

REGIONAL ECONOMIES AS RELATIONAL ASSETS

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I. The AHoly Trinity[@] of Regional Economics

Confronted with such dazzlingly complex and important phenomena as the globalization of production systems, deindustrialization and reindustrialization, new economic spaces, global-multinational regions, and enormous planetary flows of goods, capital and labor, regional economics and economic geography, like much of economics as a whole, has in recent years seen a heterodox paradigm emerge in its midst. Where the orthodox paradigm remains fundamentally concerned with prices and quantities in a rather abstracted way, the heterodox paradigm breaks the problem of economic development in regions, nations, and at a global level, into a series of substantive empirical and theoretical domains, and attempts to build up a multilayered explanation for it. The heterodox approach involves what we might call a new AHoly trinity[≡] by which it analyzes heterogeneous labor and capital: technologies-organization-territories.

Technology and *technological change* are now recognized as among the principal motors of changing territorial patterns of economic development; the rise and fall of new products and production processes takes place in territories, and depends to a great extent on their capacities for specific types of innovation. The deployment of technology in turn alters the cost-price dimensions of production, including its locational patterns. *Organizations*, most importantly firms and groups or networks of

firms tied together into production systems, are not only inscribed into and in some cases, dependent on territorial contexts of physical and intangible inputs, but they have greater or lesser relationships of proximity to each other. *Territories*, whether peripheral regions or agglomerations, may be characterized by either strong or weak local interactions and spillovers between factors, organizations, or technologies.

The heterodox paradigm integrates the significant theoretical advances that have been made in each part of the holy trinity in recent years. Technological change is no longer the black box it was once left to be. It is now common practice to distinguish between standardized, scale-dependent technologies and unstandardized, variety- or flexibility-enabling technologies in production, those which are dedicated to particular products and those which may be redeployed among different outputs.¹ The study of organizations has been revolutionized by the work of Coase and Williamson, showing that firms are -- at least in part -- transactional structures with fluid boundaries.² Others have dealt with firms in terms of property rights and appropriability of assets; or as strategic growth-maximizing agents.³ Territorial economics has in turn been revolutionized by integrating the insights of technology and organization studies. The problem of the territoriality of technological change and of the effects of technological change on territory is now well posed, if not resolved. The effects of organizations on territorial economic patterns, presciently imagined by Perroux and the modern school of input-output analysis,⁴ has been given new micro-foundations by the application of transaction cost economics to the geography of input-output relations.⁵ As a result, the organizational foundations of agglomeration economies are now understood. We are well beyond the notion of external economies as simply scale-related; they are complex outcomes of interactions between scale, specialization, and flexibility in the

context of proximity. Agglomerations also may enable dynamic processes, such as localized technological change.⁶ (Figure I about here)

The emergence of this heterodox paradigm began in earnest in the 1970s, as regionalists and international economists attempted to understand the deindustrialization of old industrial regions;⁷ it matured in the mid-1980s and early 1990s, as they attempted to understand the resurgence of regional economies, the emergence of high technology industries and regions, the ascendance of new Asian industrial tigers, and globalization. But new lacunae in the theoretical apparatus of regional or territorial development have also made their appearance. The argument I intend to make here is that the heterodox paradigm has indeed defined the right holy trinity, but that it has not yet fully seized the right content for the analysis of technologies, organizations, and territories. Its emphasis on heterogeneous labor and capital in all of them is fundamentally correct. Heterodox regional economics, like economics in general, however, continues to be controlled by the metaphor of economic systems as machines, with hard inputs and outputs, where the physics and geometry of those inputs and outputs can be understood in a complete and determinate way. This focus on the mechanics of economic development must now be complemented by another focus, where the guiding metaphor is the *economy as relations*, the *economic process as conversation and coordination*, the subjects of the process not as factors but as *reflexive human actors*, both individual and collective, and the nature of economic accumulation as not only material assets, but as *relational assets*. Regional economies in particular, and integrated territorial economies in general, will be redefined here as *stocks of relational assets*.

This shift in guiding metaphors reflects new content for each of the elements of regional economics= holy trinity, content which goes beyond what is found even in the heterodox paradigm.

Technology involves not just the tension between scale and variety, but that between the codifiability or non-codifiability of knowledge; its substantive domain is learning, not just diffusion. Organizations are knit together, their boundaries defined and changed, and their relations to each other accomplished not simply as input-output relations or linkages, but as untraded interdependencies subject to a high degree of reflexivity. Territorial economies are not only created, in a globalizing world economy, by proximity in input-output relations, but more so by proximity in the untraded or relational dimensions of organizations and technologies. Their principal assets -- because scarce and slow to create and imitate -- are no longer material, but relational.

II. Reflexivity as the Central Characteristic of Contemporary Capitalism

In recent years, social scientists have been at pains to characterize the overall nature of the capitalism that began to take shape around the beginning of the 1970s, with the breakdown of the post-war American and European growth machine. The economic capabilities of contemporary capitalism have undergone great expansion and deep qualitative change. Among the new capacities of modern capitalism, several are most important. First, the technological revolution in production, information and communication technologies permits vast expansion of the *nature and spheres of control* of firms, markets, and institutions, involving deeper and more immediate feedbacks from one part of these complex structures to others than ever before, dramatic cheapening of many forms of material production, and great increases in the variety of material and intangible inputs and outputs. Second, there has been a vast *spatial extension and social deepening* of the logic of market relations, in part facilitated by the technological leap (especially through the cheapening of telecommunications

and media as vehicles of market relations, and through the extension of physical infrastructure); greater percentages of the population, and greater percentages of their relations than ever before, are inscribed in a process of markets and commodities, and these are more and more tied into far-away places than ever before. This is, in one sense, a continuation of long-term processes of modernization; in another sense, it involves the crossing of a qualitative threshold in terms of extent and depth. Third, and combining the effects of the first two processes, there has been a *generalization* of the spread of modern organizational methods, bureaucratic rule, and communicational processes to more dimensions of economic and non-economic life than ever before. This does not mean the extension of a single, hierarchically administered regime to all peoples, but the sharing of certain general ways of life which are common to contemporary industrial-market society.⁸

The qualitative consequences of these metacapacities are more novel than the mere quantitative expansion of the capitalist market system. In the most general terms, they may be summed up as an enormous leap in *economic reflexivity*. This term refers to the possibility for groups of actors in the various institutional spheres of modern capitalism -- firms, markets, governments, households, and other collectivities -- to shape the course of economic evolution through reflexive human action. This in no way implies that such reflexivity is free from constraint. --Instead, the old debate in the social sciences between determinism and free will, structure and agency, has become largely irrelevant, because it has been empirically left behind by the course of real socio-economic evolution, in which the two sides of these traditional oppositions have become inextricably produced by each other. The metacapacities of contemporary capitalism, encompassing both of what Marx labelled the *forces* and the *social relations* of production, have developed and matured to a point where the variety of concrete

empirical possibilities for the organization of markets, firms, and other institutional spheres of economic and social life have been vastly increased. Such possibilities become realities through the selection effects of competition, and through the mobilizing effects of rules, institutional routines, and collective action frameworks.

Rules, institutions, and action frameworks have always been important, of course, as institutionalist social scientists have shown. But they were regarded principally as imperfections in modern capitalism, as in the notion of *Astates versus markets*.⁹ Fundamentally, they were viewed as non-economic or pre-modern forces which did not permit full expression of modern capitalism, or by some as humane and socially necessary fetters on the rapacious tendencies of the market.¹⁰ The ideological content of these theoretical disputes should no longer blind us to the new historical reality: in many ways, markets *were* once opposed to states, rules, and other institutions, but this is no longer largely the case. Ironically, however, the triumph of market capitalism in the West has not ended with a generalization of anonymous, standard, *Aperfect* capitalist markets; but instead coincides with a major new leap in the possibilities for reflexivity in that economy itself, generating enormous new variety within the market economy. In many ways, capitalist markets are more intertwined with *Anon-market* forces than ever before, with impulses from *Acivil society*.¹¹ This is because its triumph coincides with the development of the major new variety- and diversity-enabling metacapacities described above.

Moreover, capacities and agency also involve the generation of new constraints, or *Astructures*.¹² Contemporary reflexive capitalism is a system which *manufactures new kinds of risks* (economic, personal, ecological, psychological, social, etc). In the economic sphere, these risks are expressed through the redefinition of competition, what it takes to win and how it is possible to lose.

Winning has become a much more complex target, because the conditions which a firm, region, or production system must now satisfy in order to win are manufactured and re-manufactured more thoroughly and more rapidly than ever before, creating a moving target for success and a shifting minefield of risks of failure. This is directly a consequence of the increase in the reflexivity of economic activity in the context of a generalized market system.

Theories of competitiveness have struggled to capture these phenomena over the last twenty years, developing many descriptive monikers for the new economy: post-industrialism, the information economy, the knowledge-based economy, flexible specialization, and post-Fordism.¹³ Though each of these labels helps in understanding some dimensions of the contemporary economic process, the deepest and most general way to describe the logic of the most advanced forms of economic competition is that of *Learning*.¹⁴ Learning is the competitive outcome of heightened reflexivity.

Those firms, sectors, regions, and nations which can learn faster or better (higher quality or cheaper for a given quality) become competitive because their knowledge is scarce and therefore cannot be immediately imitated by new entrants or transferred, via codified and formal channels, to competitor firms, regions, or nations. The price-cost margin of products generated in this way can rise, while market shares increase; the resulting knowledge or technology rents alleviate downward wage or profit pressure. Learning-based activities are not immune to relocation or substitution by competitors. Once they are imitated or their outputs standardized, then there are downward wage and employment pressures. Firms or territorial economies must therefore be equipped to keep outrunning the powerful forces of imitation in the world economy. They must become moving targets by continuing to learn.

The learning economy is therefore an ensemble of competitive possibilities, reflexive in nature,

*engendered by capitalism=s new metacapacities, as well as the risks or constraints manufactured by the reflexive learning of others.*¹⁵

The dimensions of the new economic reflexivity are therefore principal concerns of any kind of economic analysis interested in developmental processes. These dimensions may be seized, at least in a preliminary way, by such keywords as Aaction,≡ Acreated rules,≡ Aaction frameworks≡, and Aroutines.≡ Substantively, their study requires that we focus on how individual and collective reflexivity operate in the contemporary economy, through cognitive,¹⁶ dialogic, and interpretative processes, with the substantive goal of understanding how *relations of coordination* between reflexive agents and organizations are established.

III. The Relational Turn in Economic Analysis: Technologies, Organizations, Territories

In the field of regional economics and territorial development, the developments describe above mean that the content of the theoretical holy trinity -- technologies, organizations, territories -- must be redefined, from a series of machines, to a set of relations¹⁷ and their constituent reflexive processes.

Technology

In orthodox economics, technology is considered to be a Ablack box,≡¹⁸ and theory assumes that rational agents, possessing full information, make optimal choices under strong constraint conditions.

In contrast to this, the field of technological change economics has always centered its attention on the generation of technological knowledge and its relationship to economic practice. The dominant post-

war account of technological change¹⁹ consisted of a linear input-output model, with scientific R&D upstream, innovation midstream, and commercialization and diffusion downstream. Diffusion was both economic (inter-firm and inter-industry) and geographical (from centers to peripheries). Though largely implicit in the early years, the notion of technologies emerging as rare and unstandardized innovations and then developing into increasingly standardized Amature \equiv technologies, capable of exploiting economies of scale, became increasingly explicit through such models as the product cycle in industrial and development economics, and spatial divisions of labor in regional and international economics.²⁰ In many ways, this theoretical focus fit well with the inter-war and post-war development experience of technology as the derived product of science, with the Aproblem \equiv defined as its unequal spatio-economic distribution,²¹ a position shared not only by many developing country economists, but also by many Europeans concerned with post-war reconstruction and modernization.

Experience since the 1970s, however, has radically called into question the hierarchical linear flow of the traditional model. Its essential assumption about the link between technology and development is that of a progression from invention/innovation to scale and standardization, where increasing factor productivity inside each firm or technology leads to greater wealth creation. Yet it now appears that development, at least in wealthy countries and regions, comes about through *destandardization* and the *generation of variety*. A new style and rhythm of technological learning has radically expanded the variety of technologies, in two ways: at any given time, the specialization and numbers of technologies for given kinds of uses; and, more importantly, over time, the pace of their modification and replacement. This forces a complete reconceptualization of the technological

innovation process in economic development: it now involves not only the gigantic formal organizations of research in laboratories, universities, and multinational firms, which correspond to our image of the process as hierarchical and linear, but the proliferation and dramatic complexification of relations among those institutions and between them and other elements of the economic environment. Paradoxically, the rise of bigger and bigger science and R&D has been accompanied not by its increasing isolation upstream, but by its increasing integration into a host of other economic and social processes. Within $\text{Abig} \cong \text{R\&D}$, for example, there are now more complex feedbacks between science and *savoir-faire* in the high- and medium-technology industries than ever before,²² while in many medium- or low-technology sectors, *savoir-faire* is now subject to deliberate reflection, attempts at systematization, and appropriation of the results of science and engineering.²³ Research on technological change has documented the importance of user-producer relations (inter-firm, inter-industry and consumer-producer); science-production relations; inter-firm relations in technologically cognate areas; and firm-government-university relations in technological innovation. It has also shown, importantly, that these relations are increasingly organized as non-hierarchical, networked, complex, and substance-filled communication and action processes.²⁴ Research on the proliferation of $\text{Aflexibly specialized} \cong \text{industrial districts}$ has shown, in addition, that the capitalisms of a number of very wealthy regions and countries are built around practical forms of technological innovation, involving relatively small or indirect roles for formal science or R&D, where complex relational feedbacks in the production systems are responsible for successful innovative performance.²⁵

The technological enterprise which is so central to contemporary capitalism seems to involve a set of circular processes today. The increasing density and complexity of relations is the means to new

forms of collective reflexivity, leading to a quantum leap in the possibility for generating technological variety, i.e. to learning. This variety has two principal consequences; on one hand, it sets off traditional cycles of codification, standardization, imitation and diffusion of knowledge. On the other, at any given time, there are innumerable Aislands \equiv of non-cosmopolitan²⁶ knowledge in this variety-centered economy, where only those actors who are inscribed in the relations required to get access to the knowledge and, perhaps even more importantly, the relations required to *understand, interpret, and effectively use* the knowledge, will be able to deploy it in economically useful ways. In turn, these nodes of relationally-linked actors may Aspin-off \equiv new standardization, decodification processes, but they may also re-generate variety within their field of endeavor, sustaining the viability of non-cosmopolitan nodes of interaction. This is but one of the many new dynamics of an economy of reflexivity and its manufactured opportunities and risks.

In sum, the essence of the process of technological change is now the tissue of relations by which asymmetric, non-cosmopolitan knowledge is generated, applied, and further evolved. The increase in variety is the result of the operation of these relations, in an economic environment which is radically different from that defined by orthodox theory: empirically, because of the qualitative link in the communicational capacities of actors in modern capitalism, an historical phenomenon resulting from technological advances and the generalization of the organizational and communicational meta-models of modernity; and theoretically because (as evolutionary economics has shown) firms and other actors operate in Aloose \equiv rather than Atight \equiv (i.e. Pareto-optimizing)) selection environments for the consequences of their reflection and communication with others.²⁷

For regional and territorial economics, this means a reorientation of the central issues posed by

technological change: from standardization to *destandardization and variety* as the central competitive process; from diffusion to *the creation of asymmetric knowledge* as the central motor force; and from codification and cosmopolitanization of knowledge to the organizational and geographical dimensions of *noncodified and non-cosmopolitan* knowledge. (Figure II about here).

Organizations

The second element of the holy trinity is organizations, by which we mean, principally, firms and production systems.²⁸ In the post-war period, organizations have figured prominently in economics generally, and regional and industrial economics in particular. The theory of the firm -- stemming from Coase and developed by transactions cost economics -- has defined, as its core subject, the functional boundaries of the firm, the division of labor between firm and market, and the relations or transactions between firms.²⁹ The theory of production systems got a major push in the late 1940s and early 1950s, with the Perrouxian notion of economic spaces and industrial complexes, and was given greater generality and empirical-analytical power in Leontief's development of input-output models of the entire economy.³⁰ Regional economists made major efforts to use input-output theory and techniques in the modelling of regional economies.³¹

Transaction cost economics, as developed by Williamson provided a more precise understanding of the cost drivers for input-output structures, thus bringing the theory of the firm and that of the production system closer together.³² In turn, the theory of industrial complexes and agglomeration was given new dimensions by consideration of the geographical dimensions of transacting. On one hand, it was shown that geography figures in transactions costs in general, and

hence influences the boundaries of the firm and production system (i.e. geography influences the degree of internalization or externalization in the production system).³³ On the other, it was shown that the geography of transactions costs helps explain agglomeration and spatial divisions of labor. Much of this work on spatial divisions of labor shared similar concerns with research on multilocal or multinational enterprise, with the first approaching the problem from the side of geography, and the second from the side of the firm, meeting around the subject of locational dynamics of complex production systems.³⁴ In addition, transaction cost theory was extended to output markets and to labor markets on the input side, and both were integrated into geographical transaction cost theory and modelling. Finally, innovation theory, in many guises, has attempted to understand the transactional context for technological change and geographers and regionalists have claimed that this context has strong territorial dimensions; though still at an early stage³⁵, it is an active area of work today, and its goal is nothing less than an integrated theory of economic space, consisting of the interrelations between organizational, technological, and geographical space.

It can be seen that great theoretical progress has been made in the last half century toward understanding economic organization, and its extension to location, and the geography of production systems. The fundamental concerns of theory and modelling, however, are focused almost entirely on the traded relations between firms and places (factor markets, institutions), on traded relations between firms (inter-firm trade), or on exchanges between production units of big firms (intra-firm trade). The mechanism which accounts for organizational and geographical outcomes is the prices, quantities and qualities of these *traded interdependencies*. This explanatory mechanism is common across the entire range of different underlying motor forces (technology, divisions of labor, neoclassical factor

substitution, etc) and across all theoretical metanarratives (neoclassical rationality, Marxist drives for control, various brands of institutionalism).

The notion that such relations among economic actors ultimately are expressed in terms of direct and traded interdependencies, however, can no longer be sustained. There are many reasons why this is the case. First, there is an historical dimension. The rise of an economy where the most lucrative forms of competition occur around technological learning has pushed for the emergence of new forms of economic organization. Learning implies that organizations or production systems must be well-equipped to move resources around in order to implement what is learned: this is what has come to be known as the "flexibility" condition. Some kinds of learning necessarily involve highly focused attention of the learners, through divisions of labor: this is what has come to be known as the "specialization" condition. Both of these organizational attributes of learning contribute to the well-documented transformation of production organizations, away from the traditional managerial hierarchy typical of post-war mass production, in the direction of what we may (inelegantly) call the "quasi-externalization" or "deverticalization" of the division of labor. By this is meant the tendency for learning-based production systems to assume the form of networks based around an inter-firm division of labor, or for large firms to mimic attributes of externalization, sometimes via inter-firm alliances, sometimes via the introduction of price mechanisms inside the large firm, sometimes via increased reliance on external suppliers, sometimes via a more decentralized internal system of organization of the firm.³⁶ These conditions, while general, do not necessarily correspond to the notion of flexible specialization as it was advanced in the early 1980s.³⁷ The precise form that such networks take in learning-based production systems varies greatly according to industry, product market, and

national-regional institutional setting. It is widely agreed, however, that all of them are qualitatively different from the neo-Weberian organizations which were common in the post-war period because, whatever the particular form they take, their purpose is to potentiate *organizational reflexivity*³⁸ and not merely bureaucratic control.

The second dimension is theoretical. All productive activity depends on actions by others which, if not forthcoming, will render our own actions inefficient or unproductive; economic activity is founded on the pragmatic necessity to coordinate one's actions with others. Yet virtually all such situations of action are beset by uncertainty -- each of us faces uncertainty in deciding what we should do with respect to a given set of circumstances. Part of this uncertainty is "secondary," i.e. it comes from the fact that others upon whom we depend also face uncertainty on their side, so they do not know, with assurance, what they will do; part of it comes from our imperfect knowledge or communication of their intentions. All this is another way of saying that productive activity is, of necessity, a form of collective action founded on the paradox of individual actions. Coordination among persons thus presents itself as the central problem of economic life.

The question is how actors manage to get themselves into successfully coordinated, forms of collective action. We now know that the solutions of most economic thought to this problem of coordination under uncertainty, are partial. Much uncertainty in economic life cannot be resolved in price and contract terms, as transactions costs economics has shown us. According to them, this is why there are firms (internalization = control + certainty).. But it is also now clear that firms cannot successfully coordinate merely because they internalize transactions, because bureaucratic authority is frequently ineffective in the presence of high levels of uncertainty: either it fails to get things under

control, or it does so at the price of the purpose of uncertainty, which today is an intrinsic correlate of the organizational reflexivity required to learn and hence to compete.

Unlike transactions of standardized and substitutable goods, factor inputs, and information, transactions associated with many kinds of organizational reflexivity involve mutually consistent interpretation of information which is not fully codified, hence not fully capable of being transmitted, understood, and utilized independently of the actual agents who are developing and using it. Some kinds of information, for example, do not stand on their own: they require communication outside the formal structure of the information -- as linguists have shown us¹⁰ -- for people to come to a common agreement on what is being said. This is no less true for non-standardized technical or economic information. It is also necessary for the political information in the economy, such as work rules, governmental rules, forms of inter-firm relations, to function smoothly. Moreover, for this communication-based interpretative convergence to occur, we have to have some level of confidence in what others are saying, 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.

In all of these situations, the problem for actors is how other actors will deal with the uncertainties at hand, and how in turn, they should do so. Anglo-American social scientists are enamored of prisoners' dilemmas and uncooperative games which have, as a priori commitments and inevitable modelling outcomes, the difficulty or breakdown of non-market (i.e. institutional) coordination.³⁹ This is the microfoundation of Astates versus markets.≡ But even game theory has

shown clearly, through the work of Axelrod,⁴⁰ that tit-for-tat cooperative games are both rational and feasible under most circumstances; and if the questionable assumptions of game theory which limit individual action to strict defense of interests are abandoned,¹ the circumstances under which non-market forms of coordination can be generated by actors increase dramatically.

The specific form and content of coordination will vary according to the product at hand, technologies, markets, etc., as well as other historical and structural factors impossible to inventory here, whose variation is as great as human life itself. There are two levels of this relational quality of transactions. In the first, personal contacts, knowledge of the other, and reputation are the basis of the relation.⁴¹ In many other cases, however, transactions are not so completely idiosyncratic; they do have dimensions which can be reproduced or imitated by other agents. But transaction is by definition, mutual; so only those agents who are equipped to enter into the kind of relation which has come to be accepted as the norm for the particular learning process at hand (by the parties with whom they will transact) can do so. They are equipped when they possess faculties permitting them to take in, interpret, and use information in a way which is consistent with the other transacting party. Such faculties are, essentially, *conventions* which coordinate these productive agents. Conventions may be defined to include taken-for-granted mutually coherent expectations, routines, and practices, which are sometimes manifested as formal institutions and rules, often not.¹⁴² Most conventions are a kind of

¹ See section IV, below, for further discussion of these microfoundations.

half-way house between fully personalized and idiosyncratic relations and fully depersonalized, easy-to-imitate relations (although even the latter do have conventional foundations, not natural or behaviorally-universal foundations).

Conventional or relational transactions (henceforth C-R) affect many dimensions of production systems, but the nature and functions of such conventions differs from industry to industry, according to the nature of the product, the economic fluctuations associated with its markets and production processes, and the type of learning which is possible.⁴³ C-R transactions may be found in at least five principal domains: (a) inter-firm "hard" transactions, as in buyer-seller relations that involve market imperfections; (b) inter-firm "soft" transactions, as in the diffusion of non-traded information about the environment or about learning, e.g. through circulation of personnel through the same external labor market or through contact between producers; (c) in hard and soft intra-firm relations, as the bases for the functioning of large-firms which are "internally externalized" in the way we noted above; (d) in factor markets, especially labor markets, which involve skills that are not entirely substitutable on an inter- industry or inter-regional basis, i.e. where there are industry- or region-specific dimensions to workers skills; and (e) in economy-formal institution relationships, where universities, governments, industry associations and firms are only able to communicate and coordinate their interactions by using channels with a strong relational-conventional content.

The conventional-relational foundations of economic coordination do not refer to a stark contrast between internal ownership and externalization of production systems, or on hierarchies versus markets or external-embedded networks, but rather on the notion that manufactured opportunities and risks (respectively, learning or the competitive challenge of others= learning), carried

out through organizational reflexivity, are becoming pervasive in contemporary capitalism. Every kind of production system has to cope with some form of fluctuations in markets, product design, available technology, and prices, which make difficult the full cognitive routinization of relations between firms, their environments, and employees.

Real systems of production reflect a wide range of conventional phenomena, from rules governing the labor market and work practices, to capital markets and investment practices, to forms of firm organization, to technological habits and propensities, and even to widely-held ideas about the appropriate qualities of products. Theoretically, as noted earlier, evolutionary economics has shown that capitalist competition is a loose environment, where multiple pathways are possible at many different junctures, and therefore where the behavioral routines and patterns of agents become positively important. Conventions and relations fill in the space of this loose selection environment, give it form and substance. In the particular contemporary historical context, moreover, the advent of a learning economy means that the junctures at which conventions and relations can make a difference have become more general and appear more and more frequently. All of these issues are, of course, the subjects of investigations by institutionalists in many social science disciplines;⁴⁴ the economics of conventions, however, goes beyond them in positing that they are elements of the coordination of actors, and that the reason they work is that they amount to a coherent coordination of the frameworks of action of the people involved.

Hence, a major additional focus in the analysis of organizations -- firms and production systems -- is now required. It has three principal components: attention to untraded interdependencies and not simply traded transactions as the cornerstones of the organizational question; the conventional and

relational qualities of such untraded interdependencies; and the ways that conventions and relations organize and make possible many of the *traded* transactions of the contemporary economy.

Territories

Most social science has traditionally considered regional economies, or -- more generally -- territorial economies at any sub-national geographical scale to be derivative reflections of the more Abasic \equiv forces of technologies and organizations. Today, even national economies are being demoted, by many analysts, to the same secondary status traditionally assigned regions, due to the increasing reach of global technologies and global organizations. Thus, in the standard view, two elements of the holy trinity generate a set of outcomes, in the form of the third, territory.

In contrast to this view, the apparent resurgence of regional economies and the growth of economic differentiation between major world trading economies has stimulated the notion that territories are levels of economic action on their own right, with defining contributions to, and feedback effects on, technologies and organizations. Moreover, some branches of contemporary innovation theory, as noted above, propose a set of dynamic interrelations between technological, organizational, and geographical spaces. In these views, territory is a basic and not secondary element of the holy trinity.

The common way that economic analysis deals with geographical proximity and distance is by analyzing the geography of economic transactions -- exchanges of goods, information and human resources over geographical distance. Economic geography considers the price dimensions of transacting activity, to identify circumstances where geographical concentration is necessary to efficient

transacting, and those where geographical dispersion of firms, consumers, workers, and institutions is consistent with it. In some analyses, agglomeration is the means to realization of superior pecuniary efficiencies of each transactor (i.e. firm).⁴⁵

There is nothing inherent in transactions that makes geographical proximity necessary. Think, for example, of the counterfactual situation where everyone were equipped with magic carpets⁴⁶ and proximity could be had over any distance costlessly and instantaneously. Then any kind of community of interaction would be possible without propinquity, including those information transactions and interactions between persons which are the most subject to uncertainty, uncoded practices, informal understandings, as well as those transactions of goods most subject to the costs of covering distance. Our magic carpets in California could take fresh orange juice and mid-winter flowers from the garden while on their way to pick up the morning's croissants from the boulangerie in Paris. A professor's students could come from all over the world and class could be held anywhere.

In the absence of such a technology of transacting, however, there are many circumstances in which distance is a barrier. The principal such circumstance is a high level of uncertainty, which impedes the planning which could facilitate long-distance repeated transacting (by reducing price and increasing certainty). Proximity in transacting is likely to be adopted in these circumstances. Uncertainty, proximity in transacting and the formation of relations and conventions, I shall argue, tend to go together.

In what are such circumstances likely to consist? Though it is impossible to construct a complete list, many of them will probably concern technological change or learning, in both products and processes. Industries with ongoing product differentiation, for example, rely on informal and

traditional knowledge and sensibilities which are then recombined on short notice into new product designs. In advanced technology industries, where the technological frontier has not been reached (the example here is not product redesign as in today's personal computer industry, but rather that of significant advances in micro- chip technology), it is difficult to reduce interaction fully to projects and teams who can relate to each other with fully formal procedures and at great distances.

But even in the absence of technological change as a source of uncertainty, there are many circumstances where neither vertical integration (and its complement, the certainty of administrative procedures) nor vertical or horizontal disintegration coupled to full formal contracting (which should be indifferent to distance) are possible. The costs of covering distance rise greatly under these circumstances because interaction has to be frequent and sustained, and it often cannot be planned out in advance. These are situations involving high levels of substantive complexity in transacting between persons; in general they are circumstances which depend on interpretative interaction and require persons to achieve and reproduce confidence⁴⁷ in their relations, where external authority for the latter and codified rules for the former will not do.

What does this mean for the central problem of spatial economics, the tension between spatial concentration of production and its dispersion? The dominant account of the existence of geographically concentrated production systems, such as Silicon Valley (semiconductors), Hollywood (motion pictures and television), Manhattan (financial services), the Connecticut River Valley (precision metalworking), is that they exist because many of their linkages, given existing technology of communication and transportation, are heavily reliant on geographical proximity. In this account, when linkages involve small scale or high levels of uncertainty, proximity reduces the actual cost of covering

distance and allows uncertainty in turn to be attenuated by permitting producers to spread risks via increased access to other producers in the agglomeration. The law of large numbers is at work for them. An example is the subcontractor who gains access to more clients so as to offset the risks associated with relying on too few commands, in the absence of the possibility of having stable, large-scale commands from just a few clients. In practice, however, even transactional relations which are attributed to this kind of optimal economizing are resolved through the establishment of some rules of the game between the involved parties: even "market" linkages depend on specific conventions of market action⁴⁸ among actors, without which there is no coordination among them.

But this account is surely still inadequate in that it proposes just one model of motivation behind economizing through linkage -- that of opportunism and moral hazard: the subcontractor is always afraid of getting cut off and the client is always afraid to be engaged.⁴⁹ Not only can uncertainty be resolved through means other than risk spreading through the law of large numbers in an agglomerated linkage system, it may be that risk spreading is itself inefficient, second best, or not possible -- some linkages may do better when resolved through conventions other than those of markets and contracts. And regardless of efficiency concerns, we know that many linkages are in practice resolved through other principles of coordination. The uncertainty which underlies geographical proximity is thus the same as that which, in the presence of proximity, is resolved through convention among actors, but the form of resolution is not determined by the uncertainty itself.

The region is not merely a derived outcome of the informational or cognitive structure of transactions associated with technologies and organizations, however. For one, the conventions and relations which develop in association with particular production systems in a given region may affect the

long-term evolution of technologies and organizations in those sectors, and the loose selection environment of contemporary capitalism suggests that there are many cases where such territorially-specific forms of economic life are not washed out by a single best practice; territorialization and multiple equilibria go together.⁵⁰ In addition, the ensemble of conventions and relations which come into existence in a territorially-defined economy may cut across the array of production systems and activities found there, affecting the evolutionary pathways of a variety of sectors in a regionally- or nationally-common way.

It is for these reasons that the effects of proximity-inducing effects conventions may "drag on" for long after the input-output (transactional) reasons which brought geographical concentration of the production system into being have disappeared or could be eliminated. They may also encourage ongoing geographical concentration even when the input-output system could permit deagglomeration. And they may differentiate the performances of superficially similar input-output systems, in terms of transactional coordination, product qualities, and evolutionary tendencies. Consider for example the aerospace industry in Southern California. While the large producers are surrounded by smaller job shops and input-providers, there is little way to explain, in strict input-output (transactional) terms, the geographical clustering of the large defense contractors. They could bring into being, almost anywhere, those local networks of input-suppliers they require. The large skilled labor market may be then invoked as an explanation, except that skilled labor is notoriously mobile. But, one might claim, the skilled labor is industry- and even agglomeration-specific. In what sense? Certainly not in terms of formal training. Its specificity derives precisely from the fact that the persons involved have learned much about the industry-specific production culture in the aerospace agglomeration of the region, as

have managers and other company officials. These are conventional forms of asset specificity, in which human resources (assets) with generic characters *become* specific and maintain their specificity, and yet cannot be fully internalized within companies and moved around from region to region easily. The frameworks of action (ensembles of conventions) learned by actors constitute key forms of asset specificity in the economy, which are external to individual firms; and in turn, those persons caught up in such webs of conventions allow firms in situations of mutual interdependence (e.g. input-output or buyer-seller relations) to coordinate effectively with each other.

This explanation of geographical concentration and territorial differentiation is now quite far from that which relies on linkages, input-output systems, and even economies of scale and scope in factor markets. While not excluding any of the latter, it suggests that the content of linkages is shaped through convention and becomes the key untraded interdependencies which underlie the coordination of economic actors in production systems and gives rise to the level of economic efficiency they achieve and the specific qualities of products they are able to master.

In sum, the territorial element of the holy trinity needs refocusing, from the geography of input-output relations -- industrial complexes and spatial divisions of labor -- and the economics of proximity in traded linkages, to the geography of untraded interdependencies and the technology and economics of proximity and distance in them. This, in turn, is necessarily bound up with the geography of conventions and relations, which have cognitive, informational, and psychological and cultural foundations. Throughout all of this, there must be simultaneous consideration of territory and region as derived outcomes of technology and organizations, and as the locales of differentiated conventions and relations -- action frameworks -- which often cut across specific technologies and organizations and

affect their evolution.

From External Economies to Relational Assets

Regional economies are usually characterized theoretically as systems of external economies; the strong points of national economies are also usually understood via this concept. This notion has long figured in both economic and regionalist thought, but there remains great confusion about what it means. For some regionalists, external economies reduce simply to the effects of urbanization economies, simple scale economies which flow from indivisible infrastructures. In this conception, of course, the region does not enjoy the status of a fundamental level of economic life; it is a derived effect of technological indivisibilities. For other regionalists who consider the economics of proximity, localization economies have been analyzed as the source of the region's economic specializations. Until recently, localization economies were considered to be the spatial expressions of distance constraints on linkages. The integration of transaction cost economics, and dynamic theories of the social division of labor, and the geography of transacting -- or what we referred to above as the relations between technological, organizational and geographical space -- has re-opened the linkage between externality theory and the theory of localization or agglomeration. A simple extension of transaction costs theory to the geography of transaction costs, though analytically powerful, does not generate a different theoretical status for the region in economic thought, because agglomeration remains a mere result of individual maximization. But more complex extensions do change the status of the region: once proximity becomes an input into the social division of labor -- by allowing firms to make choices

between what they do internally and what they buy externally -- it in turn allows firms to experiment with different degrees of specialization than would otherwise be possible, and this in turn sets up dynamics of technological development that would not otherwise be possible. So the region is now a contributor to the dynamic of modern capitalism, not just an outcome. And the *Aeconomies*≡ associated with proximity can no longer be brought back to individual maximization under stable conditions; they inherently involve spillover effects, blurred lines of efficiency, calculus with respect to a moving organizational target whose trajectory is linked to its geography. They very likely represent true positive externalities -- in the sense identified by Young (1928)⁵¹ and Kaldor (1972)⁵² -- and not merely Stiglerian-Smithian⁵³ division of labor effects. There are many empirical forms this might take, ranging from high-technology specializations, to metropolitanization as a *Aflexibility pool*.≡⁵⁴

Even so, there are many ways in which the physical and managerial constraints on distance, for even very specialized input-output relations, are being progressively reduced over time. The distinct possibility exists, with the development of increasingly effective communications technologies and the diffusion of organizational meta-routines, that even very sophisticated transactional systems will enjoy greater and greater potential for avoiding agglomerations.

But the story does not end with these traded interdependencies. In many circumstances, constraints of proximity seem to remain extremely important to the communicative, interpretative, reflexive, and coordinative dimensions of transacting, where even e-mail does not substitute for proximity. The necessarily conventional and relational aspects of the economic process are not merely *Aresidues of history*≡ or *Anon-economic*≡ aspects of the market process; as we have tried to illustrate, they are in many ways the new heart of the reflexive economic process.

The existence of the conventions and relations which permit reflexivity are something like *assets* to the organizations or regions which have them, or even to the individual agents caught up in them. Regions and organizations who have them have advantages because these relations and conventions -- much more so than stocks of physical capital, codified knowledge, or infrastructure -- are difficult, slow, and costly to reproduce, and sometimes they are impossible to imitate. The status of the region is now not merely as a locus of true externalities, but -- for the lucky regions -- as a site of important stocks of relational assets.

IV. Conventions, Coordination, Rationality: The Micro-Foundations of the Reflexive Turn

Economic behavior is not simply "embedded" in non-economic forces, whether they be cultural, cognitive, political, or structural; the distinction between "economic" and "non-economic" forces should be replaced with an analysis of the ways that diverse kinds of "information" underlie the coordination of economic actors. In this vein, the social science of conventions rejects the distinction, common to modern economics, between decisionmaking rationality -- as the ways that individuals react to information -- and action rooted in the pragmatic and cognitive acts of comprehension, understanding, or interpretation. It is not simply that different versions of comprehension, understanding or interpretation generate different "parameters" for decisionmaking in the form of different preference schedules or different things to be maximized, but that action leading to coordination is often necessarily a process of mutual comprehension, understanding and commonality of interpretation between actors under conditions of uncertainty.

The question naturally arises as to where the notion of reflexivity and the mechanism of convention are situated with respect to the decisionmaking rationality which is so central to all economic thought. Two brief aspects of this problem may be treated here: microfoundations, and pragmatics.⁵⁵

Conventions are much more than mere cognitive, cultural or psychological skills which permit actors to survive in markets. When actors undertake an activity, they do so with the expectation that they have a framework of action in common with other actors engaged in that activity.² It follows for us that the expectations which underlie coordination with other actors are not, as is claimed by many other writers, principally psychological or cognitive, although they certainly have these dimensions. Nor are they mere anticipations, even though they contain anticipations. They are not so much *A*rational,≡ as they are forms of *A*practical reason.≡ These expectations are fundamentally related to the *pragmatic* dimensions of action, which Herbert Simon⁵⁶ called their *A*ffectivity.≡ In all action, there is an ongoing tension due to the search for pragmatic coherence between ends and means. The intentions of actions are defined and clarified in the course of taking them, and are adjusted to changing circumstances. Action depends on and draws from the things and people involved in the pragmatic situation at hand. Such pursuit of pragmatic effectiveness has a practical coherence which may not resemble logical

² But NB! This in no way implies that all actors are equally satisfied, that they are equally enthusiastic, or that they are in relations of political or distributive equality. It is a description of the fact that they *do* according to the same rules of the game, not necessarily that they like to do this.

coherence; viewed from the standpoint of logical coherence, practical action may combine diverse logics.

It is for these reasons that conventions are best understood the ways they render accessible or deny access to different *possible worlds of action*. A possible world is an environment of action comprised of two major elements: first of all, it consists of other persons who act in a way which is coherent with our own actions, so that we both respond to uncertainty in mutually compatible ways: this is a *framework of action*; second, it is a practical material and institutional environment, where the actors' actions are well-adapted to the practical problem at hand, i.e. the tools, existing knowledge, materials, and external (e.g. institutional or competitive) conditions under which they are required to act.

This way of looking at the problem opens up three questions relative to dynamic collective processes in the economy.

The first question is about the diversity of frameworks of action. Though in principle there are unlimited ways to coordinate economic action, there is in practice a limited number of practically coherent combinations of actions for each kind of material good or service produced in the economy. This diversity -- leading to what we have called the *Aplurality of possible worlds* -- is in one sense much greater than that envisaged by orthodox theory, with its notion of a single production possibility frontier for each set of technologies and markets. We hold that in any given situation there is more than one *effective* economic solution. In another sense, it is more restrictive than orthodox theory, whose free and easy factor substitutions give us a world of unlimited, seamless, combinations -- a circumstance which does not exist in real practical situations. In comparison to empirical business economics, it again leads to greater diversity, in the sense that it rejects the notion of convergence toward global best

practices in given markets, in favor of a considerable diversity of effective practical solutions to the problems of production.

The second question has to do with the role of rationality. Economic action is motivated neither by strict utilitarianism nor only by the satisfaction of individual desires, but in the will to make effective the action which one undertakes. This motivation gives two fundamental characteristics to action. On the one hand, is its particularity: a given situation of action is peopled with objects, circumstances, and persons, whose varied and heterogeneous nature makes for complex and particular synergies. It is impossible to reduce the situation to a series of pre-established, fixed routines. On the other hand, is its collective character: because of this fundamental heterogeneity, mutually interdependent actions can succeed only if there is a truly collective character to them, in the sense of action within a common framework of action. Only if action were reducible to pre-fixed, fully anticipated situations, could its collective character be replaced by external rules involving no fundamental coordination by the persons involved. Fully-fledged Taylorism is the exception, not the rule, and even Taylorism never entirely succeeded in replacing relations with rules. Heterogeneity also means a plurality of collective processes, a certain Afragmentation \equiv of action; when put in the context of a A loose \equiv competitive selection environment, we arrive at the notion that there are many kinds of economically effective action, not a single hierarchy of action from best to worst.

The third question has to do with the nature of action itself. The social sciences were for along time dominated by a utilitarian conception of action as the strategic manipulation of a datum, in the pursuit of satisfying a pre-defined interest within an external reality itself predefined before the action is undertaken. This conception led to a reductionist notion of intentionality: with ends given, the search for

the optimal means to attain them. The economics and sociology of organizations have developed this notion of action. Even though they have stressed their differences with orthodox economic analysis in emphasizing the perverse and inefficient effects of rationality in organizational contexts, they have nonetheless remained well within the utilitarian-instrumentalist paradigm. To break with this paradigm, as we do, requires that we return to the sense of action as *A to do*,³ in which the fundamental uncertainty in which all actors find themselves is not exclusively something they attempt strategically to insulate or protect themselves from via prediction or strategic maneuvering.³ The uncertainty of situations of action is also a source of possibilities for realizing the intentions of action. In many situations, especially those of innovation and other dynamic processes in the economy, the actor may very well see the concrete situation as *A incomplete*,³ as one in which his or her action is designed to fill in coordination gaps and hence contribute toward the making of a new action framework. When this works, the actor's action framework has been pragmatically effective; when it doesn't work, coordination has failed (e.g. in the economy, the product or firm fails some external test) and the actors have to try again, using a different action framework to resolve uncertainty.

The only way to understand the temporal dynamic of economic processes is to conceive of

³ Although it may certainly in part consist of these dimensions, under particular circumstances, this is not an accurate general description of the nature of action.

action as fundamentally a form of *Adoing*. \equiv It leads to a vision of those processes as both structured and open, consisting at any given moment of a plurality of possibilities, but not of an infinity. Conceived in this way, action navigates incessantly between possible worlds and the present, and reality is defined in the course of the pragmatic unfolding of actions, both successful and failed. Therefore, theory cannot define, in any *a priori* way, the conventions which actors will develop. But theory can do something which is *Asecond best*: \equiv it can define general and probable groups of conventions which appear frequently in the resolution of certain kinds of practical economic dilemmas, and it can define how these seem often to go together. These are the *Apossible worlds* \equiv to which we refer above. Their relationship to the real resolutions of economic uncertainty and coordination of economic action through convention is not at all deterministic, predictive, or constraining. They are like clues to explorers, rather than generative grammar⁵⁷ or structures. Thus, not only does a social science rooted in the reflexive turn have different microfoundations from much existing social science, also requires us to complement traditional methods of research and modelling with methods which are likely to be unfamiliar to, and uncomfortable to those trained within the dominant methodological paradigm.

V. The Worlds that Make Regions, and Regions as Worlds

It remains now to begin reconstructing concrete areas of inquiry and explanation in the field of territorial economic development, economic geography, and regional economics. Our field can be reconstructed as a series of intentional, collective human projects, fields where pragmatic actions search for some kind of effectivity. The holy trinity -- as reconceptualized -- supplies some basic building

blocks, in that technologies, organizations, and regions are pragmatic domains of intentional human activity. But they are not equal in power and importance. Territories and regions, are no longer the principal pragmatic action spaces of capitalism. People do act to save regions and they act consciously to develop and promote them, in some countries more than others. Regional societies in some places have strong regionalist sentiments, weak in others.⁵⁸ It remains nonetheless the case that regionalist pragmatics are subservient to other pragmatic action networks today: this is because capitalism is increasingly based on geographically-extensive product markets, firms, and factor markets. As a result, *markets*⁴ have become the principal arbiters of what is *legitimate* collective action in contemporary capitalism: other groupings, such as regions, nations, families, and firms, must submit themselves to the test of the market, and they are more and more subject to political regimes which require proof that such groupings are not erected in opposition to markets.⁵⁹ Markets -- in conjunction with contemporary technological capacities -- make certain kinds of action spaces very important. To begin with, there is the *product*, the essential focus of markets. Product markets involve two principal elements of the holy trinity: technologies (of products and processes) and organizations (especially firms, but also the organizations that support firms, such as schools and states). Factor markets involve mostly organizations (firms, but also those of collective social reproduction, such as the state, schools, and the public R&D organizations). These two elements of the holy trinity are the principal vehicles of the primary intentional projects of economic action today. The deployment of these actions principally

⁴This does not mean, necessarily, Aperfect≡ markets, but rather markets as a general principle of the organization of legitimate interactions in contemporary capitalism. Within this general principle, there are innumerable variations.

Amakes \equiv regional economies today,⁵ when they are situated or subdivided into locations.

Through complex locational structures and patterns, however, such activities may come into close proximity in the restricted geographical spaces of regions, where they are constituted as *territorial economies*. In turn, these activities may develop various forms of regional coherence, spillovers, and feedbacks; when this occurs, it is because regional economic actors have developed conventions and relations which enable such regionally-centered co-evolutionary processes between organizations and technologies to unfold. Both the physical and the relational assets of production *become* -- to some degree -- regionally-specific assets. In other words, *regional worlds of production* can emerge out of the *technological and organizational worlds that make regions*. But this occurs in only some cases; in many others, the regional economy remains -- for the most part -- a mere locational repository of organizational and technological worlds or artifacts, exogenously-driven, exhibiting little regional co-evolution, or what regionalists have traditionally labelled *disarticulated* or *peripheral*.

The modern economy can therefore be conceived as a complex organizational puzzle, consisting of multiple and partially overlapping worlds in which reflexive collective action unfolds. For any given

⁵Even admitting that there is much *drag* from the past and feedback from the present of existing regional economies.

domain of economic analysis, the task is to understand the functional nature of the action spaces involved, and the substantive content of the conventions-relations -- the world of action -- by which actors coordinate and give shape to their concrete, functioning activities in that domain.⁶⁰ Figure 3 illustrates what this means.

In operational terms, these domains which have strong influence on the evolution of regional economies when they become coordinated worlds of action are different $\text{Acuts} \equiv$ at regional analysis. Four such domains, which are complex interactions within the holy trinity, may be defined as priorities for theory and research:

Technologies and Organizations: Technologies and organizations are the principal generators of the $\text{Aproduction possibilities} \equiv$ of capitalism. The first defines the envelope of physical and intellectual possibilities, while the second defines the institutional possibilities for deploying the first in an economically-feasible manner. As we have noted, each of these elements of the holy trinity has been revolutionized in recent years, by the reflexive turn. In combination, they generate complex coordination possibilities and problems, two sorts of which are of greatest importance. The first is *products*, which are the results of coordinated reflexive action, against a background of technological and organizational constraints and possibilities; products are the results of different, conventionally-rationally founded action frameworks, or $\text{Aworlds of production} \equiv$. The second is *systems of innovation*, which are based on action frameworks through which physical-intellectual capabilities are developed and evolved; these are $\text{Aworlds of innovation} \equiv$.

Organizations and Territories. Organizations, especially firms, $\text{Amake} \equiv$ regions through their locational behavior, but it is also the case that organizations such as firms are the products of the

institutional environments of their locations. This is most obviously true for single-location firms, but a case can be made that even the biggest multi-locational firms are, in some ways, strongly influenced by the localities in which they situate certain of their activities.⁶¹ For other sorts of organizations, such as schools, government institutions, and politically- or culturally-defined institutional environments (formal and informal rules for governance of the economy), the relationship to place is a great deal more direct. As we noted above, territorial economies may involve transversal effects between their different activities, through technologies (localized knowledge spillovers); through organizations (localized input-output linkages); or through aspects of the local action frameworks by which multiple sectors of the economy are coordinated and resources mobilized. These localized conventional-relational environments are *regional worlds of production*.

Technologies and Territories. The development of knowledge and know-how is subject to a complex dialectic of codification/economic diffusion, and innovation/ tacitness. While the first tends to lead to geographical diffusion, the second may -- in some, but not all cases -- emerge from restricted geographical contexts and impede, at least for a certain time, easy geographical diffusion. The role of localization in technological innovation and deployment is made all the more potent because certain forms of innovation emerge from inter-activity knowledge and know-how spillovers, which themselves sometimes occur in restricted geographical spaces, as well as defined organizational spaces. One of the major issues for students of economic development in the age of the reflexive learning economy of contemporary capitalism is, therefore, the geography of knowledge and know-how development, i.e. the geography of innovation. Accompanying the geography of innovation is the question of how this exceedingly complex form of collective action emerges and is coordinated in particular contexts.

Paralelling inquiries into worlds of innovation in general, then, we must examine how localization of knowledge and learning come about in the form of *regional worlds of innovation*.

Technologies, Organizations, and Territories. When all the elements of the holy trinity are considered equally and simultaneously, there is no theoretical Abracketing \cong for the purpose of simplification. As a result, only the most complex and concrete problems of economic development can be considered. But we can build up to them using insights gained through rigorous theorizing of the individual elements of the trinity, and the limited combinations identified above.

Conclusion

The approach to territorial economic development outlined here has little to say about standard problems of Aspatial economics \cong or "location theory," staples of the literature on the geography of economic development, but it has much to say about the territorial differentiation of economic development, performance, and institutions. Its principal contributions to the spatial disciplines is to analyze the role of territorial proximity in the formation of conventions; the role of conventions in defining the "action capacities" of economic agents, and hence the economic identities of territories and regions; the economic status of regional conventions of production as a type of regionally-specific collective asset of the economy; the status of conventions as untraded interdependencies in economic systems; and , why it is so difficult for some places to imitate or borrow conventions and institutions from other places. As a research program, they would vastly enhance the explanatory power of regionalist social science, bringing it closer to the principal subjects of many other contemporary social sciences while making distinctive new contributions to those debates.

REGIONAL ECONOMIES AS RELATIONAL ASSETS

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by

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text is not definitive and the references are incomplete. This paper will be published in english as chapter 2 of M. Storper, *The Regional World*, New York and London: Guilford Press, 1996.

Notes (NB: INCOMPLETE)

1. The literature on technological change, in both economics and regional science, is vast. See the survey article by Dosi, 1988, for the economics literature (although much has been added since then), and the several collections on the geography of technological change which have appeared in recent years (cites)
2. Coase, R.H. 1937. The Nature of the Firm; Williamson, O. 1985. The Economic Institutions of Capitalism...
3. First = lit on assets and appropriability; second = Penrose and that lineage
4. Perroux, F. 19... \equiv Economic Space: Theory and Applications. \equiv Idem: A Note sur la notion de pôle de croissance. \equiv Leontief on input-output analysis; Richardson's book on input output analysis and regional science; Isard.....
5. Scott, A.J. 1988. Metropolis: From the Division of Labor to Urban Form. Berkeley and Los Angeles: University of California Press.
6. The term Alocalized \equiv technological change means not only localized in the geographical sense, but also in the economic sense. It is used here solely in reference to the geographical sense. For a full examination, see Antonelli, 1995.
7. Massey; Bluestone and Harrison; spatial product cycle literature, inc Vernon, Norton and Rees; in the Anglo-American literature.
8. Cite Giddens, A, 1995, Beyond Left and Right, Stanford; but also Ulrich Beck on The Risk Society, and perhaps some of the old literature on modernization and how it's recently been updated (also Lash, Held, and Giddens)
9. States versus markets literature
10. This goes back to the debate over whether the market was an incentive to *le doux commerce* or simply to exploitation and accumulation for its own sake. Discussion of this can be found in Hirschman's *The Passions and the Interests*.
11. This latter argument can be found in Arato, J and A. Cohen, 1992, *Civil Society and Political Theory*, Cambridge, MA: MIT Press.
12. Ulrich Beck, The Risk Society, op cit. at note.....
13. One citation for each of these schools of thought

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14. Lundvall, B.A. *The Learning Economy*;≡ also: Arrow, Rosenberg, and early theories of learning

 15. The appellation *A learning economy*≡ has considerable and important differences -- in both theoretical terms and policy orientations -- with other concepts applied to the new economy of the post-1970 period (e.g. flexible specialization, post-Fordism, information economy, service economy, etc). These differences are discussed in greater length in my paper *Institutions of the Learning Economy*,≡ presented to the OECD Conference on Employment and Growth in the Knowledge-Based Economy, Copenhagen, November 1994 (forthcoming in Foray and Lundvall, editors). [i.e. Chapter 10]

 16. Citations on the cognitive turn. McFetridge on *The Economy as a Conversation*≡.....More recent evolutionist literature.

 17. See, for the original focus on this issue, B. Asanuma, 1989, *A Manufacturer-Supplier Relationships and the Concept of Relation-Specific Skill*.≡ Journal of the Japanese and International Economies 3,1: 1-30. Our concept of relations will differ somewhat from his, but the initial inspiration should be acknowledged.

 18. Rosenberg, N. 1982. Inside the Black Box: Technology and Economic Growth....

 19. Ref the early lit on the science-tech paradigm, such as Mansfield, Griliches, etc.

 20. Product cycle; diffusion models; Rallet paper on proximity and TC

 21. But it should be remembered that certain economists in developing countries did not reduce the problem to one of diffusion. Celso Furtado, for example, claims throughout his writings, that the problem for developing areas was to master the creation of technology. (Cite to Furtado)

 22. Some of the papers in the Nelson collection show this. Also American patent research

 23. Find the article that showed this

 24. Lit on networks. Especially Hakansson and the Swedish school (Johanson and Mattson). Also cite Cohendet and Llerena and Callon group=s work)

 25. Cite [chapter 1's] review of the resurgence of regional economies, as well as industrial district literature [which is now so vast as to make it difficult to cite with any justice]

 26. I am grateful to several authors for sensitizing me to the question of cosmopolitan versus non-cosmopolitan knowledge. The first is Rip:

 - A*In early design processes within unfamiliar domains, we may expect intuitive, >private= mental

technical models to predominate. Although there is no doubt a link to existing cosmopolitan cognitive representations, this is seldom explicit; as a consequence, >meta-modelling= does not yet appear as a distinct activity.≡ (Rip, 1991: 13).

The second is Haas-Lorenz. See, Haas-Lorenz, S, 1994, AApprentissage et proximité géographique dans une perspective évolutioniste,≡ Aix-en-Provence: doctoral thesis, Faculty of Economics, chapter II.

See also the excellent papers on communication and knowledge in geographical context by Lacour.

27. Nelson and Winter; Dosi

28. NB: I am choosing to use the term Aorganizations≡ to refer to firms and production systems, rather than Ainstitutions,≡ which is the term favored by institutional (transactions cost) economics. This is because I want to reserve the use of the term institution for routines, practices, and formal non-private≡ organizations, such as governments, trade associations, and so on. It is also a way to link organizations_ to the subject of economic organization in general.

29.Coase; Williamson; Dosi and Salvatore paper in Pathways to Industrialization and Regional Development

30. Perroux

Leontief

31.Isard

Richardson

32. As did Stiglerian development of the scale-division of labor analysis, and some neo-Sraffans.

33. Scott

34. E.G. multilocal firm research in geography; multinational research, eg..Dunning, Mucchielli, etc (refs from DEA class at Lille)

35. Literature on regional tech innovation. Perrin, Camagni, Maillat, Lacour, Rallet, Torre, Quere, GREMI

36. Sabel paper; Ouchi; the lit on networks; etc

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37. Foray, Hakansson; special issue of Research Policy edited by DeBresson and Walker, 1991
38. Cooke and Morgan papers on institutional reflexivity in Baden-Wurttemberg, as an analogy which inspired me in this reinterpretation of the networks and corporate organization literature.
39. We discuss this literature at length in Salais and Storper, *Les Mondes de Production*, Paris, 1993.
40. Axelrod, R. 1984. *The Logic of Cooperation*,
41. Old #8
42. Definition of convention from Lewis, and our discussion of it in Salais and Storper (excerpts from chapter 2)
43. old #9
44. Old #15
45. There is much ambiguity about external economies in both the geographical and economic literatures.. [See Chapter(movies) for more detailed discussion (if we decide to keep that part of the discussion there)]. The basic question is whether agglomeration is simply an additive effect of individual, optimizing producers, where there are no truly collective goods with spillovers involved in the transacting system, in which case no real externalities exist. If, on the other hand, agglomeration is a site of such spillovers and feedbacks to the production system, i.e. where proximity opens up possibilities for production organization and development which would not otherwise exist, then true externalities exist. In the literature, two suggestions have been made along these lines: one is that there are intimate feedback effects between proximity and specialization within the division of labor (the work of Scott suggests this, as does chapter 5 of this book). The other is that agglomerations are sites of transaction-dependent technological innovation. In both cases, agglomeration is not merely a static AStiglerian-Smithian effect, but a dynamic AYoungian effect.
46. Old #5
47. old#9, on confidence
48. In Salais and Storper, *Les Mondes de Production*, we discuss how market action, rather than being the universal form of homo economicus, is merely one way to coordinate with other actors in a market system, appropriate to certain products and ineffective for others.
49. This is the Williamsonian paradigm
50. Evolution is taken up in greater detail in Chapter 3, so we will say little more about it in this chapter.

51. Young, 1928

52. Kaldor, 1972, *The Irrelevance of Equilibrium Economics* ≡

53. Stigler-Smith

54. Veltz on Paris as a risk-aversion pooling effect

55. Much of what follows in this section comes out of work carried out in conjunction with Robert Salais and explained in part in our book *Les Mondes de Production* (1993, Paris). The focus on pragmatics is more developed in the forthcoming english-language version of that book (Harvard University Press, 1996). I have also drawn from a recent text, *Conventions, mondes possible, et action économique*. ≡ Any errors of interpretation are strictly my own.

56. Simon on effectivity

57. ≡ Generative grammar ≡ in linguistics: an analogy to explanatory theories in social science which are non-deterministic, but in which nonetheless a given Astock ≡ of tools and a pre-fixed but still empirically fluid Astructure ≡ (the grammar) exists, which define the range of possible creativity of individual actions (speech acts). There has been much debate on whether generative grammar is restrictive or creative. Since we are not professional linguists, we certainly cannot comment on this. With respect to our purpose here, our claim is simply that the Agenerative grammar ≡ of the economy should not be likened to a structure which pre-fixes the possible range of individual actions, and if there is an analogy to linguistic thought which claims the same, then we are in agreement with them.

58. On the subject of regionalism, see Markusen, A., 1985, *Regions: the Economics and Politics of Territory*

59. We have said little about the links between pragmatic action and the Ajustification ≡ and Alegitimacy ≡ of action undertaken. But suffice it to say that all pragmatic action -- especially insofar as it targets reciprocity by other actors -- rests on some notion of legitimacy, some form of justification, whether implicit or explicit, which must be shared by the actors caught up in the collective action. These issues have been extensively explored in Boltanski, L. and Thevenot, L., 1989 *De la Justification*, Paris: Editions Gallimard. In the case of economic models of products, we discuss different principles of justification for different possible worlds of economic action in Salais and Storper, *Les Mondes de Production*, op. cit.

60. It cannot be overemphasized, however, that the functional domains of action are not pre-defined, whether by a Parsonian functionalist logic of social organization or even by any higher capitalist structure. The whole point of the theory of pragmatics outlined in Section IV is that structure and action unfold and redefine each other simultaneously. We can model the basic functional domains that appear

to us now, but these are indicative, not in any way causal.

61. Literature on localization of multinationals: e.g. Tyson's study of big 500; Patel and Pavitt on technological innovation; Dunning on place-specific assets in the Aeclectic theory of multinational location.