

GLOBALIZATION, LOCALIZATION AND TRADE¹

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Globalization and specialization

When we think of globalization, it brings to mind the image of rapidly expanding flows of goods, services, and capital across national borders. One day, it seems, our economies will become more global than they are national, just as in the past, regional economies seem to have lost out to national production networks. For many, this means that we will become more dependent on decisions and development processes controlled from outside our nation-states. For most economists, the expansion of trade permits greater specialization, which is the effect of adjustments to a more efficient locational pattern as markets become more integrated. The standard version of trade theory simply upgrades Ricardo, asserting that the factor content of trade is driven by the underlying geographical distribution of factors of production; hence, by working backward from trade, it derives location as the mirror image of trade. More recent versions add in such forces as

economies of scale and product differentiation, but they also assume that trade liberalization calls forth determinate locational changes (Helpman and Krugman, 1985). This theoretical stance fits well with the state of empirical research, since trade statistics are readily available and it is relatively easy to track the evolution of trade in goods, whereas it is extremely difficult to measure location at an international scale.

Trade theory does correctly predict the rough match between labor-intensive low-wage activities, (or low-skill capital-intensive activities) and labor-rich developing areas. This is reflected in the factor composition of a significant amount of trade between poorer and richer areas. It can also provide a starting point for understanding subsequent adjustments of output composition, product prices, and wages in more developed areas in the face of such trade. As an account of the geography of economic development, however, it falls quite short.

When it comes to complexly organized production systems and locational processes among highly developed economies, trade theory cannot be used to explain locational patterns and processes. This is because location is itself driven by complex forces, and it is an independent motor of trade. Among these forces are spatial interdependence and proximity relations, economies of scale, localized technological evolution, and international knowledge flows.² Standard notions such as factor content, even when they can be measured at a very fine empirical level, do not help us understand many of the processes underlying location and specialization. Trade certainly affects locational pressures, but there is not a seamless interrelationship between location and trade. Thus, by building a framework based on locational analysis, we can shed clearer light on the causes and consequences of globalization than via trade theory alone.

A theory based on “moderate complexity”

Both trade and location studies tend to oscillate between an endlessly complex series of monographic or sectorally-specific descriptions and super-complicated modelling exercises. I would like to try something different here, which is based on the principle of moderate complexity in theorizing, hopefully enough to give a reasonable picture of reality, but not so much as to eliminate the possibility of making sensible generalizations.

To do this, I want to make five propositions:

1. To understand location, we have to understand the organization of production, because the latter mediates the relationship between the location of a given kind of activity and geographically-differentiated factor and product markets;³
2. The relationship between the organization of production and location can be roughly captured as two kinds of transactional structures, between an activity and its product markets (downstream) and between the different parts of the production system tied up in intermediate production tasks (upstream). This is an analytical way of describing the relationship between an activity and its two most important environments, its market and its necessary partners and suppliers;
3. Traditionally, transactions have been defined as hard exchanges of goods, labor, and money, and expressed through formal instruments such contracts. As we shall see, however, they also include soft and untraded interdependencies, involving knowledge, ideas, human relations, rules and conventions;
4. Technology is a strong structuring force behind these transactions, and a strong motor of change;

5. The local and international geography of soft transactions or interdependencies has important impacts on technological evolution of sectors, and hence on their locational patterns and trade.

In other words, location has a structuring influence on both trade and on growth rates in different places.

To begin the task of analysis based on these principles, we can start where a lot of economics and location theory has always started, which is with transport costs. The standard and largely correct statement made by trade economists is that transport costs and a host of other costs involved in carrying out market transactions are falling in real terms. All other things equal, this should promote globalization, because many activities can locate at greater distance from their markets than before. Activities concentrate close to their needed inputs, and this generates greater locational concentration and hence, specialization of regional economies. We will call this the TTM part of our model (“transactions-and-transport-to- market”).

The other part of the locational problem is how economic activities relate to each other. One way to synthesize this complex issue is by drawing on notions of economic organization based in the division of labor. Rather than the firm as a unit of observation, however, we will use physical units of production, for they are the central concerns of an analysis which seeks to understand output and trade. An establishment is a place where transactions between a certain group of tasks or activities are internalized under one roof; so, a large-scale business establishment is, in this sense, a large set of transactions internalized under this roof.

Modern economic activity is also carried out through a complex external division of labor between establishments, firms and industries, which in turn have to relate to each other through

transactions: about two-thirds of the buying and selling in advanced economies is at this intermediate level. This intra- and inter-industry input-output structure has a geography. If an industry has a more fragmented or complex upstream division of labor, there will be more transactions between firms necessary to get to a final product. Under some circumstances, it is efficient for establishments to concentrate together in geographical space and to accept (as a kind of tradeoff) the higher resulting transport costs to market. The standard reasons for firms to depend on spatial proximity to certain kinds of other firms consist of “hard” transactional efficiencies (ease of inter-firm buying and selling). But recent research has broadened the sources of such proximity relations to include various kinds of “soft” externalities, such as local knowledge spillovers between firms (Feldman, 1993; Audretsch and Vivarelli, 1994), and dependence on human relations, rules and customs which enable firms to coordinate under conditions of uncertainty or complexity (Storper, 1997). All of these forces tend to generate locational concentration, intra-industry trade, and territorial economic specialization.⁴ In addition to this process of inter-firm agglomeration, the existence of a big plant (i.e. activities clustered “inside” a plant), would have a similar result: the locational concentration of output.⁵ Both stand in opposition to a scattered or random geographical pattern of output.

In order to have a workable shorthand, let us label all of these forces which generate geographical concentration of output as “TEKSS” (upstream **T**ransactions, **E**xternalities, **K**nowledge **S**pillovers, and **S**cale). These two groups of forces, TTM and TEKSS, will serve as the horizontal and vertical axes of a conceptual framework to be used for shedding light on some of the major manifestations of globalization and localization today (Figure I).

The forces that generate proximity

Let us begin by introducing some complexity into the horizontal axis, TTM. The standard story about declining transport cost barriers, though true for many cases, tends to ignore that downstream transactional costs are not just determined by the means of transacting (transport) but by the complexity of what we ask the transport system to do. So, even if transport costs are falling generally, if we have more irregular shipments, smaller lots, or other demands which make the task of transporting more complex or uncertain, it is very possible that transport costs will rise. In an economy where some products are becoming more and more tailored to customer demand and increasingly service-intensive, market-oriented locations will thus remain efficient for many goods and services.

It is on the TEKSS, or vertical axis of our model, however, that outcomes are likely to be especially complex and changeable. There are two contemporary forces in the economy which tend to make upstream transactions more complex and more costly. First, in many industries, producers are obliged to organize themselves for great quantitative output flexibility and frequent product changeovers. These sectors include the frontier high technology sectors, design-intensive consumer goods, and some service-intensive or differentiated high quality manufactured goods. They achieve such flexibility in part through recourse to external suppliers. If high fixed costs are avoided through externalization, the latter may also raise transactions costs. One way to insure immediate availability of a wide range of external resources with low search and transactions costs is via geographical proximity of suppliers (Scott, 1988). Thus, there are powerful forces at the center of today's industrial system which may generate locational concentration in spite of declining transport costs.

The importance of scale economies is the centerpiece of the New Trade Theory (Krugman 1991; Krugman and Helpman, 1985). In place of constant returns to scale, divisibility and hence

perfect competition in geographical space, they introduce scale economies, locational concentration, and imperfect competition over space. The theory predicts greater overall economic specialization, because when market territories for particular goods and services are defined by their scale characteristics, they create territorial “shadows” or oligopoly effects around them. One particularly important form such specialization will take is that of increased intra-industry trade, as production of intermediate goods is freed to rise to its efficient minimal scale levels, instead of being redundantly present in many places.

There are, however, kinds of linkages between firms other than those which are based on traded input-output relations. For example, firms in many industries cluster together, even though they do not have many of these traded input-output relations at the local level. Most of the surveys on the subject suggest that they stay in the same place as other firms in their business in order to make sure that they are close to the “action,” usually defined as being in a context where they can be sure to get access to the latest ideas on how products or markets are changing (e.g. Saxenian, 1994). Often, they cite access to a certain kind of labor, even though much labor may come from outside the local labor market. In still other cases, firms suggest that they use proximity to help with the flow of ideas or negotiations, even though -- as we know -- information is cheap and easy to transport. What are we to make, analytically speaking, of this kind of evidence?

It suggests that there are what we might call “soft” and “indirect,” i.e. non-traded, interdependencies among firms, essentially having to do with spillovers of knowledge or ideas which those firms consider necessary to stay on top of the competitive process. They seem to be especially important in industries in a particular kind of technological regime -- with non-standardized products, complex goods or services involving a lot of customized and negotiated

content, or products and services where technology (in the sense of hardware or product designs) changes a lot. These interdependencies are substantively complex, often intangible, only occasionally involving the explicit and formal transaction of ideas or knowledge. This is because some kinds of knowledge or ideas are sufficiently complex or changing that they resist codification, which would in turn make it possible for them to be communicated in an anonymous, depersonalized way and hence to transcend the barriers of distance.

In general, ideas with substantive complexity and low codification will require direct human relations for their successful exchange (Boden and Molotch, 1994). Human relations, as vehicles for idea exchange, have quantitative and qualitative dimensions. The quantitative dimension is that it is relatively expensive to transfer people every time we want to transfer an idea, especially in time-opportunity cost. In qualitative terms, the absence of codification implies that a variety of communicative structures and interpersonal processes is needed to get the message through, interpreted correctly, and adjusted and readjusted to concrete circumstances through trial and error and reading between the lines (Cowan and Foray, 1997). Communication thus becomes complex and conventional, embedded in webs of relations (Lundvall, 1993).⁶ This is why most theories of the information age are fundamentally inadequate, because they treat information as disembodied bits of knowledge in relationship to hardware (as in Castells, 1996). Because of their conventional and relational content, the cost and time required to make relations cover vast distances and to reach many users can be quite high. The supply structures for these ideas and knowledge are thus characterized by small numbers (due to lack of transparency and easy reproducibility), and hence the “markets” for exchanging such ideas are strongly imperfect. Knowledge and idea spillovers are not only geographically limited in these cases, but the places where they are produced have the

advantages of possessing economically -rare, specific, and difficult-to-imitate resources.

Paul Krugman (1995) has argued that while these phenomena may exist, they “leave no paper trail.” He means that there is no easy way to measure them directly, and he is right. He concludes that therefore we should not bother with them as a possible source of localization externalities, and hence as a driver of specialization and trade. In contrast, the argument is that they may be one of the principal reasons why, in an era of declining transport costs, so many specialized clusters of producers have made or reinforced their appearance on the landscape of contemporary capitalism. It seems impossible to account for such major complexes as Silicon Valley, the pharmaceuticals industry in New Jersey or Switzerland, the City of London, or Hollywood, or a host of other world-important, highly-performing regional economies, with any other kind of reasoning.⁷ Moreover, the persistence of these clusters in spite of certain forms of internationalization of their knowledge (to which we will return shortly) would seem to be evidence of locational path dependency, in turn rooted in the evolutionary trajectories not so much of their hard input-output structures, but rather of their underlying webs of human relations.

Some patterns of development

Now that we have explored some aspects of TTMs and TEKSS, we can put them together to characterize analytically some major geographical patterns of different sectors (or closely interlinked groups of activities) found today. Figure II⁸ suggests three levels of intensity for each axis, from low to high transactions -and-transport-to-market, and from low to high upstream transactions, externalities, knowledge spillovers and scale.

In order to use the ideas set forth above, some adjustments are necessary. For the present purposes, there is analytical similarity between a big establishment and a cluster, in that both bring

about locational concentration of output and should give rise to economic specialization and interregional or international trade. In practice, however, it is unlikely that the scale of a single establishment will compare to that of a cluster. Hence, in Figure II, we are going to consider big establishments⁹ as a medium level of TEKSS, and only the biggest establishments will be classified as high TEKSS cases, i.e. quantitatively equivalent to clusters. Having done this, we can now examine a realistic typology of cases.

Take the upper left case, where both TTMs and TEKSS are low: firms have little reason to localize with other producers, nor strong reasons to locate near markets. One would expect a random, scattered pattern of isolated producers, a sort of entropy, unless there are natural resources or other scarce factors involved. Given competitive markets, entry should produce relatively low levels of international trade, but we cannot be sure about this, because low TTMs might also favor such trade. Moving to the upper right case, we find high costs of getting to market, but low upstream interdependencies, and this logically will yield the locational pattern known to geographers as that of Christaller and Losch: market serving locations, where the only driving factor is the matching of output scale to market scale, resulting in a nested hierarchy of market areas. Only for the most specialized products would we expect high levels of international trade.

On the bottom row, all the cases have high levels of upstream interdependencies. What varies is the relationship to the market. In the bottom left-hand case, high upstream interconnections but low costs and difficulty of getting to market generate one of the most typical and complex geographical phenomena today, that of interconnected clusters. In any complex and long production chain, there will be many upstream stages, each with its own intricate division of labor. It is likely, moreover, that each clustered group of intermediate goods producers will serve more than one

downstream client, whether in terms of firms or even whole sectors. Thus, the semiconductor industry might cluster in an area and be linked downstream to clusters elsewhere in computers, military hardware, aerospace, and so on. Even within semiconductors, several clusters might form due to differentially intense relationships in parts of the production chain. Insofar as TTMs remain low, these clusters can form their own geographical centers of gravity, and ship their intermediate products – which are the “final” outputs of the clusters – to other clusters. Equally, a large plant might cluster with its suppliers, but in turn – if its products are intermediates – ship them to other clusters. This is a geography of two levels of the division of labor: locally between firms, and interregionally or internationally between clusters. In addition to these hard input-output reasons for a hierarchical system of clusters, there are the soft forms of TEKSS that we explained earlier. Clusters based on communities of knowledge exchange and spillovers are likely to appear and to form specialized nodes in much longer production chains. This is why globalization has become so complex: it involves nested geographies of divisions of labor, knowledge spillovers and local path-dependent learning communities. Existing industrial statistics are almost entirely incapable of illuminating these dynamics. Yet this sort of locational dynamic is probably behind high and increasing levels of international trade.

This pattern often involves transnational firms as the key agents that bring the clusters together (Blanc and Sierra, 1997; Keeble and Wilkinson, 1999). There has been quite a lot of polemic about the role of multinational firms in the literature, where frequently it is claimed that localized clustering and the big enterprise are somehow in opposition to each other. The multinational enterprise is said to “eat” local economies by internalizing everything as intra-firm trade, disconnecting it from the external, market-based local environment. But this is analytically not

entirely useful: the most common practice nowadays is for a big transnational to assemble the products of different clusters, often through buying-selling or alliance with other transnationals, who themselves are the key nodes in clusters.

From the standpoint of regions, the key issue is how strong and “sticky” the local hard or soft TEKSS interdependencies are: how much do they really serve to deter new competitive entrants coming from other regions? In order to answer this question, we need both more sophisticated analyses of upstream intermediate divisions of labor, and a new geography of ideas and learning processes, or what is being defined here as “the geography of TEKSS externalities.”

The right-hand bottom case consists of high interdependencies upstream and high costs to market. In this case we are likely to get a clustered version of Loschian market geography, where what is at the center of the market area is not the firm, but a group of interrelated firms, and the cluster’s scale corresponds to that of the demand in a local market area. This is different from the case we just examined, because these market-serving clusters are oriented to final demand rather than intermediate demand. As in the upper right-hand cell of Figure II, international trade will result only when the minimal market area for a cluster exceeds the size of national markets.

In between these two bottom row cases is a particularly interesting set of cases. When the TEKSS forces are very strong, but costs and difficulty of getting to market are moderately strong, we enter into a complex area of elasticities between TTM advantages and TEKSS advantages. We would expect clusters of firms to reduce TTMs by having some locational relationship to their markets. But insofar as their markets are frequently other clusters of firms, the locational logic of these clusters is that of co-location with other clusters. The way that TTMs are managed in many cases is through the appearance of clusters of clusters in proximate geographical space.

There are two aspects to this co-location. On one hand, in an economy where technological change and innovation are the motors of both hard and soft TEKSS, there is always the risk that clusters of firms will find their previous patterns of interrelationships disrupted (Lundvall and Johnson, 1994). To minimize the possible effects of this, they must locate in an area where they can reconstruct such relationships and find new clients, as quickly and easily as possible. This system of co-location as a way of minimizing risk, in the presence of moderate TTMs, is one reason for the metropolitanization of specialized economic activity, as firms try to locate close to the greatest number of potential clients in the face of relationships that are highly unstable (Veltz, 1996). But co-location of clusters is not due exclusively to managing change in this negative sense. We observed, in the lower left hand cell, that separate upstream clusters relate well to each other across long distances where their TTMs are low. But if these are high, then the knowledge spillovers and positive externalities that might flow from inter-cluster relations will also require some degree of spatial proximity. Such positive benefits of soft inter-relationships as innovation and learning, would depend on co-location of clusters caught up in longer commodity chains. For both these reasons, co-location of clusters results in the appearance of geographical super-clusters, which generally take the form of complex metropolitan economies today.¹⁰ These superclusters are increasingly caught up in interregional and international trade, because superclustering implies a distinctively uneven international location pattern.

The other face of globalization: international knowledge flows

We arrive, finally, at the analytically most complex set of cases, those of moderate TEKSS forces and moderate TTM forces: big establishments neither entirely indifferent to their final market

locations nor inexorably located near them. These cases are complex because there is a big margin of maneuver, both with respect to upstream co-location and with respect to geographical orientation to market. Elaborate supply structures are very likely involved, but they can be extended in geographical space; market relationships have moderate cost and difficulty. Outcomes are particularly difficult to derive analytically here, because the tradeoffs are so many and hence multiple elasticities are at work. There may also be considerable and multiple uncertainties and path dependencies in supply and market structures. Dunning (1995) has argued a similar point at length, claiming that trade theory in general lacks an analytical language for the most important kinds of international, intra-industry relationships today, those characterized by complex substance, and that this includes both inter-cluster and inter-establishment relations.

Predictions of locational concentration and specialization due to reinforcement of TEKSS are likely to be only part of the story. There are new forces and capabilities tugging in the other direction, that of viability for a multiplicity of locations, because of the rise of a new set of more complex international, intra-industry relations. As noted, the existence of strong TEKSS corresponds to a particular kind of technological regime, with significant process or product innovation. In the activities with moderate TEKSS, however, a different kind of technological regime is at hand: innovation occurs, but it is primarily concerned with modifying and perfecting underlying product designs. Knowledge is more codified and stable, but significant evolution is nonetheless occurring (Utterback, 1996).

The geography of such knowledge is also likely to be quite different from the high TEKSS sectors. On the one hand, there is the well-known tendency for ICTs to become more efficient and cheaper, which permits – within limits – certain forms of even relatively complex knowledge to be

transmitted over long distance and relationships to be carried out in real time. But more important are institutional developments. For example, when managers go to the same business schools or to schools that use similar ideas, even when they come from different countries, they learn to “talk the same language.” Physicists and mathematicians have done this since Newton and Descartes, of course, and the Church did it early on through the generalization of Latin. We are not talking of a literal language here, but of a system of signifiers, which are common ways of constructing understandings so that messages flow more easily: the language of international investment, technology, and management.

This complex web of new structures and practices, of which I have just scratched the surface, is what sociologists call a new “institutional field” which has been emerging over the last couple of decades (Zucker, 1994). It has made the international sharing of economically-useful knowledge and ideas more feasible, precisely by specializing in the relationships that make the global-local transfer possible. It constitutes a powerful, though not invincible force, for the long-distance exchange of partially codifiable and partially tacit, and relationally-dependent knowledge.

There has been some concern with this process in international economics recently, under the guise of research into international R&D spillovers (Eaton and Kortum, 1995; Coe and Helpman, 1993); Manfield and Romeo, 1980). There are major productivity-boosting spillovers of American research outside of American borders, and this has accelerated sharply in recent years. Less is known about the flows into America because of the way patent statistics are structured, but it is a good guess that the flow has been in that direction, too. That research in economics, however, does not dig into the how and where of such flows. We are suggesting that a rapidly expanding institutional field has now made it possible, under certain circumstances, for rather complex ideas

and types of knowledge to flow internationally.

The effects of such knowledge exchange on location and trade may be very important, but appear to be underestimated in both the trade and location literatures. Very detailed statistical measurements produced by the CEPII in Paris (Fontagné, Freudenberg, and Peridy, 1997) suggest that in the European Union, for example, intra-industry competition in the routine durable - goods manufacturing industries is accentuating in two ways. For a given, rather narrowly defined kind of output, there is a greater quality variations, and within a given general kind of good, there is a greater number of European producers, in part due to their different quality strategies, and in part due to intensified head-to-head competition. Something similar is at work with respect to intermediate outputs as well. Many firms have transformed themselves into more specialized intermediate producers, but they diversify within this field (Greenaway, Hine and Milner, 1995).¹¹ All of this suggests that European companies are successfully restructuring to serve global markets through accentuated quality and variety differentiation, rather than necessarily shutting down some operations and concentrating them elsewhere. This is reflected in some statistical evidence that in many routine, durable-goods sectors in Europe, international trade and the presence of increasingly contestable markets are not leading to American-style patterns of regional specialization (Storper and Chen, 1999).¹²

The question of how trade affects location in the presence of international knowledge flows in routine production sectors may now be reformulated. Initially, trade appears to generate some specialization effects, depending on the pattern of winners and losers. But subsequently, local producers may respond positively to this new contestability of markets. And they react using the knowledge which comes in part from trade itself: the products and efficiency levels of their new

competitors signal to them what they must do, and the new institutional field described above makes this possible. Trade then becomes a vehicle of knowledge diffusion. This diffusion in turn becomes a force which helps local firms to stabilize their market shares by competing effectively with invaders. At the same time, these local companies may then invade their competitors' territories, resulting in a new international structure of market shares, but with relatively moderate change in aggregate locational patterns. Underlying this aggregate stability, however, there is now a lot more cross-border market serving than there was previously. In other words, a soft form of globalization – knowledge and idea exchange – sustains a much higher level of trade but a relatively stable international output and locational map. Two flows increase dramatically – trade in goods and exchange of ideas – without being propelled by a dramatic increase in locational and output specialization. We could say that the evolutionary technological and product dynamics of these industrial complexes depend in part on their uptake of international knowledge and its use in a specific way within the local production context.

This reasoning leads to a quite different outcome from models based solely on transport costs and imperfect competition. Venables (1996), for example, suggests that agglomeration occurs at intermediate levels of transport costs, while dispersion comes at high and low levels. In the analysis developed here, at the intermediate level of transport costs, a great deal of spread is likely. Our view is that a broader definition of the nature of intra-industry interdependencies, and then placing them in relation to transport costs, and considering both of them in processual and evolutionary terms, is required to achieve a more plausible view of locational outcomes.

Globalization, in this way, may involve a less radical reshuffling of specializations than we have been led to believe by many theories. If this analysis is correct, the implications for European

regional development – especially in contrast to the historical experience of the United States – are considerable. Insofar as the location pattern of these industries was established before lowering of trade patterns and hence is relatively widely dispersed – this is the European case – then the fact of moderate TEKSS and TTMs *affects the evolution of their technological regime in a different way from what has occurred in the United States*, leading to the internationally competitive restructuring in situ described above. The outcome is high levels of resulting trade, high levels of international knowledge and idea flow, and maintenance of a relatively dispersed locational structure. There may be lessons of this for other regions in the world.

Reconsidering some common forms of globalization

This analytical schema can be used to shed light on some common understandings of globalization (Figure III). There appear to be four essential “tiers” in the major developed economies today: these categories consist of activities, or parts of sectors, each of which has a distinctive economic dynamic and different overall degree and type of globalization. The first is *world-serving industrial specializations, and specific-skill-based activities*. This tier consists of the most advanced activities in our economies. The tier has two distinctive parts. On one hand, are the *winner-take-all products and services*. In industries such as financial services, media, sports, high level corporate management, business consulting, and science and medicine, there are functions which are assured by individuals who either take part in an international labor market or where the products and services they render are identifiable, scarce, and consumed over an increasingly wide market area. The high-powered corporate attorney, the film or sports star, doctors with a global

reputation, are examples. Internationalization enables them to increase their skill-specific rents because international market access now has very low marginal costs (Frank and Cook, 1996). They are found in the lower left and middle boxes: they are products of very specific, highly embedded economic contexts, but now they serve world markets. Similar, but taking a very different appearance, is the second part of this tier, what we can call *export-oriented specialized industrial clusters*. In most countries, there are certain sectors or parts of sectors which that economy is particularly good at. They show up in each country's export specializations, and we know that the coefficient of difference of exports of the advanced economies has been increasing in the last 20 years, along with the growth in trade. Often these products emerge from distinctive geographical clusters within each country, which have variously been termed "industrial districts" or "technology districts" (Storper, 1992). They correspond to the two bottom left and middle cases and can analytically now be understood in the terms we have used here.

The second tier is *locally-serving partially- or non-tradeable goods and services*. There are many goods and services which require strong proximity to their points-of-delivery: their TTMs are high. This may be just the final delivery, as with some services that involve long and complex upstream commodity chains, or it may be that the chain itself is largely localized. In any case, they amount to rather large portions of total output and employment: the part that follows the geographical distribution of population and income. We often forget this in discussions of globalization, and while there is obviously a relationship between mobile and immobile activity, in the sense that population and income redistributions can occur due to the redistribution of mobile activity, in the end much of the economy is less tradeable than we are led to believe. It can easily be seen that this tier corresponds to our two market-serving cases, one where there are strong local

TEKSS forces, the other where this is not the case. But local delivery of many products and services is the end of a far-away production system. Non-tradeables are often the end product of combining many tradeables. Hence they may involve more globalization than meets the eye.

The third major tier consists of *globalization through deterritorialization* or, as it is frequently known, *global commodity chains*. This is largely routine manufacturing and services which are susceptible to offshoring to low-wage countries, because of low-levels of place-specific assets in the production process. In general, these activities rely on rather low TEKSS upstream, and low TTMs. What is their overall importance? They are very visible in the countries which use them as the basis of their developmental experience, but studies which have attempted to measure their importance indirectly in terms of the degree of competition presented to low-skill workers in the developed countries by low-wage imports almost invariably conclude that it affects about 5% of the total workforce in developed countries and has caused 10-15% of the increase in wage inequality there (Mishel, Bernstein and Schmitt, 1998; Levy, 1999).

Finally, there are the manufacturing and service activities which are caught up in increasingly contestable markets (in the sense of Baumol, Panzar and Willig, 1982). Only some of these fall into the upper left or upper-right hand cases of Figure III. Many of these cases are typified by New Trade Theory, with scale economies permitting them to serve big markets from afar; lowering of trade barriers, which lower TTMs, should lead to a less even geographical distribution of them. A good number of them fall squarely in the middle of the model, involving knowledge and idea exchange with entry, as the basis for a new geography of internationally contestable markets. These involve a more even distribution of activity than we have been led to believe, precisely because of the increasingly wide distribution of competences, initially as a consequence of trade (spurred by it)

then as a substitute for further geographical rearrangement.

Two concluding observations can be made here. First, in only a few of the boxes do we find location patterns which presuppose a high degree of locational independence (isolated, footloose plants). Their exports should be perfectly consistent with the factor contents hypothesis, but they are a limited number of cases. Second, in virtually all the cases, we can expect rising intra-industry trade (intermediate inputs). This rise in intra-industry trade is, of course, just another way of expressing the complex input-output relationships *between* our different cases and the forms of trade they take. Unfortunately, we do not yet have good theories for such complex relationships, especially at the international level (Dunning, 1995).

Growth, convergence, divergence: evolutionary trajectories of local economies

It is an assumption of most international economics that trade is an effective mechanism of growth rate and income convergence: trade in products brings about price and quantity adjustments in local economies and thereby causes their growth rates and income levels to converge in the long-run, especially when seen in a general equilibrium framework (Grossman and Helpman, 1991). The empirical evidence on growth and income convergence tells a different story, however. At a world level, growth and income convergence is not in evidence. Theory has therefore turned to the notion that convergence can only happen among economies within a certain range of “structural” similarity, which is known as “club convergence.” There is considerable evidence in favor of club convergence; but there are major theoretical and empirical problems with the notion (Bouba-Olga, 1999; De la Fuente, 1995; Barro and Sala-i-Martin, 1991). On the one hand, it works only retrospectively: that is, it is not good at predicting convergence among a group of economies, but

rather tends to find the structural similarities retrospectively for economies that have experienced convergence. On the other hand, it cannot account for the fact, well documented, that even among the most convergent economies, convergence seems to encounter serious limits. Western Europe experienced considerable catch-up with the United States in the post-war period. Since then, the pattern has been irregular, with countries shooting past each other in one period, and then falling behind in the next (Bouba-Olga, 1999). This is true also at the level of sectors: international productivity leadership passes from one nation to the next, with countries falling behind and then catching up or shooting past their competitors. Club convergence seems to be limited and temporally irregular, in other words.

Our framework is consistent with the overall notion that the rate and direction of technical progress will differ between economies, in that the strong localization forces we have described theoretically, and the concomitant observable category of winner-take-all and world-serving-specializations, describe activities with localized, strongly endogenous forms of technical change. These differences drive trade and trade does not even them out spatially. At the same time, we have suggested, in agreement with the literature, that there are likely to be processes of international knowledge exchange, and we have argued that they could permit locational patterns to persist precisely by permitting local producers to attain world levels of productivity and product quality, and this should constitute a force for convergence. So, rather than opting for simple choices of convergence versus divergence, or exogenous versus endogenous growth theories, it is suggested here that a locational approach – rooted in organisational dynamics of production systems and technological dynamics of sectors and places -- will shed light on the observable reality of spatial and temporal diversity in growth patterns. It does so specifically by providing an analytical way into

the forces that affect the specialization of places. Trade certainly contributes to these dynamics, but in and of itself tells us rather little about them.

Conclusion: Trade is not a palimpsest of globalization

Trade and trade theory, then, are not mirrors of location. They are, variously, complements, outcomes, and partial causes of location. Only by developing the two fields, each in its depth, and through a semi-disaggregated but analytically coherent set of categories – what I have called a moderately complex style of theorizing -- can we come to an understanding of their interrelationships, so that when we speak of one we know more accurately what it implies for the other. The analysis advanced here suggests that much of the existing empirical research on globalization which relies uniquely on trade data will have limited utility for understanding the causes, evolutionary tendencies, and consequences of globalization. It will have limited policy relevance. There is a strong need to develop empirical research on globalization which measures international location in its own right rather than reading it off from trade patterns. It follows that by developing both trade and locational analyses in this way, we would have more powerful and realistic things to say about them, and hence about how globalization will influence people's lives.

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NOTES

¹ This paper was initially prepared as a public lecture to the Suntory and Toyota International Center for Economics and Related Disciplines, at the London School of Economics, November 6, 1998.

² More recently, the New Trade theory has focused its efforts on one of these, economies of scale (Krugman and Helpman, 1985).

³ For non-economists, this refers to the non-mainstream notion that the mix of economic factors used in an activity comes in a package, and this package is not defined exclusively by economizing on the most expensive factors or even by achieving the cheapest mix of such factors, but by a host of more complex considerations, such as the technology used and the evolution of the product's qualities ("specific factors models"). These create non-separable "packages" of factor demands, so that the kind of activity found in a given place has a very complex relationship to the costs of factors found there. This finding was empirically validated for world trade in the 1950s by Leontief, who showed that labor-rich poor countries had a higher capital content in their manufacturing exports than rich countries. He called this the "contrary factor intensities paradox." Thus, factor content is often a very poor explanation of why a certain activity goes to a certain place, and hence it is very hazardous to try and read location from the factor content of trade.

⁴ Because we have a more sophisticated idea of the division of labor, outcomes are both dynamic and uncertain. Simple conceptions of the outcomes, such as those of the product cycle, are now

replaced by a notion that technological change can bring about locational concentration by creating divisions of labor that create stronger spatial interdependencies, or it can bring about locational spread by changing the division of labor so as to create a need for fewer or longer-distance transactions.

⁵ Indeed, this problem has been recognized formally via the construction of the Ellison-Glaeser agglomeration measure, which separates plant size influence from the role of clustering.

⁶ Lundvall (1993) suggests a triad of what kind of knowledge, who has it, and why is it needed?

⁷ I argue this point at some length in Storper, 1997, chapters 1 and 2.

⁸ The inspiration for this figure comes from my colleague Allen Scott at UCLA, especially the top and bottom rows, but I have redefined the axes and added the middle row.

⁹ I will define big, for this purpose, as plants with more than 5000 employees.

¹⁰ These two reasons apparently outweigh the obvious disadvantages of metropolitan regions as compared to non-metropolitan areas, but they are also maintained in a state of viability by the internal expansion of metropolitan regions.

¹¹ One of the most interesting potential implications of this reasoning is how it modifies the standard New Trade Theory notion. Their explanation, as noted, has to do with the way declining trade barriers allow plant level scale economies to generate new patterns of intermediate production, with increased geographical concentration and specialization. But here, we are suggesting that in a routine technological regime, international flows of knowledge might actually bring about the opposite effect, by diffusing knowledge and allowing more producers to get into the intermediates market. Especially where output levels are below the minimal optimal level (frequently the case),

there is much “room” for such intermediate producers to enter. So there could well be a situation of increasing intermediate trade and no geographical concentration for the sector.

¹²We should not forget, relative to the Krugman-Helpman analysis, that minimal-optimal scale economies are reached many times over for many goods, so that the idea of a strong locational concentration effect to reach this scale is not likely in the Triad regions.