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Geopolitics and innovation: The creation of value in Querétaro[i]

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GEOPOLITICS AND DECISION-MAKING

Geopolitics is "the science that, through Political Geography, Regional Studies, and History, studies the spatial causality of political events and their future effects." In other words, it allows us to understand, from a global perspective (spatially and temporally speaking), the origins of the incomprehensible contemporary global phenomena, such as the crisis in Ukraine, the conflicts in the Middle East, the presence of the Zetas in the Gulf of Mexico or the industrial dynamics in Querétaro and Bajío. Even more relevant, how these "isolated" incidents, which may seem distant or disconnected from each other, will come to affect a political, economic, social, or even technological decision anywhere in the world and, thus, be able to make the relevant decisions in a local or regional context[1,2]. The "Theory of the Small World"[3,4] reaffirms the incredible connectivity that people, events, and geographical locations are constantly generating and modifying, through dynamic networks in very varied areas of knowledge and economic development[5-6].

From a planning and decision-making point of view, Geopolitics is very relevant since it allows us to generate a vision, which leads us to move from a scenario of a "forced future" to one of a "desired future", in which a country, a state, a society or a company is enabled to design not only where they want to reach, but how and when. Geopolitics, in short, represents a powerful weapon of planning and decision-making, global and historically grounded.

Science, Technology, and Innovation in 21st-Century Geopolitics

Modern geopolitics was born, as a science, towards the end of the nineteenth century, coinciding, in an interesting way, with the emergence of science and technology as engines of economic development, a phenomenon that had begun with the Industrial Revolution. The twentieth century thus witnessed both enormous growths in science and technology, unprecedented in the history of mankind, and unprecedented geopolitical changes.

Open innovation vs. Closed innovation

While the term "innovation" has become almost a cliché in geopolitical decision-making today, the reality is that it continues to represent an important concept that is constantly being adapted and improved. Innovation as a development strategy is already part of global macroeconomic patterns, and there is a tremendous interest in generating alternative innovation models. One of these models, which is becoming very important in recent times, is that of "open innovation"[7], in contrast to traditional innovation, which would be "closed". The primary difference in open innovation is that it considers that generating innovation internally in the market sector where it is operated is not fundamental but to have access to it, through agreements, alliances, joint ventures, and all the types of partnerships in networks that can be imagined. The basic philosophy is that we don't need to possess all the talent, but we do need to have access to it, wherever it is. This, apparently very simple, is representing a revolution in the field of business, technological intelligence, and decision-making.

Open innovation emphasizes the importance of having, rather than physical assets (buildings, equipment, human and material resources, etc.), highly dynamic and accessible networks that allow access to resources and where they are located. What is relevant, then, is not necessary to create hardware but to invent software that articulates resources efficiently and openly.

The Local Innovation System (LIS) Program

In this sense, about a decade ago, the Massachusetts Institute of Technology (MIT) created an interesting program (LIS)[8] along the elements that were outlined in the previous paragraphs, with a regional development aspect. The basic questions that this program raises are:

1. What is the role that innovation plays in boosting regional competitiveness and development?
2. How can Higher Education Institutions (HEIs) and Public Research Centers (PRCs) promote regional innovation capacities?

Taiwan, and Norway, which have overthrown several myths associated with the academia-industry relationship, such as, first, that HEIs and PRCs do not have, in practice, economic significance, only in highly developed economies. The second myth, very popular, is that patent licensing is the mechanism for HEIs and PRCs to achieve economic impact. The third myth is that the transfer of technology from academia to industry takes place, preferably, through intellectual property protection instruments. As a counterproposal to these myths, the LIS proposes four actions that have demonstrated, at least where appropriate, economic effectiveness: education (with emphasis

on competencies), the generation of spaces (physical and virtual), the resolution of problems proposed by and for the industry and the constitution of reservoirs of knowledge. The implementation of these actions led MIT to create another dependency, also very successful, the Industrial Performance Center (IPC)[9] that performs four specific tasks:

1. Local creation of new industries
2. Transplanting industries from other regions to the locality
3. Diversification of local industries
4. Modernization of mature industries

Open innovation in Querétaro

Based on the theoretical elements described above, it is now worth reflecting on the relevance of creating a "Prospective and Innovation Center" in Querétaro, which could be integrated into MIT's LIS. The first point to emphasize is the risk of making decisions based on isolated data, such as the number of companies located in the State, how many researchers reside in Querétaro, the nations that are creating similar centers, etc. Such a potentially important step must be based on a geopolitical analysis as complete as possible, for which an interesting starting tool is the technological Road Maps[10] whose effectiveness has been proven in several successful cases of planning national and regional technological development in various fields of knowledge[11].

The second lesson to remember is that, in addition to hardware, a State Innovation System[12-13], preferably "open"10,12 must ensure the availability of software that manages to instrument the resources that are being put into play. Additionally, the evaluation criteria must be different for science, technology, and innovation, which leads, necessarily, to the creation of relevant measurement instruments on a case-by-case basis. Another important aspect to consider is innovation governance, from a global perspective[14], and how knowledge networks linked to innovation networks can be generated, which is not always the case[15].

Finally, the profiles of innovators imply skills that neither a technologist nor a scientist possesses and that, rather than adding pressure to the evaluations to which the current actors of the State Innovation System, turn into the articulation of networks and collaboration and competitiveness clouds. The question, in a word, is not what, but how.

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i To further expand the topic, you can consult:
J.L. Lucio y M. Torres (Coords.). (2017). Presente y Futuro de la Ciencia en México. Retos y Perspectivas de la Física. Academia Mexicana de las Ciencias. Ciudad de México. http://ccciencias.mx/librospfcm/presente_futuro_retos.pdf