativity economy.

References

1. Allen J (1997) The cultural economies of cities. *International Journal of Urban and Regional Research*, 21, pp. 323–339. doi: 10.1111/1468-2427.00075
2. Begg I (1999) Cities and competitiveness. *Urban Studies*, 36, pp. 795-809.
3. Castells M (2010) Globalisation, Networking, Urbanisation: Reflections on the Spatial Dynamics of the Information Age. *Urban Studies*, 47, pp. 2737-2745.
4. Costa P, Magalhães M, Vasconcelos B, Sugahara G (2008) On ‘creative cities’ governance models: a comparative approach, *The Service Industries Journal*, 28:3, pp. 393-413.
5. Florida R (2002) *The rise of the creative class*. Basic Books, USA.
6. Florida R, Mellander C (2006) The creative class or human capital? Explaining regional development in Sweden. *Royal Institute of Technology, CESIS*, 79.
7. Florida R, Mellander C, Stolarick K (2008) Inside the black box of regional development – human capital, the creative class and tolerance. *Journal of Economical Geography*, 8, pp. 615-649.
8. Florida R (2008) *Who’s your city?*, Basic Books, USA.
9. Gil-Aluja, J., 1999. *Elements for a theory of decision under uncertainty*, Kluwer Academic Publishers, Dordrecht.
10. Gil-Lafuente, A.M., 2005. *Fuzzy logic in financial analysis*, Springer, Berlin.
11. Gil-Lafuente, A.M., Merigó, J.M., 2006. Acquisition of financial products that adapt to different environments, *Lectures on Modelling and Simulation*, 7, pp. 42-48.
12. Gil-Lafuente, J., 2001. The index of maximum and minimum level in the selection of players in sport management (in Spanish), In: *Proceedings of the 10th International Conference of the European Academy of Management and Business Economics (AEDEM)*, Reggio Calabria, Italy, pp. 439-443.
13. Gil-Lafuente, J., 2002. Algorithms for excellence. Keys for being succesful in sport management (in Spanish), Ed. Milladoiro, Vigo.
14. Graeme E (2009) Creative cities, creative spaces and urban policy. *Urban Studies*, 46, pp. 5-6.
15. Hall P (2000) Creative cities and economic development. *Urban Studies*, 4, pp. 639-649.
16. Kaufmann A, Gil Aluja J (1988) *Modelos para la Investigación de efectos olvidados*. Milladoiro. Santiago de Compostela, España.
17. Landry C, Bianchini F (1995) *The creative city*. Demos, London.
18. Leslie D (2005) Creative Cities?. *Geoforum*, 36, pp. 403-405.
19. Pareja M (2009) The Barcelona Metropolitan Region: From Non-Existence to Fame. *Built Environment*, 35, pp. 204-211.
20. Paddison R (1993) City marketing, image reconstruction and urban regeneration. *Urban Studies*, 30, pp. 339-350.
21. Pratt A (2008) Creative cities: the cultural industries and the creative class. *Geografiska Annaler: Series B, Human Geography*, 90, pp. 107–117.
22. Scott A (2006) Creative cities: conceptual issues and policy questions. *Journal of Urban Affairs*, 28, pp. 1-17.