

## **TERRITORIAL DEVELOPMENT IN THE GLOBAL LEARNING ECONOMY: THE CHALLENGE TO DEVELOPING COUNTRIES**

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***Abstract** - There were wide margins of variation in economic development among middle-income countries and regions in the 1980s. A new model of competition has evolved since then, based on continuous technological change, or "learning". In concert with this model, the world trade system has increasingly become oriented to trade on the basis of specializations, among rich countries or among countries who engage in such technological learning. The most successful developing countries and regions, do not copy an existing global best practice, but develop their own superiorities. This paper argues that the true secrets of success lie in the rules of coordination, both formal and informal, of the learning process in the successful developing economies.*

**Keywords** - DEVELOPING COUNTRIES, TECHNOLOGICAL LEARNING, CONVENTIONS, TERRITORIAL DEVELOPMENT, GLOBALIZATION

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### **1. TERRITORIAL ECONOMIES IN A GLOBAL ECONOMY: WHAT POSSIBILITIES FOR MIDDLE-INCOME COUNTRIES AND THEIR REGIONS?**

Outside of the four "dragons" of Southeast Asia, there is widespread frustration, if not despair, with respect to the possibilities for economic development in middle-income countries<sup>1</sup>. The decade of the 1980s was largely a rather bad one for many countries and regions characterized by stagnation or decline in output, real income, and severely inadequate employment opportunities. Faced with this reality, academic analysts lined up into three major groups. Most orthodox economists blamed the problem on the countries and regions themselves, arguing that the excesses of their pasts (indebtedness, inefficiency of the State, inflation) were responsible. Much of the academic left claimed that the problems were due to a higher-order structure, that of "global capitalism", which changed the rules for such places (especially the financial rules, via the debt crisis, and production rules, via an increasing integration of global production chains), forcing them to abandon strategies of national economic planning and growth poles adopted in the 1950s-70s. A third group began to look into the "meso-level" of economic and social organization in different countries and regions, at such factors as technology, institutions, and policies. They sought explanations for why there were such wide margins of variation in economic development among middle-income countries and regions in the 1980s, in particular with their ability to cope with the global economy.

This paper locates itself largely in the latter group. This perspective does not at all deny the role of global rules in defining possibilities, as described by the second group, but seeks to know why these possibilities lead to developmental realities as different as those of Brazil and Taiwan, Korea and Argentina, or even Portugal and Greece. I shall try both to describe the change in the global rules of the game for development in middle-income economies in the early 1980s, and then reflect on what goes on in territorial economies that can affect how they do within these global rules in the 1990s.

The argument with respect to the global system of constraints and opportunities is familiar to many. Around the beginning of the 1970s, the conditions which had enabled many nation-states in developing countries to engage in national economic

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<sup>1</sup> Middle-income countries are defined according to the standard World Bank definition.

planning, with its regional variant in growth poles, essentially dissolved. These changes had to do with many factors, but our analysis shall focus on their manifestations in technologies and markets. The ways in which developing economies must be integrated in the global economy if they wish to derive substantial developmental benefits from it are now very different from those of the period up to the 1970s.

This potential integration is based on a paradox : the most successful countries and regions in recent years, especially in East Asia, have the most "endogenous" forms of production, by which is meant forms of production based in technological, organizational, and institutional resources which are specific to the nation or region, not copies of any supposed single global "best practice". There are two main components of these specificities. The first is "hard" externalities in production technology and input-output relations -- which are well-known subjects of the development literature. The second, and perhaps most important, is much less recongnized in the debate, and consists of what may be called "soft" externalities in development: untraded interdependencies in the local economy, rules of action or "conventions", and local institutions of economic coordination which are situated in local economic practices, not imposed on actors from above. To make matters more complicated, both components are dynamic : they are not stocks, but trajectories. It is only in mastering these two trajectoiries -- the hard and the soft -- that successful regional development is likely in a global economy.

## **2. FROM THE POST-WAR ECONOMY TO THE LEARNING ECONOMY: AND THE CHANGING CONDITIONS FOR DEVELOPMENT**

There are always many ways to carry out economic activity, but only a few these fall, at any given moment, into the category of products and production methods that can act as "motors" of the rest of the economy. Activities are propulsive when they have either high productivity growth without rapid catch-up by competitors, or scarcity in the key inputs or knowledge required to produce them, and preferably both. Such activities allow for the accumulation of capital by those who master them: productivity increases by permitting quasi-rents on inputs or knowledge. The surplus profits thus earned can be ploughed back into the economy, through investment and consumption, to generate economic expansion. It helps if there is also rapid secular market growth (which adds the additional productivity push of scale economies to the other economic forces), but market growth alone will not propel an economy: it does not allow for

surplus profits if other producers can immediately imitate the knowledge or technology required to produce at equal productivity for an expanded market, for in a competitive market system, this merely pushes prices down.

A principal question for development analysis is which such activities are propulsive at any given moment, as well as how they are organized, what kind of geographical distribution they may have, and what it is necessary to do to get them -- and their benefits -- into a given territory. Celso Furtado -- the great Brazilian development theorist -- insisted on a similar point from the early 1950s on, i.e. that development is necessarily (though not sufficiently) based on mastery of advanced "technology", not mere copying or importation of production systems (C. Furtado, 1963 and 1983). He argued that developing countries and regions would have to become masters of the economic dynamic -- technology is just a shorthand for that -- in order to get out of the trap of price-cost competition within a world division of labor, with its limited developmental benefits. The problem that much of the post-war period created a kind of *trompe l'oeil* effect which fooled even the most brilliant developmental analysts, including the *dependencia* schools in Latin America (and beyond them, the proponents of economic planning in many European countries): they thought that merely by copying the production systems of the most developed countries or the dominant firms, and then inducing the maximum possible closure of their input-output systems inside the national territory, they could become masters of their own destinies (R. Prebisch, 1982 and A. Hirschman, 1958).

Here is how the *trompe l'oeil* effect worked. From the 1930s to the 1950s, the major industrial economies perfected a series of production technologies, organizational and management skills, and institutions, collectively known as "mass production". This system is capable of producing huge numbers of similar goods at relatively low cost, because the goods are standardized, allowing highly efficient production technologies and marketing systems to be developed around them. In its early years, i.e. in the 1910s and 1920s, the system was confined to relatively few regions and countries because the knowledge to produce the product was quite rare. But as it developed, a split opened up between two parts of the system: the direct production of consumer goods, and the production of capital goods and certain of the more refined components of consumer goods. The former involved technologies that had a slow, incremental pace of technological improvement; the production of the latter constituted the core technological dynamic of the mass production system from the 1950s onward. The former involved highly codifiable, imitable knowledge, i.e.

knowledge that could easily be shifted from one territory to another, packaged as it was in machines and in relatively simple skills or formalized procedures. The latter, on the other hand, involved an ongoing dynamic of discovery, of more radical forms of innovation than in the consumer goods sector; hence, they could not be implanted widely, willy-nilly, through the mere transfer of hardware of formal skills.

Thus, a huge part of the mass production system was transferred from country to country, that having to do with consumer goods production; final assembly plants were essentially turn-key operations that could be implanted by teams of engineers. Such transferability of technology applied to large parts of the input-output chain for complex assembly goods as well, especially if the country's markets were large enough. The relatively slow pace of product modification itself enhanced this transferability, so technological lags between products made in developed and developing countries narrowed steadily.

Many features of the world macro-economic environment made the geographical diffusion of mass production feasible. A dollarized economy with stable exchange rates and low interest rates made for a favorable world investment climate, as did the high rate of capital accumulation in the world's major industrial economies once the post-war recovery was accomplished. The strong currencies of the capital-exporting countries made investment in developing economies cheap for them.

A number of countries, especially in Latin America (but also extending to India, certain Mediterranean and European nations) implemented economic development strategies designed to take advantage of these technological and institutional circumstances. They use market protection and import substitution to hasten the process of transfer of industry to their territories, and growth pole policies to try and spread activity between different regions. Such strategies, while not desired by nor even approved of by major multinational companies in the developed countries, were nonetheless not seriously at counter-purposes with the technological or economic environments of the time. For all these reasons, such strategies often had dramatically positive growth outcomes in the 1950s, 60s, and even the 1970s, with industrial output and the diversity of that output growing remarkably in countries such as Brazil. A number of authors have called attention to the way these industrial economies imitated the mass production systems of the core countries copying their macroeconomic structures (A. Lipietz, 1985).

The national economy was in any case conceived as a territorial space in which the full complement of inputs and outputs could be located, thereby recirculating profits from production into investment, and demand from salaries into consumption. National technological independence and keynesian dynamics were to be complementary and virtuous. Statistics on world trade in relation to world output for the 1950s and 1960s reflect exactly this reality: trade growth paced that of output until the second half of the 1960s, exactly as it had done since the end of the first world war (OECD, 1992). National economies were spaces to which important parts of production systems corresponded.

There were major contradictions and failures in the developmental process associated with the buildup of mass production in the developing economies, all of them well documented in the development literature. Among these we may cite several. Increasing income inequality frequently came about due to labor market polarization in the face of highly labor-saving techniques used in the modern industrial sector, as well as due to the initial uneven distribution of property. Such inequality, of which Brazil is the most extreme case, created "keynesian" blockages within the national economy, i.e. a failure to expand domestic markets beyond a certain point. Highly protected industrial firms, once confronted with the tendency for demand to stagnate, turned ever more to their respective national states for additional protection and, in many cases, subsidy. Such subsidies were often provided without insisting that such companies devote sufficient attention to improving efficiency, and without subjecting them to domestic competition. In turn, oligopolistic price behavior created inflationary pressures in many economies, especially in Latin America, and these were aggravated by additional state borrowing to finance services in order to offset the social crisis generated by increasing inequality, as well as to finance the industrial subsidies themselves. The macroeconomic cycle of debt, inflation, depression and, finally, withdrawal of international capital is now well known.

The whole system had another contradiction. It tended to produce one or a small number of gigantic industrial city-regions, where a huge proportion of the nation's industrial output and workforce would be concentrated, to the exclusion of other regions, who delivered up the rural populations who migrated to the main industrial centers in search of underpaid work (M. Storper, 1991). Sao Paulo and Mexico City are notable examples. In turn, these enormous primate industrial cities tended to aggravate the social crisis of inequality generated by the economic development program itself, by concentrating huge masses of underpaid or non-waged people in a

small number of city-regions.

These social and collateral effects of the developmental model based on mass production of consumer goods were bad enough, but they were not the only problems. For there was a central flaw in the developmental approach itself. The underlying purpose of import substitution industrialization was not simply to allow each country to get the jobs and profits associated with its own domestic markets. It was to get the national economy started in the direction of mastery of knowledge, of technology, so that it could one day create its own developmental trajectory. Celso Furtado is quite clear about identifying import substitution, market protection and the reintegration of the national economic space not as a final goal, but as a *means* to the goal of technological-knowledge equality with the developed economies (C. Furtado, 1963). The *trompe l'oeil*, the optical illusion, refers to the notion that implanting large segments of the mass production system would necessarily generate such technological capacity. There was a large-scale "modernist" illusion, that implanting technologically-stable Taylorist-Fordist production hardware and consumer-oriented parts of the input-output chain could substitute for the painstaking social and intellectual dimensions of the development process.

Already in the 1960s and 1970s, there were worries about this, since the national economies in question were not moving smoothly from consumer goods production to capital goods production, but simply from traditional consumer goods to more complex consumer goods. Yet it was not until the mass production system began to founder as a paradigm for propulsive activity in the developed countries themselves, over the course of the 1970s, that the optical illusion would be fully revealed. There are many reasons for the unraveling of the post-war global keynesian order, with its key productive foundation, mass production in propulsive industries. These reasons have been the subject of a voluminous recent literature: exhaustion of productivity gains within the technological system itself; saturation of markets; increasing wage pressure; changes in consumer markets in the direction of greater product differentiation; and abandonment of the Bretton Woods system of fixed exchange rates around an overvalued dollar (which had stabilized the territorial configuration of producer prices since the War).

The logic and organization of propulsive economic activity today is quite different from that of the 1960s. The principal goal of management is no longer simply to compress costs around a relatively fixed set of outputs and markets (or around a predictable and planned evolution of those outputs, as in the Galbraithian "new

industrial state"), but to insure a much greater differentiation of products at any given moment while constantly adapting the configuration of products and processes to anticipate the competition. The transition is not from a so-called complete stability then, to "flexibility" now; it is, rather, that the nature of economic fluctuations has changed from predictable risks to true uncertainty (F. Knight, 1921), ranging from high rates of market volatility in low-technology industries (shifting consumer tastes, more product changeovers, more imitation), to the unpredictability of scientific-technological innovation in new technology industries.

Those firms, sectors, regions, and nations that learn faster or better than their competition become propulsive because their knowledge is often scarce; therefore it cannot be immediately imitated by other entrants or transferred, via codified and formal channels, to competitor firms, regions, or nations (B.A. Lundvall, 1992). Time is the crucial element in sustaining this desirable form of imperfect competition; the price-cost margin of learning-based production can rise and market shares can increase simultaneously, with attendant developmental benefits. Learning can also take the conventional form of superior productivity increases, again with developmental benefits, especially if these productivity increases are not easily or immediately imitable. In other words, in contrast to the consumer goods portion of the mass production system, inter-territorial transferability of the core elements of the learning economy is quite limited.

This switch in propulsivity is manifested in the reorientation of the world trade system since about 1965. World trade has grown much more rapidly than world output, in part because territorial economies now export the products where their learning is most effective. Increasing commodity trade specialization of nations is a major feature of contemporary world economic geography ((M. Storper, 1992).

Specialization due to superior learning is based on what economists call "absolute advantages", which exist when there is virtually no set of alternative factor prices that would suffice to attract the activity elsewhere; the mechanism of comparative advantage is secondary in these cases (G. Dosi, K. Pavitt et L. Soete, 1990). So there is no longer room for the post-war optical illusion: technological-knowledge mastery is central to the economic destiny of nations and regions, and there is no way to short-circuit it via the mere implantation of hardware or even large segments of input-output systems in the way that appeared possible in the 1950s. And the developing economies do not appear to be coping effectively with these new

conditions of participation in the global economy: in 1980, the 102 less rich countries on the planet accounted for 8% world exports and 9% of world imports; in 1990, these figures were 1.4% and 5% (P. Veltz, 1993). At the beginning of the 1980s, developing countries received 25% of foreign direct investment in the world, but this figure fell to 17% at the end of that decade, and flows were concentrated in fewer countries.

But not all developing middle-income economies suffered this fate. The economies which combined export-orientation and institutional conditions promoting domestic skill acquisition and technological upgrading of products and processes did well in the 1980s: they engaged in learning which enabled them to escape, at least partially, the cost-price competition trap in world markets.

### **3. DEVELOPMENT STRATEGIES AND NEW TERRITORIAL CONFIGURATIONS**

There is both continuity and change in the international division of labor. Continuity in that the post-war development of global commodity chains, in the form of the territorial division of multinational production systems into core areas (those where technological-knowledge mastery, i.e. advanced learning, takes place), routine production regions (branch-plant regions for certain components and assembly, and market-serving assembly), and excluded regions (those who do not partake of international production circuits in an important way) continues to develop at a world scale.

Most industrializing countries -- such as Sri Lanka, Indonesia, Turkey or the Philippines -- are routine production sites with respect to the global economy. They are in some ways more vulnerable than they were in the post-war world "core-periphery" configuration. In that system, cores and peripheries had standard center-hinterland relationships, whether at national level or at international level (P. Veltz, 1993 ; R. Vernon, 1971 ; A. Liepietz, 1977 ; F. Frobel, J. Heinrichs, O. Kreye, 1980). Such clear, hierarchical, structured roles within production systems and as whole economies no longer exist. Routine production areas are, in most cases, simple production locations without any wider necessary relations to "core" investing economies. The extreme manifestation of this is that in some industries, especially those with low fixed capital requirements, there is a "roving" division of labor, with companies alighting in a country or region for just a few years and then moving on as soon as wages rise above the global minimum. This has been happening in certain areas of southeast Asia and Central America in recent years. In general, the developmental possibilities afforded by branch-plant development are more limited than ever. It remains fundamentally vulnerable to changes in markets and technology if export-oriented; it remains fundamentally subject to local income constraints if oriented toward domestic markets; and in neither case is it a creator of markets and technologies. Thus, while the expansion on a global level of mass production continues apace, and generates spectacular growth effects in certain times in particular developing regions, it cannot, taken alone, serve as a vehicle of true development.

In other cases, branch plants involve a certain amount of technological upgrading and skill upgrading, and the State plays a significant role in determining the

extent to which this is the case. Brazil and Mexico are intermediate cases, where what remains of post-war import substitution strategies and existing capital goods production leads to some upgrading (with the notable exception of most of the Mexican *maquiladora* border industries).

A third group of countries interacts with the global economy in a different way. The long term motor force in their regional and national development success (defined as growth with proportionately increasing real per capita incomes) is the progressive improvement of their technological capabilities, while combining this with productivity advantages. They have all sustained the development process, and are moving toward the point of absolute technological advantage in certain areas, on a par with the advanced nations. In some, this occurs primarily through foreign direct investment on the part of transnational firms (e.g. Singapore); in others through locally-owned big firms (Korea) or locally-owned small to medium-sized enterprises (Hong Kong, Taiwan).

Nations that pursue such learning-based activities have an entirely different territorial relationship to the global economy from the other two groups of countries cited above. Paradoxically, their favorable relationship through exporting exists because their learning process is highly "contained" within firms or networks of firms, actors, and institutions; learning is contingent on scarce and territorially-specific knowledge and practices.

#### **4. TERRITORIALIZATION AND LEARNING: THEIR ENDOGENOUS CHARACTER**

An activity may be defined as territorialized when its economic performance is dependent on localization (place-dependence) and where such localization is place-specific, i.e. rooted in resources that are not available in many other places or cannot easily or rapidly be created or imitated in places that lack them. Much learning-based production is territorialized because it shares these characteristics, although not all learning-based production is territorialized. In the developed countries, where the overall intellectual and social infrastructure is deeper and wider, spatially-extended networks of learning activity have become possible in many sectors (P. Veltz, 1993). But, not only is this not a decisive phenomenon in many developed countries (M. Storper, 1992), it is even less possible in developing countries, where as a result the basis of technological learning is overwhelmingly likely to appear in the form of

contained islands in the national economic space.

To see why this is the case, we need to compare three different possible approaches to the territorialization of learning.

The first is the traditional notion of "agglomeration" economies: these are what we may call "traded, direct locational externalities". The point of departure for much of this reasoning is François Perroux's theory of "economic space" (*not* geographical space). Economic spaces are defined by dense linkages between activities within a division of labor, in the form of input-output transactions or overlapping input requirements. Over the past decade, much effort has gone into theorizing and measuring the relationship between economic space and territorial space (A.J. Scott, 1988), because agglomerations seem to have "reappeared" on the landscape of advanced capitalism in association with the new learning economy. The growth of dense "industrial districts" in many countries, whether in small -and medium- sized cities, or within large metropolitan centers, seemed to partake of this phenomenon. In some of these cases, dynamic learning processes are in evidence. But in many other cases, agglomeration based on linkage is highly present, but evidence of learning is not. Unfortunately, in major cities of some developing countries, the agglomeration is all-too-frequently merely a way to offset uncertainty, to shed risk in an uncertain economic climate (M. Storper, 1992).

Moreover, while research on industrial districts has demonstrated that the growing territorial cores of learning-based industries often do involve dense, local input-output linkages, it has not solved the problem of territorialization in the global learning economy. This is because many such core areas *do not* have an overwhelming concentration of local input-output linkages (it depends on the country and on the industry: local linkages are high in the neo-artisanal industries of Italy, relatively low in Californian high technology). The reason is that *not all learning which depends on agglomeration depends on direct traded linkages between firms*.

It appears increasingly that specialized knowledge and organizational talents, as developed through learning, is developed in place-specific contexts due to knowledge spillovers and complementarities: these are indirect locational externalities, the second possible explanation for the territorialization of learning. In the case where, for example, two industries depend on similar kinds of technological knowledge, but do not trade with each other, they will tend to trade with similar input suppliers and to hire

people from the same labor market and from the same training institutions. So the linkages are traded, but not between the agglomerated firms. The technological spillovers made possible by such linkages are all-important to the companies caught up in this technology nexus, encouraging agglomeration.

But even this conceptual expansion of the notion of traded linkage, from direct to indirect, is insufficient to capture what we know about technological and organizational learning. All activities of learning, of *development* in the truest sense of the word, involve uncertainty, in that there is no possible configuration of markets and firms which allow zero levels of inter-dependency on other actors. There are many kinds of uncertainty (in different kinds of markets, with respect to the particular kind of technology and knowledge at hand, etc.), and thus many different possible solutions to it. The main way that such uncertainty is resolved is through *conventions*, which are taken-for-granted rules of thumb, routines for action between the partners to different kinds of relations defined by uncertainty.

When we speak of conventions, we mean rules of thumb, based on precedent, that establish specific, context-bound expectations in actors, enabling them to proceed under conditions of uncertainty in ways that are consistent with, and therefore likely to be met by appropriate forms of reaction, the expectations of actors upon whom they are dependent. They affect virtually every area of production, including producer-market relations, employer-worker relations, investment behavior, and producer-producer relations. Markets, for example, are assumed by most economic theory to be fully described by price and quantity data, and by institutionalists to incorporate "structural" factors. But markets are much more than this: they are, fundamentally, relations between producers and buyers involving fluctuations and uncertainties. Such uncertainties differ according to the product at hand (in some cases, they are subject to production smoothing through forecasting and planning; in other cases, they involve interpersonal relationships between client and producer; in still others, they are spot market relationships). The particular way that such uncertainty is resolved, and whether it is resolved efficiently, depends on the kind of precedent established and the resulting convention of actors. There is a plurality of ways of resolving uncertainty through precedent, not one single best practice, for every such situation. There is also the possibility of failure, which will be revealed as lack of competitiveness or, in the case at hand, failure to learn. Production systems are an intricate web of such coordination processes.

These frameworks of action, rooted in conventions, are quite different from both direct and indirect traded linkages: they are *untraded interdependencies* between actors (D. Dosi, K. Pavitt et L. Soete, 1990). These untraded interdependencies are often the key to whether the traded linkages work properly to produce technological and organizational learning. They are a kind of "glue" which works behind the backs of traded linkages.

Conventions exist in association with virtually all forms of economic activity, but they are likely to be particularly important when high levels of substantive complexity in information and its interpretation are at hand (a condition associated with learning). Many kinds of information, for example, do not stand on their own: they require communication outside the formal structure of the information in order for people to come to common agreement on what is being said (B.A. Lundvall, 1990 and 1991)<sup>2</sup>. This is true not only for technological information, but also for political information in the economy, as in work rules and governmental rules. Moreover, for communication-based coordination to occur, we have to have some level of confidence in what others say or do, or at least some confidence in how we interpret them. In the first case, some degree of trust is at hand; in the second, dense and multiple understandings of what is being transacted are required, i.e. ways of reading between the lines, of verifying in multiple ways the possible meanings of what is an inherently uncertain formal content (B.A. Lundvall, 1990 and 1991).

We may now return to the geographical unevenness and differentiation of much learning-based economic activity. Though the price dimensions of extensive external transacting cannot account for their geography, the non-price dimensions of transacting -- their conventional "glue" -- are likely to be highly differentiated from place to place. The conventional and relational content of these transactions is often not easily duplicated, transferred, or imitated from place to place. The problem is that because scholarship has concentrated so much on traded input-output relations, we have little systematic knowledge of the geography of untraded and indirect interdependencies, and their relationship to economic development.

This gives us additional insight into the central paradox of territorialization within today's global economy: conventions-as-untraded-interdependencies are by definition highly "endogenous" forms of economic coordination. They are generated

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<sup>2</sup> Lundvall has argued this most extensively.

through rounds of action and interaction among economic actors, leading to taken-for-granted regularities in what they expect from each other and what they do. Much social science tends to view such phenomena as mere "residue" of the past, destined to disappear in the face of modern, universal logics of development, convergence toward singular, optimal best practices, and so on. This narrow way of viewing the sources of economic development (which has both neoclassical and marxist variants) has come under strong empirical and theoretical criticism in recent years, and for good reason. The leading edges of contemporary economic development are in many ways highly-dependent on these historically-created and geographically-differentiated conventions, customs, and institutions. Indeed, the core areas of the world economy have become cores because they embody forms of economic efficiency which are in many ways localized,

customary, territorially-rooted and territorially-specific (M. Storper, 1995)<sup>3</sup>. And, in purely territorial terms, it may be that geographically-limited untraded interdependencies often outlive geographically-constrained input-output linkages, especially direct input-output linkages.

Nexuses of both indirect traded linkages and untraded interdependencies in production systems are not territorially concentrated in all industries or at all times. We may imagine a complex set of territorialities -- i.e. at different geographical scales, from local to national to world-regional and global -- for different types of indirect and untraded interdependencies. Some will be highly localized, as in the case of extremely uncoded information or interpretative dimensions of skills. Others may be national in scope, as in the cases of industrial coordination conventions which are established in a national territory through successive rounds of national economic integration and diffusion of behavioral precedents and rules-of-thumb, embodied usually in non-technical, culturally-embedded national linguistic tropes. Some may be established through formal national institutions, such as professional associations and standardized national curricula. Still others will be international in scale, often embodied in internationally-recognized multinational corporate practice.

There are always two active forces tugging in different directions on the geography of interdependencies. One is the bureaucratization of capitalist enterprise, with its tendency to diffuse an internationally-recognized matrix of rules to people, especially managers and professionals. This is the equivalent, for untraded and indirect interdependencies, of the force of standardization and substitutable components in hardware. The other is the ongoing development -- unplanned and unforeseeable at the outset -- of new forms of knowledge and the means to interpret and communicate it, on the one hand, and new nexuses of highly context-specific human relations, on the other. The former is related directly to technological and organizational evolution. The latter, more complex to grasp occurs because local groups of people are constantly redifferentiating their practices and relations at the same time that rounds of bureaucratic "standardization" sweep over them. Thus, major global corporations are places where management increasingly speaks an inter-industry, global language of

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<sup>3</sup> Thus, these dimensions of production are not just secondary outcomes of the information attributes of an industry's technology or division of labor: once in existence, conventions can have important long-term feedback effects on the evolution of such technologies, divisions of labor, products, so that the degree of endogeneity associated with such learning does not necessarily diminish, but is reproduced as long as non-formal foundations of learning exist.

management, easily recognized from one firm to another and across the continents; but paradoxically, each major multinational has its own culture, including international but firm-specific human relations, many times achieved by relocating managers from the country or region of origin, so important is this form of asset specificity to the workings of the corporate bureaucracy.

Thus certain highly complex, relational interdependencies are incorporated in large corporate networks and even in scientific-professional associations, through intensive human contact and sustained investment in networks of human relations. These evolutionary tendencies are in constant combat with each other, making geographical outcomes a two-way street between localization and diffusion, not a one-way highway to dispersion.

Note that there is thus no automatic correspondence between internationalization of markets and deterritorialization of productive activity. World trade is territorially specialized because those activities with the highest skill, knowledge or technology contents, are increasingly located in particular places. They are also increasingly inserted into networks of relationships with other territorialized cores and with the deterritorialized (routine production) activities of their production and marketing systems, giving rise to globalized-localized systems of production (sometimes now called "glocalized" in contrast to the incorrect image of placelessness associated with the term "globalization").

One principal dimension of this territorialization is the behavior of the major technology-based multinational enterprises, who tend to keep their most important technological activities in their home countries<sup>4</sup>. Studies also show that the foreign direct investments of these companies are attracted to the technology core regions of other countries; they tend to be territorial followers, not territorial leaders. The overall result of these dynamics is that a high proportion of the value which is traded in the contemporary world economy emanates from territorial production cores in industries which form the export specializations of their respective countries.

## **5. THE TWO TRAJECTORIES OF ECONOMIC DEVELOPMENT: TECHNOLOGY AND CONVENTIONS**

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<sup>4</sup> A thorough review of the degree of "nationality" of multinationals can be found in M. Carnoy, M. Castells, S. Cohen, F.H. Cardoso, eds (1993) ; J.H. Dunning (1988) ; P. Patel et K. Pavitt (1991).

A major problem for development strategies now poses itself on the basis of the foregoing analysis: where appropriate conventions cannot be constructed, it is unlikely that any economic development program, no matter how brilliantly executed around the traded dimensions of the economy, will be successful.

*Two trajectories, not one.* It used to be thought that economic development could be forced via technology policy. In developed countries, especially in post-war continental European countries, most such policies were mission-oriented; they undertook large-scale technology-development programs leading to a specific kind of final output such as petrochemicals, airplanes, or computers. The United States adopted a military version of these policies in order to wage the Cold War. These policies are very expensive, have long latency periods, and suffer from high failure rates, such failure being largely technological for military projects and both technological and economic for civilian projects (H. Ergas, 1992). They also have produced brilliant successes, such as Airbus or French high-speed trains. Brazil succeeded via such a policy with the civilian branch of its aircraft industry, Embraer, but has not yet succeeded in its computer industry (more on this shortly). Success comes in industries where basic knowledge is already fairly mature and the product is a large-scale technical ensemble with very high barriers to entry. Mission-oriented technology policies do not appear to work for basic technological components (e.g. microelectronics), final outputs with rapid learning curves (computers), or complex capital goods (machine tools, for example). They do not even work for low-tech but highly differentiated products (the French *plan textile* failed utterly). The learning economy is highly unadapted, with these few exceptions, to mission-oriented policies.

The object of policy in the learning economy must not be simply to install hardware in a place and the skills required to operate it, but to set a nation or region on a learning-based technological trajectory in particular technical-economic spaces (ensembles of activities characterized by direct and indirect linkages). The task is a complex one, designed to keep the region moving from one point in a trajectory to another. As other regions in the world economy catch-up and become capable of imitation, it moves onto activities which reflect recent learning. This enables it to enjoy the economic quasi-rents of scarcity. The region, in other words, travels a technological trajectory so that it is a moving target, not a static target.

But just as learning is the outcome of untraded as well as traded linkages, so policy must focus not only on technological trajectories per se, but on the conventions

that seem to make them possible for a given group of actors. Hardware is not the only problem; a national or regional economy must also construct and keep reconstructing the conventions -- frameworks of action enabling economic coordination and communication to take place -- that enable it to turn one-time skills and given stocks of hardware into effective technological trajectories. The challenge of the global learning economy to territorial economies, then, is to establish and maintain not one economic dynamic, but two: the technological trajectory, i.e. mastery of specific spaces in the economy characterized by technological spillovers and complementarities (G. Dosi, K. Pavitt et L. Soete, 1991 ; L. Tyson, 1992), and the trajectory of conventions or untraded interdependencies which build the capacities for ongoing collective action in regions and nations so as to permit transformation of hardware into technological trajectories.

*Conventions : Neither Micro nor Macro.* The problem of ongoing adjustment or collective action is most frequently referred to as that of *institutions* although as we shall see shortly institutions are only the tip of the iceberg of the untraded interdependencies or conventions which we have been analyzing here. Discussions of the institutions needed for endogenous economic development usually fall into either the "macro" camp or the "micro" camp.

On the macro side, Taiwan and the other dragons of Asian are the favored positive examples, and various Latin American economies the negative examples. The Latin American model has been based on: (a) earlier industrialization than in East Asia; (b) heavy reliance on foreign multinationals; (c) extreme underlying economic inequality; (d) use of the State as a substitute for the market via import substitution industrialization; (e) little endogenous technological development; and (f) practices inferior to world standards. All this is a descriptive institutional version of what was referred to earlier as the *trompe l'oeil* effect in Latin American industrialization strategies. The East Asian institutional "model", by contrast, has been characterized as consisting of: (a) local ownership and control; (b) substantial development of backward and forward linkages; (c) a high level of endogenous technology development; (d) industrialization by learning best practices or inventing them; and (e) state intervention that "governs" the market rather than substitutes for it (G. Gereffi et S. Fonda, 1992). In the extensively-studied Taiwanese case, for example, it has been shown that the developmental process has been strongly guided by the State, not left to the market. The State judiciously intervened over the entire post-war period, in four principal ways. It generated an initial income distribution which was not excessively

unequal, using land reform as a key way to regulate the flow of rural to cities, thus raising rural incomes and preventing excessive downward wage pressure in the cities; it directed credit toward key sectors, while using devaluation only very selectively and not as a centerpiece of the economic policy, while preventing currency speculation (through a bank-oriented finance system); it used protection, but with export-orientation, growth-orientation, multinational participation and steady opening to market pressures; it had an effective economic policy apparatus in the State, underpinned by high levels of technical competence and stabilized through political corporatism (R. Wade, 1990). As is well known, these conditions have not been widely generated outside the Asian context. High levels of income inequality, price instability, uncontrolled money credit, and political instability have reigned, for example, in many Latin American countries.

The micro-institutionalists claim that "getting the prices right" is the means to development, and that do this, state should, as their primary mission, enforce the absence of impediments to the action of the market. The problem with this reasoning is not only factual -- i.e. that there is little concrete evidence for it in such cases as Taiwan, Singapore or Korea --but also theoretical. Advocating the use of a State to *enforce* the market presumes fundamental institutional stabilities that do not exist in many countries. It also assumes that, fundamentally, the relevant actors in the economy are ready to play by the rules of the market, i.e. that there is a widespread and deep social agreement about markets. Markets, in other words, are *conventions* between persons that permit that a particular kind of collective action, that of "market relations". This may exist in the United States, but it is not the essence of the social contract in most other countries, even in continental Europe. So it is disingenuous to invoke the need for the state to prevent institutions from impeding the market as the precondition for development, as do some of the New Institutionalists (D. North, 1981).

The most sophisticated institutionalist analyses of pathways from the periphery (S. Haggard, 1990) in East Asia show the complex and intricate interrelations between macro-institutional strategies and their effects on micro-level behavior and routines in markets, prices, entrepreneurship, and technological learning.

The conventions or untraded interdependencies required for successful technological trajectories correspond to neither the "macro" nor the "micro" of most institutionalist analyses. On one hand, macro-institutional formations are expressions of the possibilities for collective action in any given society. Wade, for example, notes

that the whole technical apparatus which generated the macroeconomic context and trajectory of Taiwan depended on the "authoritarian corporatism" of the Taiwanese state, holding dissident elements of the civil society in check, whether they be popular opposition or elements of the capitalist elite, without having to resort to outright dictatorship (Wade, 1990). The point is not whether or not we like authoritarianism or corporatism, but rather that the conditions existed in Taiwan to hold large segments of economic actors in conditions of *coordination* with each other so as to travel along technological trajectories. The macroeconomic strategy depends on the existence of these other conditions. And it is important to realize that authoritarianism alone does not accomplish this goal; many other developing countries have tried authoritarianism, notes Wade, did not need to be harder than it was because there were deeper conditions of "agreement" -- dare we say convention -- that undergirded it, in the civil society itself.

This is not precisely the same thing as dividing development strategies into outcome-generating (macro-institutional arrangements as independent variable, micro-behavior as dependent) and into generated outcomes (micro-foundations of macro-institutional arrangements as independent variables, macro-arrangements as dependent variables). Rather, it is a claim that conventions underpin the functioning of both micro and macro institutions and routines in the economy; they are ever-present conditions of the ways that economic actors coordinate with each other, in both "big" institutions and "small" ones. There is an irreducible level of understanding of these conventions which must be attained in order coherently to identify possible pathways from the periphery. Without it, formal development strategies are likely to be undone by powerful, contrary circles of precedent, i.e. incompatible conventions.

This notion that development must consist of the dual trajectories of technology and conventions, and that they must be consistent with each other is suggested by two examples. The first is "development without hardware". Post-war Germany and Japan found themselves with little physical plant or infrastructure. In terms of their raw productive capacities per capita, they were something like middle-income countries today. They were aided by the Marshall Plan, certain private fortunes which survived the war, and ultimately by inward foreign investment, largely from United States. But fabulous economic development was produced from a miserable starting point in terms of hardware. This development cannot be reduced to the presence of a fixed stock of "skills" or "human capital", although they certainly did exist in good quantity. Rather, both the German Japanese peoples established systems of relations which enabled them

first to rebuild physical infrastructure, and then to become vigorous innovators in a number of sectors and thereby to take increasing shares of world markets. The keys to success were the myriad ways that actors interact in firms, labor markets, research institutions, and in input-output systems that amount to effective economic coordination. These systems of relations were not mere reflections of the formal "macro" constitutional structures imposed on them after the war (Scully et W. Gerald, 1992); some countries who started out with relatively intact hardware, stable constitutional regimes and favorable geopolitical positions, such as Great Britain, have fared worse over the same period. Could it be that the economic actors in these countries are locked into ineffective conventions with each other ?

The second class of examples are those of "hardware without development", where the absence of collective order and coordination makes hardware prone to failure. In 1970s, Italy increased the autonomy of her regional governments. They were endowed with a wide range of powers to promote economic development, though not much direct power in the matter of industrial policy. Over the same period, the *cassa per il Mezzogiorno* was quite active in installing all kinds of public goods and private investments in the southern regions. And then along came Europe, with its massive infusion of resources from the structural funds of the EEC. There has never been a more ideal testing ground for the possibility regional development in an underdeveloped region: national and international funding and institutional decentralization within a wealthy, constitutionally stable country, when other regions in the same country experienced impressive, internationally competitive economic growth during those decades. The fate of both the regional governments and the economies of the southern regions is indicative of the problem. D. Putnam et al (1992) studied the regional governments from 1970-1990, showing that the regional governments in the south have all performed poorly in their mission, while those in the north have performed well. The absence of what he calls a "civic culture", and what we are more precisely calling a set of virtuous conventions of economic coordination, makes almost any effort at creating formal institutions or of applying investments, doomed to failure. Mistrust, fear, the retreat to particularistic social groupings such as natural family or mafia family, and so on, impede the formation of such conventions, no matter how high the investment level or how wide the institutional powers. Without needing to invoke the problem of mafia which is specific to the Italian case, we can easily see analogous phenomena in other regions in the developing countries.

The French example is also revealing. The application of a hardware-oriented

"endogenous growth policy" by the Socialist government in that country throughout the 1980s emphasized raising the quality of factors of production in the underdeveloped regions of the national territory (education, roads, telecommunications). The strong central state had also encouraged decentralization of numerous production facilities (routine manufacturing) since the 1960s, and higher level research centers since the 1970s, to less developed regions. Moreover, and unlike the Italian case, this policy was executed by a strong central state staffed by extremely competent people. And all this was combined with a major institutional reform in 1982, a decentralization of administrative power to local governments. But for the most part the ages-old pattern of "Paris and the French desert" has repeated itself. The failures of decentralization in France cannot be attributed exclusively to the attractions of Paris. For one thing, Paris suffers from all the diseconomies of any city of that dimension. Moreover, in other countries with similar big cities (e.g. New York in the USA), the pattern of centralization has not been repeated, in spite of New York's similar concentration of economic resources (A. Markusen et V. Gwiasda, 1994). The problem of the French desert is not as dramatic as in the Mezzogiorno, economically or sociologically. It is analogous, however, in that the regions and localities of France which are excluded from the development process have long suffered from deprivation of their own autonomous capacities for action. In part, this deprivation is the counterpart of its opposite: the overwhelming endowment of Paris with political, institutional and symbolic-prestige resources (much more so than for the comparison American case of New York City) (R. Salais et M. Storper, 1993). A mere law on decentralization combined with hardware will not suffice to build anything resembling collective capacities for learning-based development. This is a painstaking task of building up skills, physical capital, knowledge of markets, and so on, but more importantly of "gluing" all that together in a set of conventions that establishes the framework for collective action known as technological learning in a particular technological-economic space.

By way of example: if one rereads accounts of successful East Asian development (Wade, 1990) or -- in a developed country context -- the Japanology literature, it can be seen that repeated references are made to confidence-building and loyalty-building rules inside firms and in firm-firm relations and even of "relation-specific assets" (B. Asanuma, 1991). These are conventions by which firms establish relationships to markets which are specific, and particularly effective at sustaining learning because of the ways they maintain inter-firm coordination over time. Another subject in the Asian development literature is the relationships between financial

institutions and productive firms. Though very different from country to country and industry to industry, the constant factor is the confidence in saving that is established throughout the economy, and the practices of financial institutions in keeping interest rates down, coupled to the arms-length relationship of firms to investors, allowing dividends to be low and retained earnings high. These, too, are conventions that coordinate the parties to these arrangements, not explicit or formal rules. Other examples can be found in the system of labor relations, as in the convention of loyalty in return for hierarchy in large Japanese firms and in their subcontracting relationships. It is in these detailed webs of precedents and expectations, and the specific content they give to interdependencies in the production system, that different pathways of learning and competitiveness may be sought.

## 6. TWIN STRATEGIES OF DEVELOPMENT

This is a disappointing kind of analysis of what countries and regions must do to command propulsive activities in a global learning economy; disappointing because monstrously complex, far more so than any of the extant orthodox ("markets"; "getting prices right") or even more well-know heterodox ("institutions", "skills", "networks") policy frameworks. Some broad-brush principals for policy follow from the analysis presented here.

*Policy for Technological Trajectories.* The object of policy can be defined in a way which was impossible a decade ago: generating a technological trajectory (products and processes) in a given economic space, voyaging up it, and continuing to extend it. And the means which policy should use to accomplish this task must be tailored to the nature of technology as a dynamic process which is both continuous and discontinuous, where much of it consists of tacit knowledge developed by actors and between them (especially through user-producer interactions) and where structural competitiveness is just as important as market competitiveness.

Students of technology-based development have begun to develop a "heterodox" policy framework for the learning economy. The specific features of such policies are many and varied. Keywords include: networks, flexibility, decentralization, inter-firm linkages, research and development, technopoles, training, and so on. These are the public goods which such policies are said to require nowadays. Note that the public goods provided by such policies differ from those prescribed by mainstream economic theory, and so does their political justification (L. Boltanski et L. Thevenot, 1991). In

the latter, "market failures" sometimes occur, and public goods can be provided to rectify them. Such public goods must have economy-wide applications, i.e. they must be as *generic* as possible (general labor skills, infrastructure, ect.). They can then be implemented by particular private-sector actors, in combination with specific assets of firms and industries. Government does not "pick winners" in this analysis. The new theory also calls for policy to produce public goods where markets are likely to fail, but allows that they may be *specific* to technological spaces; it is their developmental properties (evolution along trajectories through learning) that ultimately generalize their benefits to the wider economy and society. These public goods start out with specific characteristics which subsequently have general effects through learning, spillovers, and complementarities, and these general effects may therefore widen over time and space. Market failures, in other words, may be specific to technological spaces, and so the means to rectify them may be directed at the actors in those spaces. Such means include the establishment of institutions for a number of purposes : (a) smoothing inter-establishment industrial networks, where markets lead to failures of information exchange; (b) helping firms benefit from common stocks of technological knowledge where they cannot do so individually, nor execute contracts to do so collectively; and (c) coordinating collective investments in local labor markets, where individual firms might tend to withhold such investments for fear of free-rider effects by other firms or workers (M. Storper et A.J. Scott, 1993).

One specific requirement of implementing such a technological strategy which unfortunately is often omitted by its practitioners is the analysis of possible technological-organizational branching points in particular technological spaces. These are the points at which technological spaces are amenable to redefinition (the "windows of opportunity"), when it is possible to introduce or master products that will serve as the supports for learning, and which are not locked-up by existing producers. At these points in the trajectory of a technological space, it is possible for countries and regions to become entrants, because nexuses of external economies and untraded interdependencies of existing strong producers lose some of their grip. Specific public goods in this case are oriented toward helping infant industries or "getting an early start", and include providing pre-competitive and enabling R & D.

Many of these goals were behind the Brazilian law protecting the computer market in the 1980s (the *lei de informatica*). The idea was to encourage the development of skills specific to a particular technological space in the economy and thus to promote the structural competitiveness of the Brazilian economy in parts of the

world computer market. There is no question that this policy allowed certain skills to develop in Brazil, especially in certain subsectors of the technological space, such as electronic banking (H. Schmitz et J. Cassiolato, 1992). It is not however, evident that the programs undertaken are capable of leading to learning in the sense that we have defined it here (as original endogenous development of the technological space), not mere copying of skills or hardware already developed elsewhere; and the test of this is that Brazil has virtually no world market presence in computing, software or semiconductors (whereas another developing country, South Korea, does).

Schmitz et al ascribe this failure to the lack of an overall industrial policy (H. Schmitz et J. Cassiolato, 1992); in other words, there appeared to be a focus on using the large national market to acquire the level of skills and hardware already existing elsewhere (and the policy did not fully succeed even in this limited dimension of the learning process), rather than on possible transition pathways from this initial "stock" of human and physical resources to other points along a technological trajectory. A key element of any such policy is precisely a sense of possible transition pathways, much in the way which was conceived explicitly by Taiwanese industrial policy technocrats throughout the post-war period (Wade, 1990).

In general, then, the kinds of technology-based industrial policies to which we refer here must not only correct market failures within the technological-economic space and provide for an early start, they must also sustain the learning trajectory. Key means of doing this, which have been explored elsewhere (M. Storper et A.J. Scott, 1993), include: (a) regional technology centers to promote ongoing incremental innovations; (b) labor training for industrial adaptation; (c) industry service centers for coordinated adaptation of firms; and (d) regional and industry development funds capable of looking forward, pointing the way, and bootstrapping early efforts toward transition from one point on a given trajectory to another, or to jump from one trajectory across a technological "window of opportunity" to a different but parallel trajectory.

It should be admitted, however, that we have little systematic evidence as to their efficacy, even less as to how they fit together into a coherent whole, and virtually none as to how they fit together into a coherent whole, and virtually none as to how they operate over time. And, quite frankly, many of these words have become mere empty lists which are used to justify almost any kind of localist action.

*Trajectories of Conventions.* To avoid the latter danger, such institutions must be rooted securely in the situations of action defined by participants themselves; no ex ante formula is likely to work. That is, institutions must be rooted in and support, conventions; in the end, institutions are themselves conventions.

Setting conventions into place is a much more murky task than setting technological trajectories into motion, however difficult the latter may be. Some industrial policymakers and many institutionalist scholars, however, already implicitly make reference to this task when they analyze, sector by sector, the requirements of coordination between the different actors that must go into the production system. Why do producers in clothing need subcontractors that are, at one and the same time, highly sensitive to costs and highly adaptable to changing markets and the time dimension of production? Why do those subcontractors, in order to survive, need order-givers who will compensate for their high demands with reasonable terms of payment and credit, long-term loyalty, and technology and knowledge-sharing? Note that both sides to this relationship require coordination. In the absence of coordination, performance will be inferior (the producers will have to internalize more production, losing flexibility and specialization; the subcontractors will invest less in their skills, tend to pay less attention to the specific requirements of the producer, and even then will tend to be squeezed out by the producer's cost compression and volatility). Uncertainty can be abated, provided that all parties to the relationship have rules of thumb to which they subscribe which are mutually coherent. Many such conventions are specific to each technological-economic space.

One way such relationships have been constructed in the clothing and electronics industries is through the institutional device known as "specification subcontracting" in East Asia: producers there commit to produce to certain specifications, but do so without substantial interference at the organizational level by the order-givers (G. Gereffi, 1994). Both parties know, and respect, price and specifications and time limits on deliveries. The advantage for subcontractors is, of course, the possibility of learning, because the organizational and technological content of production is not limited to fixed roles defined by the order-givers.

It is tempting to suggest, simply, that subcontractors in Latin America and other less-favored regions should switch from capacity or task subcontracting to specification subcontracting: a transfer of a successful institution from one place to others. But it is unlikely the transfer would work in many Latin American contexts: the

whole tissue of conventional interactions between subcontractors and order givers, and even more importantly, between the subcontractors and local partners, workers, machinery builders and suppliers, financiers, and so on, is not in place.

The metaphor of conventions, common action frameworks, untraded interdependencies as a kind of glue especially revealing for the contemporary Brazilian case. In a detailed recent study of technological modernization in Brazilian industry, Ferraz, Ruch and Miles (1992) note that there is enormous learning at the level of the firm occurring in many different industrial sectors in the Brazilian economy. But one element which is missing from the strategies of firms in their detailed survey data is the possibility of inter-firm cooperation, i.e. of building external relations which involve *interdependence* (J.C. Ferraz, H. Rush et I. Miles, 1992). In the absence of the possibility of building such interdependencies, firms must rely on modernization which is confined, to the maximum extent possible, within the boundaries of the firm's production units. This may work for some products, but it will not work for all, especially those production systems where technological learning is highly dependent on inter-firm specialization and trade, or on labor markets which are highly externalized: conditions which are thought to be central to technological learning in many industrial sectors nowadays (D. Foray, 1990). The pervasive macro-level instability of the recent Brazilian experience, combined with pervasive mistrust at the level of inter-firm relations and in labor markets, are clear impediments to learning; building such conventions from the bottom up is a critical task in the Brazilian economy today, as in many others, and will determine whether the hardware which firms are ready to install will be a one-time competent imitation of best practice imported from elsewhere, or the technical foundation to a complex social process of learning-based development.

*Trust, Confidence and Precedent.* There is a role for institutions here, especially those that promote trust, confidence and precedent in the forms which are specific to particular technological-economic spaces, without which interaction is for survival, not for learning. Yet institutions can only help insofar as the actors who are supposed to be coordinated by the institutions are favorably disposed to be coordinated. Formal rules are easily ignored or evaded. Institution-building thus must be *situated* within the context of the actors themselves, build upon what exists toward something better; they cannot be imposed as sets of formal rules upon unwilling actors.

The circular relation between public institutions and the learning economy

requires that the parties to public institutions somehow be convinced of the utility of having a public institution help in supporting the conventions and relations which learning possible. Talk between the parties may be one approach. Much has been said about the difference between institutions that function via a combination of loyalty and voice, versus those that rely on exist for adjustment and structure (A. Hirschman, 1970). Talk is upstream of voice, in that there is no institution yet existing in which the channels for voice among loyal parties are already established.

Talk refers to communicative interaction, designed not simply to transmit information and preferences, but to achieve mutual understanding. It can immediately be objected that if there is no tradition of communication or, worse, if there is distrust or antipathy (characteristic of hierarchical social structures often found in developing areas), what is the possible basis for talk? The objection is important. It is very difficult to stimulate talk, precisely because talk is not free: it takes time and effort, and payoffs are not evident, especially if the history of relations is bad or the economic culture is organized by conventions which do not encourage learning relationships. On the other hand, talk is cheap: it is not that costly and the risks are relatively low. Public institutions certainly have a reasonable, low-cost probability of getting talk going.

For events to lead to precedents, confidence is needed, without which events remain single occurrences with no impact on the formation of future expectations. Confidence about how others will interact with you in situations involving some uncertainty involves a measure of vulnerability: it is necessary for the interacting parties to place themselves in a position where, should the other not follow precedent, they will be subject to a real loss. But how to establish confidence so as to bring into being precedent, relation and convention, especially where there are histories of mistrust, broken promises, or antagonism?

Talk may involve the parties in getting the ball rolling on a learning project, but it does not establish confidence in the specific sense that generates precedent and convention. Bribery through special material incentives (subsidies, etc.) provided by a public institution to private actors is likely to work only as long as the incentives last; if all actors calculate that the other actors only do what they do because of special incentives, then a convention based on incentives is established. Incentives have to be slowly replaced, in these cases, with other conventions.

One method of creating confidence in a sea of non-confidence is, of course,

bureaucracy. It has been found that certain economic projects are amenable to isolation from the overall economic culture by internalizing them within hierarchical bureaucracies. Major indivisible high technology projects such as the French TGV, are carried out by quasi-military bureaucracies with strong financial power and command-and-control authority.

But internalization is not a solution for much of the learning economy, precisely because of the open-endedness and high degree of risk of much learning, which nobody in society wants to pay to internalize or where the technological character of the product does not permit near-monopoly. Some other method of building confidence must be used.

Small, repeated experimental interactions are useful here. "Experiments" means setting the parties to work in limited relations which facilitate learning and attempting to build up in complexity. Most importantly, they do so by proceeding "as if" confidence existed. The small experiments build on the communicative understanding that comes from talk by asking the parties to interact by suspending their fears and doubts.

*To whom is this applicable?* There are all kinds of intricate dimensions of talk and confidence-building as the vehicles for creating precedent, relation and convention. But who should talk? What should they talk about? What techniques should be used to facilitate such talk? What small relations should be attempted first? What kind of assurances should be used to get the parties to suspend skepticism? It is impossible to answer all these questions here because the answers depend not only on the specific kind of products envisioned and the nature of the conventions that accompany them, but also according to the starting point of the parties.

Is the analysis here realistically applicable to middle-income developing countries or to the less-favored areas of the advanced economic blocs (certain European nations, certain regions in North America, for example)? Strategic assessment of the potential for each of these areas to excel in learning in particular products remains an essential starting point for the twin trajectories policies recommended here. Three basic strategic entry points into learning may be identified.

For industries with low barriers to entry, especially products involving low-scale production and limited capitalization, the experiences of Italy and Germany in the

post-war period may be guides. In the Italian cases, traditional skills were deployed to serve national markets in the 1950s and early 1960s. That market was relatively big but quite fragmented. Smaller countries do not have such big markets, however, and even big markets are subject to more import competition today than was Italy in the early 1950s. The lesson is that such industries are likely to flourish only where: (a) skills are good enough or highly focused enough that they can contribute something unique to the world market; or (b) they can serve a local or national market which is unsatisfied by imports or can do so in a way that passes the indifference test: higher local prices are compensated by better tailoring to local demand. With open markets, this knife-edge dynamic is sharper and sharper. Some of these conditions are apt to be met in less-favored regions of certain wealthy countries, and -- under certain conditions -- one could imagine them being fulfilled in the smaller, less favored countries of the European Union. In developing countries, the East Asian experience of using specification subcontracting to build up skills is probably more appropriate as a transition strategy, but such forms of subcontracting may even be appropriate to less favored countries and regions in the European Union, as well as certain parts of eastern Europe.

For industries with high barriers to entry, whether because of traditional scale issues or because of high technology investment requirements, the choice is a very stark one: either go all the way with a major technology policy designed to cover a technological space (e.g. Airbus) or target particular subsectors with more limited spillovers but still with potential for further spillover development. In any country, big multinational partners are essential for such strategies and substantial commitments of local resources over long time periods are required. Moreover, the only strategies likely to succeed in these cases are those where technological branching points are at hand, and where the risk is taken to develop locally along one branch rather than another (e.g. which model of high definition television? Which system for transmitting mobile phone calls?). Even for the biggest and richest countries, such strategies are ambitious. For smaller or less-favored countries in the European Union, there may be possibilities to develop advanced specification subcontracting to the extent that they mobilize research and development resources at the same time or do so in partnership with other European nations, within the structure of the institutions of the Union. For middle-income developing countries, there would seem to be little possibility but building faithful relationships with foreign multinationals for specification subcontracting to the extent that they mobilize research and development resources at the same time or do so in partnership with other European nations, within the structure

of the institutions of the Union. For middle-income developing countries, there would seem to be little possibility but building faithful relationships with foreign multinationals for specification subcontracting, coupled to a very committed effort to build up R & D capacities, at least in applied industrial arts in specific technological fields, and later on to expand slowly to other areas.

Major efforts, such as Airbus, are difficult even at the level of the European Union, but they are theoretically possible, insofar as they involve multinational firms, considerable well-developed R & D resources which are then inserted into international cooperative networks, and cooperative divisions of labor between nations (through the agency of nation-states or multinational corporations). The outcomes of a number of European Union projects in technological cooperation to establish major new learning trajectories remain to be known. They are mentioned here only because, if they are successful, there will be reason to believe that cooperative networks of developing countries could do the same. "South-south" cooperation in this context would be redefined from market integration for scale economies -- a formula more appropriate for mass production -- to inter-nation cooperation for the establishment of major new learning trajectories which are impossible at the level of single nations (L. K. Mytelka, 1994).

## 7. CONCLUSION

The dual trajectories of technology and conventions which are set out here as elements of economic development policy today are, admittedly, much more complex objects of policy than is the norm. And the suggested policy goal -- that middle-income developing countries must necessarily develop some propulsive activities, defined as activities which have enough endogenous absolute advantages to command world market shares -- is a higher and harder one than the goal of import-substitution and national keynesianism. The agenda proposed here may sound utopian if not impossible. It is not proposed as the single goal or the sole means of economic or regional policy today, but rather as a necessary component of such policies, without which there is no value-added intensive "motor" for the rest of the national economy under current global constraints. Many other tasks for policy, and means to implement other policies, have to be thought through for developing economies, especially those having to do with external constraints, insisting on a better set of rules for international production, trade and capital flows, and an internal strategy, including income redistribution, social policy, and overall rationalization of economic institutions. But it

is no longer possible to consider these latter policies, broadly "redistribution and justice" oriented, without also considering the hard (and less politically correct) tasks of the painstaking construction of economic practices -- dare we say a new economic "civil society?" -- which would enable middle-income economies to insert themselves back into the world of advanced economic activity, from which so many are being increasingly excluded.

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### **Résumé**

*Dans les années 80, on a pu constater de grands écarts dans le développement économique des pays et des régions à revenu intermédiaire. Un nouveau modèle de concurrence s'est manifesté basé sur un changement continu de la technologie, donc sur le "learning" (l'apprentissage). Lié à ce modèle, le système des échanges mondiaux s'est de plus en plus orienté vers des produits spécialisés, aussi bien dans les pays riches que dans les pays qui se sont engagés dans un tel apprentissage technologique. Les pays et les régions en développement qui ont réussi le mieux ne copient pas les*

*innovations et les pratiques les plus avancées qui existent dans le monde mais développent plutôt leurs propres supériorités. Cet article soutient que les vrais secrets de leur succès résident dans les règles de coordination, à la fois formelles et informelles, qui caractérisent les processus d'apprentissage.*

### **Resumen**

*En los años 80 había grandes márgenes de variación en el desarrollo económico de los países y las regiones de medio-ingreso. Desde entonces un nuevo modelo de competencia ha evolucionado estribándose en un cambio continuo de las tecnologías llamado "learning" (aprendizaje). En acuerdo con tal modelo, el sistema mundial de intercambios ha ido de productos especializados orientándose hacia el comercio sobre la base de especializaciones y a sea en los países ricos o bien en los países que se dedican a dicho "learning" tecnológico. Los países y las regiones en desarrollo que tienen más éxito no imitan las innovaciones y los métodos más avanzados que existen en el mundo, pero más bien desarrollan sus propias superioridades. Este estudio argumenta que las verdaderas razones del éxito se encuentran en las reglas de coordinación, a la vez formales e informales, que caracterizan el proceso de aprendizaje.*