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CONTENTS

EDITORIAL

INNOVATION SYSTEMS AND KNOWLEDGE: THE CASE OF JALISCO, MEXICO

Sergio Ordóñez[1]

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Abstract

This paper discusses the concepts involved in national-regional innovation systems (N-R_I_S) in light of the emergence of knowledge capitalism as a new phase of development, and the neoliberal appropriation of these concepts, pursuant to neoliberalism's position as the predominant development path in this new phase. Against that backdrop, this study looks at the experience of Jalisco, Mexico, the only state that has conceived of and put into practice a development strategy centered on an N-R_I_S and anchored in the electronics-computing and telecommunications sectors, on the neoliberal path the country is following. This study concludes that despite progress made, the fact that public-private partnerships are the main way this strategy operates has prevented the state from gaining a strategic position in the region from the standpoint of developing knowledge capitalism in Mexico and the breach of a "glocalizing" spatiality.

Keywords: Knowledge capitalism, national-regional innovation systems, neoliberalism, development strategy, Jalisco.

INTRODUCTION

At present, it is accepted that innovation systems are an essential precondition to national development. Below, I suggest that this concept and its spatial acceptance in national-regional innovation systems (N-R_I_S) should be rethought in light of the emergence of a new phase of capitalist development, known as knowledge capitalism, which, moreover, constitute an instrumental-theoretical arena in ideological dispute, whose application could serve to promote different working visions in the future.

From that standpoint, this paper studies how these concepts have undergone a neoliberal overhaul, moving from the conceptual formulation to the so-called *starting models*, which try to make the concept operational while at the same time providing a framework for its assessment; this is especially evident in the conceptual shift from the *national* to the *regional innovation system.* This process happened at the same time that neoliberalism came to be the predominant path of development in knowledge capitalism and globalization, alongside other clearly more successful development tracks.

Through that lens, I examine the experience of Jalisco, the only state in Mexico that has implemented, since the beginning of the twenty-first century, a development strategy centered on a regional innovation system, which is in turn anchored in the regional electronics-informatics and telecommunications sector (ES-IT) (the new sector that is connecting and invigorating growth in the new phase), in the framework of the neoliberal development path Mexico is following. The idea is to characterize where the strategy is headed and what it is designed to do, in broad strokes, and evaluate its contribution to the advent of knowledge capitalism in Mexico.

To do so, this paper is divided into three parts. The first describes the distinctive features of knowledge capitalism, globalization, and neoliberalism as the framework to rework the concepts related to the N-R_I_S and understand how it has been appropriated in neoliberalism, in the second part; against that backdrop, the third section studies the experience of Jalisco.

1. KNOWLEDGE CAPITALISM, GLOBALIZATION, AND NEOLIBERALISM

A New Phase of Development and its Spatial Dimension

The distinctive aspects of the new phase of capitalist development have been abundantly discussed in other papers,[2] so the discussion below is limited to factors directly related to N-R_I_S concepts.

Knowledge capitalism arises from new connections between the science-education (SC-E) sector and the whole of social production, where SC-E becomes an immediate condition for production, meaning that knowledge production, circulation, and accumulation tend to influence and involve all realms of economic and social reproduction, going beyond merely scientific-educational institutions and companies and extending to new economic-social institutions that are de facto formal and informal, among which the most important have come to be known as communities of knowledge (Ordóñez, 2009a, p. 60).

This new connection between SC-E and social production is made possible thanks to the technology revolution in the fields of computer science and telecommunications, by permitting an immediate and interactive link between SC-E, as the primary social realm where science and knowledge is produced, and social production, as the primary realm where they are applied. This sort of linkage embeds the two social realms with one another, beginning with a process in which their respective radii of action dilate: the first towards the application of knowledge and the second towards its production, the latter being the truly novel and more important of the two aspects (Ordóñez, 2009, pp. 386-387).

For its part, the new technology revolution makes possible the rise of a new productive force, as the link between science and knowledge and social production grows ever closer, mainly by way of two basic processes: *1*) burgeoning information-processing capacity and the production of science and knowledge in a way that is directly accessible and applicable to production, the result, respectively of, the development of the microprocessor and of software, in the area of coded knowledge; and *2*) the dramatic increase in the speed and scale of access to and spread of knowledge and information, thanks to the confluence of information technology and telecommunications, and their development (Ordóñez, 2009, p. 387).

These conditions are the basis upon which the cycle of knowledge takes shape (production, circulation, and accumulation), which includes SC-E and social production, circulation, and consumption, in which the great historical challenge is the valuation of knowledge (creating new knowledge with knowledge), which will come to constitute a counterweight to the trend of the falling profit rate (see Ordóñez, 2004 and 2009).

At the macroeconomic level, the deployment of the information technology and communications revolution brings with it the rise of a new technological-productive complex, constituted by the set of industrial and service activities interconnected via basic integrated circuit technologies, software, and digitalization, which shall together be called ES-IT.

ES-IT is the new center fueling global production, growth, and trade, and it is around ES-IT that they revolve, in place of the automotive, metal-mechanics, and petrochemical complex, which marked the Fordist-Keynesian development phase.

The set of specific characteristics unique to the new industrial cycle centered on ES-IT translates into new economic momentum with longer and faster-growing expansive phases and shorter and less profound recessive phases (Dabat and Ordóñez, 2009, pp. 133-134).

Accordingly, globalization is the spatial dimension of knowledge capitalism in which the national-centric and territorially integrated geography of the state space is shaped by the global and territorially integrated geography of capital, which inverts the terms of the prevailing geographical-shaping relationship seen in Fordism-Keynesianism (Brenner, 2004, p. 16).

Consequently, globalization tends to entail a spatial re-hierarchization of geographical scales, where the national scale loses relative weight to the trans- and supra-national and regional and local (subnational) scales.

This necessarily reorders the national geographical scale beginning with the new dynamics of the regional and local scales and a new "bottom-up" relation to the national, which allows it to play an essential role in the re-hierarchization of the geographical scales in which the connection between the trans-supranational and the regional-local is reorganized, mediated by the national scale (Brenner, 2004, p. 205; Fernández and Alfaro, 2011, p. 86).

Neoliberalism as a Development Path

The new technological-productive base described in the section above, however, has been deployed in the midst of the global predominance of the neoliberal *development path,*[3] which results from the connection between this rising productive-technological base with a foreign social-spatial and institutional fabric (political, ideological, cultural, institutional, and spatial) inherited from the earlier development phase (not the result of a new social construct), but rationalized around the ideological principle of the cult to the free interplay of market forces and the new (global) regionalism, with the institutional aggregate of economic-political networks (see Ordóñez, 2017a),

Neoliberalism thus entails a political-ideological projection of the present and future, fundamentally on the basis of the rationalization of the social-spatial and institutional fabric inherited from the earlier development phase, which includes its liberation from earlier corporate and distributive commitments to the subordinated classes and groups, as well as the spatial centrality of the national scale, aiming to make way for the deployment of new financial capital and, by way of it, the new productive-technological base in a new global "glocalizing" regionalism fueled by the institutional aggregate of economic-political networks[4] (Ordóñez, 2017a, p. 11).

But there are other social forms in which groups of countries have managed to put together the new emerging productive-technological foundation in their territories with their social-spatial and institutional fabrics, in this way prompting development paths alternative to that of neoliberalism. These countries include, on the one hand, the Scandinavian countries, which have undertaken innovative and unprecedented social transformations; on the other, it includes the Asian countries that have borrowed "proven" experiences from other more developed countries in the preceding development phase and adapted them to the new conditions of the emerging technological-productive base (Ordóñez, 2017a, pp. 12-13).

2. THE CONCEPT OF THE NATIONAL-REGIONAL INNOVATION SYSTEM AND ITS NEOLIBERAL APPROPRIATION

It is recognized in the literature on the matter that the concept of an innovation system was forged in the heat of the controversy between the theoretical perspective grounded in the structuralist-evolutionist camp predicated on market failures (Freeman, 2002, 2008; Lundvall, 1991, 2004, 2010; Nelson, 1993, 2007; Edquist, 1996, 2001) and the Borrás and Edquist (2014) neoclassical view of economic development based on the general equilibrium and technology development as an element exogenous to the economy and the markets.

Less well-known is that this controversy takes place in the historical context of the move from the Fordist-Keynesian development phase to that of knowledge capitalism, in which the neoclassical conception tends to reflect, not without an ideologically justifying component, the predominant way in which innovation and technological change happen in the preceding development phase, while the approach that views it in terms of market failings theoretically expresses the emerging process of a new form of innovation that will become predominant once SC-E is connected in a new way to social production in the new development phase, as described in the first paragraph.

In Fordism-Keynesianism, innovation and technological change took place pursuant to the manna from heaven metaphor (Antonelli, 2003), in other words, as part of a "top-down" exogenous process in research and development (R+D) conducted in isolation by scientific-educational institutions (without market influence), descending sequentially and linearly into companies in the form of innovations that included technological change, which was automatically disseminated, at no significant cost or with practically no delay, through the mechanism of the "invisible hand." This process came with a conception of technology basically as information and, therefore, as easy to copy, and innovation as a linear and sequential process (Heijs, 2001).

The structuralist-evolutionary contribution reveals the changes that innovation has undergone as the result of a new connection between SC-E and social production, meaning that the first becomes the immediate condition for the second,

which, in turn is extended by the incorporation of new formal and informal knowledge organizations, which means that SC-E and social production are embedded with one another, as described in the first paragraph. These changes come with a conception of innovation as an interactive process that interrelates and involves dynamic and continuous feedback across diverse actors and building blocks; a conception that becomes important alongside the R+D departments at companies with their linear model of knowledge application, corporate technological capabilities grounded in "know-how." There is both a tacit and accumulative dimension to this, and technology is conceived of as knowledge (Heijs, 2001).[5]

But it is in the so-called *starting models,* which constitute more technical-operational instruments for identifying, characterizing, and evaluating the elements that concur in the innovation system, as well as its relationships and limits, that the so-called role of the State begins to blur and the role is passed to other actors, in accordance with the tenets of neoliberalism as the predominant development path, consisting, as was described earlier, of the free play of market forces and a "glocalizing" spatiality: *a*) in the Fernández de Lucio and Conesa (1996) model, the participating agents are identified as the scientific, technological, productive, and financial spheres: *b*) in the Triple Helix laissez-faire model from L. Leydesdorff and H. Etzkowitz (1996), the State, enterprises, and universities are independent units and their relationships are a function of specific objectives;[6] and *c*) in the Spanish Cotec model, corporations appear at the center, buttressed by supporting organizations (technology centers, private R+D entities), public administration (local-regional, national, and continental), the environment, and the public R+D system (Quintero-Campos, 2009), which limits state action and implicitly elevates the market to the role of coordinating institution for the interrelationships between agents and surroundings.

The prevalence of the neoliberal vision in the innovation process is consumed with the movement from the SNI concept to that of the regional innovation system (R_IS) in the early nineteen-nineties (Cooke, 1992). In the original structuralist-evolutionary formulation, the movement from one concept to another is justified in terms of the contextual character of knowledge and, therefore, of the importance of spatial proximity as the element to leverage innovation processes, derived from the following circumstances: *1*) proximity facilitates formal and informal learning interactions; *2*) companies clustered into a region share a regional culture that can give rise to shared languages and codes; *3*) regional cultures and languages tend to come with institutions that help formulate the rules and conventions that reinforce their identity and how regional corporations perform and interact (Quinteros-Campos, 2009); *4)* the need for a critical mass of resources; *5*) the existence of growing returns via the use of certain facilities, equipment, and infrastructure; and *6*) the existence of long time periods to reach maturity and very specialized personnel (Heijs, 2001). In this approach, the R_IS would tend to reveal the heterogeneity of regions because this cannot be captured by the SNI concept.

But the fact that structuralism-evolutionism has not addressed this conceptual shift from a multi-scalar methodological-theoretical standpoint, related to the change in spatiality involved in the passage from the Fordist-Keynesian development phase to knowledge capitalism, positioned the R_IS as the launching pad for a fragmentary conception of reality and space, which meant the fragmentation and dismantling of the national space and the direct integration of local and regional scales with the trans- and supranational scales of globalization.

The R_IS therefore emphasizes the relevance of local innovation systems as the right analytical level to establish the competencies of an economy, as the region may be conceived of as the driving territorial unit in which different economic agents operate and from which the basic elements to generate the knowledge and innovation needed to guarantee growth and economic welfare are channeled; as such, the R_IS is an alternative approach to the SNI, which considers the competencies existing in countries in general (Listerri and Pietrobelli, 2011) in an "unrealistic abstraction" (Heijs, 2001, p. 8, citing Lundvall, 1992).[7]

In light of the rationale provided above, below is a study of the experience of the R_IS put into practice in the Mexican state of Jalisco, aiming to characterize its general orientation in the framework of the evolution of the concept mentioned above, as well as advance in studying its contribution to development in a regional ES-IT from the standpoint of the movement to knowledge capitalism in Mexico.

3. THE REGIONAL INNOVATION SYSTEM IN JALISCO, MEXICO

Deploying the Strategy

Against the backdrop of neoliberal development in Mexico, the state of Jalisco has, since the dawn of the twenty-first century, put into place an ES-IT-centered development strategy revolving around a state-regional innovation system (SR_I), based on public-private partnerships (PPP).[8] Jalisco is the only state with an ES-IT-centered development strategy (Palacios, 2008, p. 56).

The origins of the strategy date back to the height of the boom of the nineteen-nineties, when the electronics industry (EI) began to lose steam and become less competitive, expressed in the fact that several indicators hit peak highs in 1998 and then began to decline: annual investment in the EI reached over 700 million dollars; the share of EI exports in total state exports exceeded 80%; and state gross product growth hit nearly 8% (Palacios, 2008, pp. 50-52).

In this setting, a group of Mexican executives in major companies like IBM and Hewlett Packard, in conjunction with figures from the state government and private corporate-oriented universities like the Monterrey Institute of Technology (ITESM), anticipated the catastrophe to come and pointed to the need for a process of industrial ascent in global productive networks (GPN) for EI and a shift toward more knowledge-intensive, higher-added-value manufacturing that would make products with a wider variety of components in shorter production series.[9]

That foresight took shape with the formation of an institutional scaffolding that little by little began to guide the emergence of a state innovation system centered on ES-IT. In accordance with the discussion on the N-R_I_S above, it was a Triple Helix *starting model,* to the extent that it constitutes more of a technical-operational instrument of identification, characterization, and evaluation of the building blocks that concur in the innovation system, as well as their relations and limits, with the following characteristics that place it in the laissez-faire model: *a*) it is a long-term PPP revolving around the ascent of industry and the development of a regional ES-IT based on the original EI, taking on specific circumstantial forms in response to specific projects, as will briefly be explained below; *b*) in the PPP, the state-region plays the dual role of setting the rules of the game and "facilitating" the operation among participating agents, but always under corporate leadership, initially, of the Mexican executives at the transnational companies located in the state, and also the civil servants with business backgrounds and scholars from private corporate-oriented universities and, later on, Mexican

executives at local companies who little by little joined the process, too; this prevents the state-Region from gaining a strong foothold to develop the ability to discipline private agents as a function of a state development strategy tied to the national strategy, by becoming an active agent in funding; and *c*) although Jalisco does capture the highest proportion of PROSOFT funds (nearly 276 million pesos in 2006 or 26% of the total, rising to nearly 524 million pesos or nearly 49% in 2010) (Palacios, 2008, p. 38; Medina, 2011, p. 4), the requirements to operate this program reproduce the PPP scheme (PROSOFT 3.0, p. 8), with the consequent impediment to the strategic positioning of the state-region.

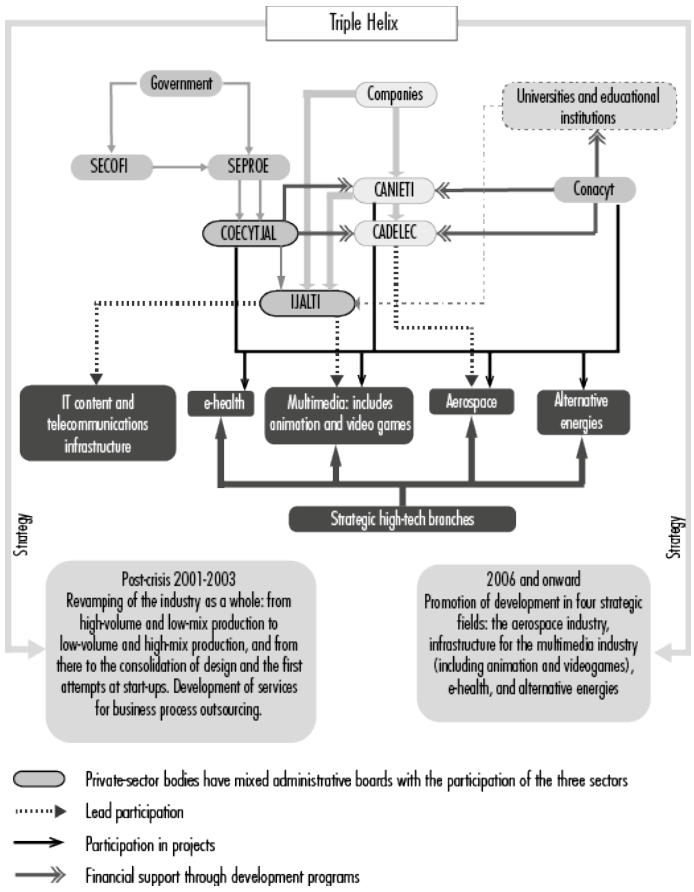
In the SR_I, the COECYTJAL, formed in 2000, is the institutional branch that runs the strategy on behalf of the state government and controls the funds, which are federal (PROSOFT, Fondo de Innovación), state (from COECYTJAL itself), private, and matching, the latter usually from abroad.

The founding of the Jalisco Institute of Information Technology (IJALTI) in 2001 was central to the formation and coordination of the institutional scaffolding behind the strategy, but it was not until 2003 when it began to take on its current role as the main body of the Triple Helix, to the extent that it is the core of the PPP that includes in its Board of Directors the state government, industry, and universities and educational institutions. Universities and educational institutions, meanwhile, play an active role in providing information to industry, under its direction, with the formation of the Industry and Academics Integration Center (CIIA, in Spanish), under the auspices of CANIETI, to guarantee that businesses are managing the process.

There are therefore two phases that emerge from the start-up of the strategy: *1*) the time period following the 2001-2003 crisis was centered on (*a*) a redirecting of the development model of EI to the aforementioned industrial ascent in GPNs directed at more knowledge-intensive and higher-added value design and manufacturing that makes products that require a greater variety of components and lead to shorter production series; and *b*) the development of a subcontracting industry for more knowledge-intensive and electronically- and telecommunications-based services known as Business process Outsourcing (BPO); and *2*) from 2006 and onward, centered on promoting the development of diverse ES-IT activities, including *(a)* the development of embedded software, *(b)* the development of subject-oriented databases, which are the foundation of logistics, *(c)* tests, emulations, and simulations of both software and embedded software as well as hardware, (*d)* the development of the aerospace industry, and *(e)* the development of infrastructure for the multimedia industries (which include animation and videogames, e-health, and alternative energies.

The design of the strategy and its institutional scaffolding are shown in Figure 1.

Figure 1. Triple Helix



Source: Created by the author using information gathered from interviews, 2011-2012.

The result of the first-stage implementation of the strategy in the wake of the 2001-2002 global crisis centered on the ES-IT (see Dabat and Ordóñez, 2009) was the effective reorientation of the EI development model followed theretofore, as has been studied in detail in Ordóñez (2006) and Dabat and Ordóñez (2009), implying the following processes in terms of the insertion of industry in GPNs: *1*) integration of industry in the mew mode of inter-industrial division of labor (based on medium-knowledge-intensity activities), through the relocation of Original Equipment Manufacturing (OEM) companies for design operations in the country or the incorporation of local subcontractors into the process; *2*) the reorientation of

production to emerging and/or highly dynamic sectors or subsectors, such as new consumer electronics, the automotive electronics, aerospace, integrated telecommunications systems, and information storage; and *3*) the geographical redistribution of exports to the detriment of the American market and the benefit of China, Japan, and Europe, implying the start of international integration of the industry in the emergence of China and East Asia (Ordóñez, 2006; Dabat and Ordóñez, 2009).

For their part, the joining of local subcontractors in international service subcontracting brought with it the surge and development of around 70 service contractor companies, of which at least 50 were national, and at the time, had 14% of the national BPO market. In light of the dearth of bank financing, they provided support for potential clients, subsidizing other industrial branches, like the furniture, fashion, and food areas, with the potential to increasingly incorporate electronic-information technology and telecommunications technological inputs. This simultaneously drove the service contractor industry, the EI, and the industries sourcing their intermediary products (Medina, 2011).

In the second phase (2006 and later on), the implementation of the strategy led to the following results and guidelines in process: *1*) the development of the software industry, in particular, embedded software and firmware, *2*) the still-nascent development of an aerospace industry; *3*) the development of information technology, content, and telecommunications infrastructure for the multimedia industries (including animation and video games), e-health, and alternative energies.

The development of the software industry has basically been centered on the design and development of firmware and embedded software, a sector in which Jalisco, in 2011, concentrated nearly 85% of national production (Medina, 2011), under the model of subcontractors for the activities at the software development hubs of global companies located in Mexico, such as Intel, Motorola, IBM, GE, and HP, or through international relocation/subcontracting of activities tied to development (production) of software for companies located beyond Mexico's borders (Heeks, 2003). This opens a new possibility for the integration of production networks between the EI and the software industry, consisting of the production of embedded software and firmware for the new types of industrial products and sectors to which the EI is ascending and redirecting its production, as already indicated above.

Looking at the aerospace industry, the Jalisco Aerospace Council formally launched in June 2009 with the participation of 22 companies grouped around CANIETI and CADALEC, nine educational institutions, and the state government's Secretariat of Economic Development, through the COECYTJAL, aiming to develop the industry in the following areas: *a*) manufacturing, which is the main area; *b*) aircraft maintenance and repair (MRO); and *c*) engineering services and systems (Cárdenas, 2012).

The information technology, content, and telecommunications infrastructure model laid out in the *Jalisco 2030 Plan* poses three strategies led by IJALTI: *a*) connectivity; *b*) digital inclusion; and *c*) application and content development.

The specific infrastructure of the multimedia industry includes the Chapala Multimedia Park, which will be host a forum especially designed for using multimedia technology, installed capacity for post-production, a high-definition audio booth, and the latest animation equipment.

Finally, the e-health and alternative energies industries are basically still in project status.[10]

Balance and Results of the Regional Innovation System

Examining the implementation of the SR_I-centered state development strategy anchored in ES-IT, it turns out to be crucial that the vast majority of the executives and managers working at transnational companies in the state were themselves Mexican, with strong roots in the state (Palacios, 2008, p. 32) and real potential to spearhead a development strategy, unlike, seemingly, other territorial agglomerations where the EI has taken hold, especially in the Northern Border Zone (Padilla, 2005, cited by Palacios, 2008, p. 34). A series of circumstances have come together in Jalisco: *1*) Jalisco's industrial tradition dates back to tentative steps towards industrial decentralization during the import substitution era of the nineteen-sixties and -seventies (Ordóñez, 2004, p. 446), combined with the initiatives undertaken by the first chapter of the American Chamber of Commerce (AmCham) outside of Mexico City (in Guadalajara) to attract electronics companies to the state (Palacios, 2008, p. 33), which, in conjunction with the universities and educational institutions in the state, which have slowly gotten on board with the process, would result in the development of a pool of engineers who would become the executives and managers of the transnational companies with offices in the state; and *2*) the advent of the so-called "neo-Panism" of the nineteen-eighties and -nineties, which referred to a moment in time when business groups signed on to the National Action Party (PAN, in Spanish) as part of a renewed relationship between the business sector and the State (Ordóñez, 2017b, pp. 11-14), resulting in the formation of a liberal-conservative business current in the nineteen-eighties, which morphed into the liberal-critical current in the nineties (Luna, 2004, pp. 337-341). The latter event led to the need for an industry policy that would consider not only the specific conditions of each productive branch, but also the size, technological capabilities, and regional imbalances of the productive units, coinciding with the stipulations of the 1999 Vallarta Project drafted by the consulting company Grupo de Economistas Asociados (GEA) on a commission from CANIETI Occidente (Palacios, 2008, p. 36),[11] which would become, in part, the action plan that the Mexican executives and managers in Jalisco undertook as part of their efforts at business activism in the northern and central-western regions of Mexico.

The strategy implementation produced mixed results, entailing a relative step forward as compared to the baseline situation, but failing to fully resolve the contradictions of the national ES-IT reflected in the regional ES-IT, and certainly not exploiting all of the potential the state had to contribute to development.

In the regional EI, the rise to complex manufacturing and design activities entailed a reduction in their contribution to total state exports from 72% in 2007 to 58% in 2015 (INEGI-BIE), their share in national EI exports from a historic peak in 1999 of 31% to 14% in 2015 (Dabat, Ordóñez, and Rivera, 2005, p. 97 and INEGI-BIE), as well as their weight in domestic EI production, moving from 50% in 2998 to 17% in 2013 (INEGI-CE). By contrast, software and computer services production grew at an annual rate of 17% in 1998-2013, and the telecommunications services industry at 13%, against -2 and 5% nationwide, respectively, meaning that both realms saw their weight in the domestic totals increase, from 0.9 to 11%, and from 0.02 to 0.3%, respectively (INEGI-CE), implying that the activities prioritized in the development strategy were extremely dynamic.

Nevertheless, fundamentally, the regional ES-IT continued to be immersed in the national ES-IT development model via the neoliberal path, which stood in the way of it becoming the heart of the new industrial cycle in the country with all of its

potential to link up and inject momentum into growth and fuel development, as has been broadly discussed (Ordóñez, 2012, pp. 37-56), with the exception, to a certain degree, of the software and computer services industry, as will be described below.

The regional EI continues to operate under a regulatory regime based on free importation for re-exportation as part of the regional deployment of GPNs for the principle global OEM companies in the industry, where nationwide, in terms of value, 86% of EI production in 2012 consisted of constant capital or inputs that need souring from other productive activities (and only 14% consisted of added value), while 87% of that production was destined for intermediate consumption (13% providing final consumption); but 78% of that constant capital was fed by imports; and 98% of the production for intermediate consumption is exported, with the consequent weak internal articulation both forward and backward and high import coefficients in the industry.

The situation remained fundamentally the same with respect to 2008, with the exception of the precision instruments whose forward articulation increased in 2012 (direct coefficients going from 0.03 to 0.11) (Ordóñez, 2017, pp. 81-84), even though its share in total gross regional EI production is minimal (0.4%), meaning there are signs that the regional EI situation could be different from that of the industry nationwide. Even so, internal productive networks in the regional EI have only been deployed to a minimum and only a handful of around 20 national-regional companies have joined the process[12] as a result of the strategy.

On another note, there are signs that in the regional ES-IT the high degrees of monopolistic control over networks and their profit-seeking management in the telecommunications services industry (ISTC) has been counteracted, as has the monopolization of content production and mass media content production and distribution (P-DCMM). As a result, the situation is such that in both industries, the national scale is valid for its regional counterparts: the potential effects on growth as a whole in the high-momentum ISTC, as well as the potential driving and spillover effects on P-DCMM knowledge services, are counteracted by an orientation to final demand, which is complemented by the low penetration of services provided by the ISTC in international comparative terms (Jalisco is ranked above the national average) (IFT, 2016, pp. 18-42) and the limits on the digitalization and content-distribution processes by ways of interconnected networks, derived from high degrees of monopolization over production and the formation of captive audiences (Ordóñez, 2017, pp. 59-60).

The best success case of the strategy is the software and computer services industry, which has managed to overcome the predominant in-house model in the country, with which its important potential effects on driving growth, derived from their orientation to the provision of intermediate demand, tend to become effective in the regional industry. However, this does not translate into an export position for the industry, with the subsequent failure to take advantage of the global market, which has grown at an annual average rate of nearly 15% between 2000 and 2014, and in which a group of developing countries whose exports grew by 19% in the same period managed to position themselves, increasing their weight in global exports from 16% to 33% (BPM-FMI).[13]

In short, the strategy does not break with the ES-IT mode of integration in GPNs based on international relocation-subcontracting, which runs into the following limitations: *1*) this is an integration model grounded in the combination of the international low-cost workforce with a medium skill level and a medium-low-developed and not very competitive telecommunications infrastructure (Ordóñez and Bouchaín, 2015, pp. 235-237), which implies, therefore, little differentiation in the services provided; and *2*) is based on scant innovation-learning and the growth of international rents obtained only happens once the production scale is increased, in contrast with the formation of own intellectual property that permits the generation and appropriation of rents thanks to productive differentiation based on learning and basically incremental innovation, and not only on the expansion of the production scale (SELA; 2009).

Under these conditions, the integration of the regional ES-IT into the GPNs comes with a "glocalizing" spatiality in which the metropolitan zone of Guadalajara is mainly integrated into the NAFTA Trade Corridor (Manzanillo-Guadalajara-Monterrey-Oklahoma-Chicago and Winnipeg, with branching into Mexico City (CDMX) and Los Angeles) (Palacios, 2008, p. 22), rather than with the economy of the state of Jalisco or the domestic economy, with the consequent fragmentation and dismantling of the national space. Reversing this regional ES-IT development model integrated into GPNs in an authentically post-neoliberal way would require the initiative of Mexican executives and managers at the transnational companies headquartered in the state and, therefore, the operation of the SR_I, in order not to be subordinated to these companies' global policies, but rather to a national development strategy articulated around a "bottom-up" relationship with the state development strategy, underpinned by the dynamics and local-regional specificities. From that standpoint, it would be necessary to plug in the SR_I to the organized civil society networks that would allow it to incorporate and manage social-learning-innovation processes together with those of business origin in a cycle of constant feedback.

The foregoing would make it necessary for the regional government to take on a strategic position in close "bottom-up" relationship with the Nation State, and with the participation and active control on the part of organized civil society.

BY WAY OF CONCLUSION

The Jalisco state development strategy, centered on an SR_I anchored in a regional ES_IT, operates on the backbone of PPPs and is aligned with third-generation regional industrialization policies[14] that aim to leverage the systemic competitiveness of regions. It is about fostering the development of productive linkages and the emergence of business networks, as well as connections between them and local support institutions, and the vertical multi-scalar linkages between local, national, and supranational bodies and programs, aiming to harness the benefits of investment and extra-regional trade (Palacios, 2008, citing Helmsing, 1999).

Consequently, the development strategy entails a neoliberal reorientation within its own boundaries, which impedes the strategic positioning of the State in the development of knowledge capitalism in the country and, in line with the foregoing, fails to interrupt the fragmentation and dismantling of the national space intrinsic to the "glocalizing" spatiality of the GPNs.

From the standpoint of the passage to knowledge capitalism and its spatiality, the SR_I would have to be enriched with extended actions and the financial capacity of the State in the following directions: *1*) in providing new expanded conditions for accumulation based on knowledge, derived from turning SC-E into the immediate condition for production and the emergence of formal and informal knowledge organizations in civil society; *2*) the multi-scalar articulation of an national innovation system with an SR_I that positions the national space as the mediator of the competitive articulation of

the local and regional scales with the trans- and supra-nationalities of globalization, in a new "bottom-up" relationship with these scales that makes possible new spatial-economic national dynamics beginning with the local-regional dynamics; and *3*) the SR_I would have to incorporate the learning-innovation processes from civil society organized into networks as part of the process of productive and cognitive social inclusion.

This is the big challenge facing a regional development strategy contained in a multi-scalar national development strategy in the post-neoliberal perspective.

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[1] Institute for Economic Research, National Autonomous University of Mexico (UNAM), Mexico. E-mail address: serorgu@gmail.com. Research made possible by the UNAM-PAPIIT IN 301616 Program grant.

[2] In particular, see Ordóñez (2004 and 2009).

[3] An in-depth development of the concept can be found in Ordóñez (2017).

[4] The new regionalism struggles for the (necessarily fragmentary) global development of the regions, in a spatial "glocal" dynamic that aims to directly and without intermediation connect subnational scales to the trans- and supranational scales, negating the role of the national in the process. It is this sort of spatiality that is promoted by global economic-political networks.

[5] The endogenous growth theory is a formulation that posits that R+D and technological development are processes endogenous to the economy and correspond with the rise of knowledge-intensive industries, such as pharmaceuticals and chemicals, toward the second half of the nineteen-fifties, in the context of Fordism-Keynesianism and, therefore, can be seen as an "intermediate theoretical formulation" between the linear innovation model and the interactive model.

[6] There is Model 1, where the State is the main player in the relations between companies and universities (Quintero-Campos, 2009).

[7] Because economic coordination is becoming increasingly globalized, interactions between companies in specific industrial clusters are becoming regionalized (Cooke, 1998, cited by Rozga Luter, 2003). Ohmae (1997) preaches that regional levels are more important than national, because they are the key economic scale in which business competitiveness is organized, on the practical level (op cit.). The titl of his work is significant in that regard: El fin del Estado Nación: El ascenso de economías regionales (1997).

[8] "Public/private partnerships - cooperative relationships among industry, government, and/or universities - leverage the efficiency of R & D and are thus a critical aspect of a nation's innovation system" (Link, 2006, cited by Palacios, 2008, p. 18).

[9] In business terminology: "[orientation] to a lower-volume market with a better mix of products and higher added value, with lesser degree of complexity in process administration" (Laveaga, 2011).

[10] "We will have electronic medical records with all of the information on a person, including their family clinical history" (Lozano, 2012).

[11] The industrial policy proposed was contrary to discriminatory measures between industries, arbitrary measures, and was manifest in the usage of transparent and quantifiable parameters, including the following lines of action: export promotion, training labor, making the labor market more flexible, timely investigation into disloyal trade practices, efficient competition policy, training for MSMEs, and fostering new investment (Palacios, 2008, p. 36). The formulation of the project coincides with the arrival of the PAN to the state government in 1995, which remained the case practically until 2013.

[12] Above all, these are integrated into the production of telecommunications equipment (Intec, AFL Telecomunicaciones de México), design and manufacturing of telecommunications equipment for access networks (Mixbaal), as well as the design of software-type solutions (ASCI),

proof of product, and integrated circuit design and their assembly (Mextronics, Easy Circuits, Grupo Gollet Electronics), design of software and hardware (Resser, Quest, and ATR), design of testing equipment (INSOL), and electric components (Prolec) (Ordóñez, 2017, p. 98).

[13] These countries, in addition to India, the top world exporter, include Poland, Russia, Czech Republic, Romania, Hungary, Brazil, and Uruguay, to name a few (BPM-FMI).

[14] First-generation policies exist in the framework of Fordism-Keynesianism and the social State, which, beginning with a "nationalization of the scales" (Brenner, 2004) formulates policies that promote development poles and industrial complexes with the objective of mitigating regional inequalities. Second-generation policies exist in the framework of the emergence and deployment of knowledge capitalism on the neoliberal development path, and policies related to the fragmentation and dismantling of the national space in the nineteen-eighties and nineties; when upon the base of a flexible spatialization model, industrial clusters predominantly consisting of small and medium-sized enterprises were promoted, with cooperation being the backbone supporting them, including industrial associations, unions, and local governments (Palacios, 2008).

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