

**Diversity, Not Specialization:  
The Ties that Bind the (New) Industrial District**

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**1.**

**Whatever they are exactly, industrial districts are also a worldly success and a conceptual innovation. In Italy, the map of district agglomerations of small and medium-sized firms specializing in particular branches of light industry is no longer limited to the triangle marked by Venice, Florence, and Ancona in the Adriatic Marches. New agglomerations are spreading, as though by contagion, down the shores of the Adriatic and the Mediterranean, now and again obstructed in their march south by the detritus of failed, heavy industrial complexes. Quite apart from this expansion of the districts' homeland, district-like agglomerations are emerging in some patches of the South of Italy. Looking at the economic map of Europe, the economic agronomist sees a "hot banana" of thriving districts curving from London, through Switzerland and the Southwest of Germany into Northern Italy. In the developing**

**economies districts are identified as a motor of growth in countries as different as Chile, Brazil, and India.**

**The advance of the industrial district as a concept has at least kept pace with its progress in fact. Discussion of economic growth in both the advanced and developing countries is dominated by what is often called the Washington consensus—concern for opening economies to free trade, getting exchange rates and other prices right, and (lately) building the institutions needed to do this. But insofar as it is not, debate gravitates toward the creation and expansion of “clusters”—the business name for districts. In the European Union in particular fostering clusters is often seen as a way of encouraging economic competitiveness without giving in to US pressure to give markets free reign. In theoretical debates about economic growth and international trade too agglomerations, often explicitly identified with districts, have come to play a central role (although, as we shall see, with surprisingly subversive effects).**

**Why, then, are the districts prospering and diffusing? What explains their success in today’s volatile and rapidly changing markets?**

**Surprisingly—or not, you be the judge—there is no compelling answer to such brusque and elementary questions. Not that familiarity with the subject has dulled curiosity about its causes. Rather, I suspect the fruitfulness of the district idea as a research agenda and as a policy tool has dulled incentives to inquire too closely into the consistency and generalizability of the sustaining ideas. Concepts that both allow exploration of economic forms uncognizable in the light of standard theories of the firm and discussion of public engagement in economic development otherwise taboo seem somehow self justifying if not self evident. Put another way, you don't look a gift horse in the mouth, especially when you are bestride it.**

**The result is a growing gap between a venerable and originally plausible explanation of district success and the sources of competitive flexibility generally, and a discrepant mass of material regarding developments in the world, research findings and alternative views of innovation. The familiar explanation focuses on the specialization of activity and the tacit or lived quality of the knowledge that such specialization produces. The discrepant**

material, on the contrary, links the innovative capacities of agglomerations to diversity and the (partial) formalization of the knowledge that coordination across difference demands. The districts initial success was mysterious. How could small, traditional artisan firms outperform giant, technologically sophisticated corporations in the application of new technologies in industries as diverse automotive components and textiles? Now the deep changes wrought by the districts' capacities for transformation make the grounds of their continuing success mysterious again.

In this essay I want to argue for the discrepant view. More exactly, I want to argue that under current conditions innovation, and problem solving generally, depend on disciplined comparisons of alternative solutions, and these in turn require transforming tacit knowledge into what might be called pidgin formalizations: accounts sufficiently detailed to be recognizable to those who know the situations to which they refer first hand, but sufficiently abstracted from them to accessible to outsiders, from various disciplines.

**Such pidgins are more than mere descriptions yet less than fully developed causal theories. As the work of Galison (1997) shows, they are familiar to the history of science as the working languages of collaborations between, say, experimentalist instrument makers or engineers on the one hand and theoreticians on the other. From these collaborations radically innovative theories sometimes emerge. For our purposes, though, these formalizations are less interesting for their generative potential than for the working exchanges they enable. Their availability, we will see, breaks down or at least attenuates the distinction between insiders and outsiders, intimates and strangers upon which the success of districts, and related organizational forms, was premised. Conversely, organizations designed to generate such formalizations, and collaborate with others doing the same, have internal structures and build relations not contemplated in the familiar district literature or in its analogue in the discussion of large firms. These novel organizations are neither craft communities that organize themselves on the basis of common, tacit skills nor hierarchies tied together by tacit routines. Their distinctive feature, the one from which flows their peculiar openness to change within and reconnection to the world without, is precisely the ability to question**

**their routines and the foundations of their common skills without undermining the utility of either. They represent, we will see in the end, a form of self-organization that engages the human capacities for self reflection and deliberation without supposing that we are endowed with anything like a panoramic understanding of our situation.**

**To intercept misunderstanding at the outset let me underscore two important limits to the argument. First, in emphasizing diversity and formalization rather than specialization and taciturnity as conditions of problem solving I am not arguing that things have always been so. The traditional view of the districts is still a good account—the best we are likely to have—of how districts operated traditionally (until roughly the early 1990s). The discrepant material, and the reading given here of it, is less concerned with revising history than taking account of new circumstances. Second, however great the changes entailed in accommodating the changed circumstances there is no compelling reason to think that districts, starting from their traditional constitution, will be unable to make the adjustment, or will be changed beyond recognition if they do. Indeed, on the current**

evidence “new” districts agglomerating firms and other institutions capable of jointly formulating pidgins as and so that they can collaborate are often arising from the stepwise transformation of “old” ones.

In presenting these views I am, some readers will know, speaking out of both sides of my mouth. I was a partisan of something akin to the “traditional” view of the districts when it seemed to many outlandish. I’m reasonably sure that the concept of flexible specialization that Michael Piore and I (1984) coined to capture the innovative responsiveness of districts apparently bound by craft tradition is ambiguous enough to paper over the differences explored here. (See also Sabel and Zeitlin, 1997) But nothing is served by this kind of evasion. Self reflection, and the distance on past selves it requires, is by definition not just for the others.

2.

The conception of innovation and flexibility founded on tacit specialization finds a natural expression in the idea of a craft or

**artisan economy. In such a world problem solving is associated with particular tools and materials. Through apprenticeship the use of the materials and instruments characteristic of a particular trade become second nature. So too apprenticeship teaches that the exercise of individual prowess draws on, and replenishes a fund of community knowledge. Mastery comes with further experience, as the artisan gains the autonomy to apply the familiar techniques to the solution of unfamiliar, even novel problems.**

**To connect this form learning by socialization to an economic structure, take the simplest case, where each artisan in a given trade owns and operates a single lathe or loom. Together the ensemble of owner-operators command the skills and machines needed to whatever specialized good the market for their class of product demands. A broker (who may also be an artisan) solicits customers and contracts with the appropriate group of skilled producers to deliver the goods. Since producers and brokers can diversify the risk of any transaction by pursuing other projects with different partners simultaneously or in sequence, the artisans and brokers can jointly respond to highly volatile markets while safeguarding or advancing**

their separate interests. Given the manifest advantages of cooperation, moreover, the artisans can easily agree to create institutions—public or private—to provide themselves with services (bookkeeping, monitoring of technical standards, quality assurance) that none, given the small scale of operations, can provide for him or herself. (Brusco, 1989) *Ecco il distretto*.

Notice that this craft version of the district economy is largely self governing in the sense of (almost) proof against opportunism or self-seeking guile, and for related reasons expansively self reinforcing. The governance of opportunism is a limited problem because the artisans' skills are largely complementary. Homogeneous viewed from the outside, they are highly differentiated in their own view, with micro-specializations—the use of a particular kind of loom or lathe—that make most of their colleagues into potential partners rather than rivals. To be sure, even partners are rivals when it comes to the distribution of the gains to cooperation; but such rivalry is disciplined in explicit partnerships and in the craft districts by the recognition of the mutual dependence. Socialization into the community of craft knowledge, and the sense of dignified competition for the respect of

**ones' peers that goes with it, echoes the conclusions of prudent calculation. So it proves relatively easy to establish institutions to police the wage cutting and substitution of shoddy materials that, in hard times, tempt strapped producers to defend their individual livelihoods at the price of jeopardizing the stability and reputation of the district ensemble.**

**This craft model of the district is naturally expansive: given that skills are fixed in a community and a community in a place, the more specialized the district, the more it attracts similarly specialized resources. Alfred Marshall is famous today not least for having seen this connection. In craft communities, he noted, looking to the metalworking agglomeration of the Birmingham of his day, the "mysteries" of a trade are "in the air." Youngsters learn them before they are fully conscious of learning at all, let alone investing in their human capital. Once acquired, the skills become a local resource, attracting outsiders who need in some sense to incorporate themselves into the community to benefit from what it can do only where it is. Today we would say there are positive returns to specialization. Marshall put it this way:**

**When an industry has thus chosen a location for itself, it is likely to stay there long: so great are the advantages which people following the same skilled trade get from near neighborhood to one another.... A localized industry gains a great advantage from the fact that it offers a constant market for skill.... Employers are apt to resort to any place where they are likely to find a good choice of workers with the special skill which they require; while men seeking employment naturally go to places where there are many employers who need such skills as theirs and where therefore it is likely [they will] find a good market. (Marshall cited in Fujita 2000, p.10. See also of course Becattini, 1990)**

**The craft model of the small-firm district connects to large-firm settings by two routes; and it useful to consider these briefly to see the full reach of the assumptions of specialization and taciturnity on current discussion of innovation and flexibility. The more direct, but also more parochial connection is simply that in some cases large firms are an assembly of craft shops under one corporate or physical roof. This is notably so in Germany, where large firms did not specialize in the mass production of standard consumer goods (cigarettes, packaged cereal, cars) Instead they traditionally manufacture customized producers or investment goods: for example, the complex machine tools that mass producers use in their**

own factories to turn out long runs of a single make or model of product. Workers are largely autonomous in the same way, and by virtue of a similar (though more formal) experience of apprenticeship as artisans in their small firms. Because the firm is large, it can provide itself with many of the support services provided by the institutional exoskeleton in the craft district. But familiar collective action problems—especially fear that trained workers will be poached away from firms where they apprenticed by firms that provide no training at all—require that here, too, the community character of specialized skill is formally acknowledged and protected against tragedies of the commons.

The second connection to large firms is via the school of evolutionary or neo-Schumpeterian economics. (For the *fons et origo* see Schumpeter, 1981.) It is less obvious but broader in reach than the first, and shows that the idea of specialized, tacit knowledge need not be associated with the notion of craft in any familiar sense at all. One key assumption of this school is that large firms are configured not as (nearly) self-organizing communities of producers, but rather as hierarchies. The peak of the hierarchy fixes a master plan, including

rules for partitioning that plan into executable tasks. Successive tiers of superiors then actually decompose the tasks into finer and finer jobs for their respective subordinates. This is specialization by task. Because it is disconnected from any systematic exploration of tools or materials it is disconnected from, even antithetic to specialization by craft. A second assumption is that the partitioning of the rules by which complex projects are subdivided and the rules by which the outputs of the partitioned tasks are aggregated into useful wholes are never comprehensive and unambiguous enough to cover all contingencies. The written rules therefore have to be supplemented and corrected by informal, lived experience of how to actually get things done in the organization. This is tacit knowledge. But it is tacit knowledge at least as much of process and organization as of substance: of the routines that define a firm and enable it to execute as a collective tasks that employees could not manage if they needed to think both about their work and how to link it with the efforts of others.

Unlike the craft model district, the tacitly routinized large firm faces substantial governance problems and is not inherently expansive.

**The governance problem arises from the fact that the firm's assets, physical and human, are specialized to work most efficiently with each other as provided in the master plan. Their value in alternative arrangement—in conjunction that is, with assets not specialized according to the same plan—is close to zero. Hence the hold up problem: Suppose a power-plant owner and a coal-mine owner agree respectively to build a power plant and dig a coal mine that are co-located and otherwise specialized to each other. Whoever invests first is at the mercy of the other, who can withhold the complementary investment until the dupe agrees to redistribute the benefits of the venture in favor of the knave. The solution of course is for the one owner to make both investments (with the one better positioned to use the whole effectively taking control). This vertical integration formally closes the large firm in on itself in a way that contrasts with the—formal—openness of the craft districts.**

**With such closure comes another kind of self-limitation. All the crucial aspects of large-firm operation have to be under exclusive control of a single owner, and the exercise of control becomes more expensive as the complexity of what is controlled increases. Firms**

therefore do not benefit from the positive returns to agglomeration in the way that “centerless” districts do. Or rather they do no benefit from such returns as a matter of course. Economies of scale—the larger the production run, the lower the unit costs of production—favor such expansion; the costs of extending control to every more complex situations cuts against it. (We are, many readers will recognize, in a Coasian world (Coase, 1937) where the decision to extend the organization, and how, or rely on the market, depends on a comparison of the relative costs of executing the marginal transaction in each of these ways.)

But beyond these differences the craft district and routine large firm views are fundamentally similar in the emphasis on tacit knowledge as both a precondition but also limit to innovation and flexibility. Because craft skill and corporate routine are taken for granted and second nature, they allow for “spontaneous” or self organized coordination within certain boundaries. For the same reason, they make it hard to identify those boundaries, and harder still to say when they are obstacles to problem solving, and hence to be corrected.

The neo-Schumpeterians are especially clear on this point. Given the grip of routine, large firms can only innovate—break free of past assumptions to aspire to “autonomous strategic behavior”—if they can establish “breakout” structures: “entities separate from current operations which” are used to “incubate new projects.” (Teece 1998, p. 152) This recognition that the large firm can only be reformed from without is tantamount to an admission that it can not be transformed from within. A congruent view is current in network analyses of economic sociology. (Granovetter, 1973) Ties among neighbors—friends who are themselves likely to be friends—are robustly self-reinforcing. They are the social substratum of the reciprocity that fosters trust and tacit knowledge. These ties do the work of coordination, but, again, at the price of closing the networked organization off from the world. The information about the outside on which innovation ultimately depends comes from sparse, “weak” ties to distant actors: the cousin of a distant friend from my home village who tells me where to look for a job in the city to which we have both migrated. These ties convey formal knowledge, but neither its tacit complement nor the propensity to trust from which collaboration grows.

**Accordingly, boundary blurring, “breakout” structures aside, innovation for these schools of thought occurs largely outside the firm, in university or government research labs or “distant” companies. Different from country to country, these constellations form what the neo-Schumpeterians call the “national innovation system.” This system is to the large firms what the exoskeleton of service providers is to craft firms in the districts: the external, innovative corrective to the routines of self-coordination within the firms themselves. Explicitly in the case of the neo-Schumpeterian large firm, implicitly in the case of the craft district, the assumption is that competition selects for those firms or bundles of routines that make the most effective use internal and external resources. Economies of large or small firms survive in the long run in part because their constituent “organisms” are sufficiently diverse in the genetic material of their tacit knowledge to accommodate even the broadest shifts in the conditions of competition. But they survive in part too because the “we” of society is capable of renovating the “external” institutions of the district or the national economy as circumstances warrant. If these routine-revising institutions were**

**themselves prisoner of their own incorrigible routines, only blind luck would save us from tragic attachments to solutions that no longer serve.**

**So in the end, and in the large—at the level of society at various scales—some kind of reflection on and amendment of routine is possible and necessary. But only outside the economy, in “society,”? Or at least the firm? Is it really plausible that large firms can devise “breakout” structures and small firms district institutions, yet neither is capable of continuing self-revision in the small of its on-going activities? Surely the existence of these structures and institutions attests awareness of the problem of routine entrapment. Is that awareness fully exhausted in the split solution—routine firm, routine-jiggling frame—these theories take for granted? Or is this assumption itself an example of a (scientific) routine that impedes recognition of a novel solution? The evidence presented next strongly suggests the latter.**

**3.**

It is common, though perhaps not yet commonplace, to observe in the business and business-school, engineering, and organizational sociology literatures that firms are today able to adjust their operating routines and organizational structures, and that disciplined comparisons of alternatives is an indispensable aid to this. Most of the organizational innovations that permit this were pioneered in modern times by Japanese firms, but are no longer limited, or indeed most effectively developed by them. Here, sidestepping any considerations of how these changes came about, I present an eclectic review of the innovations to highlight the way the formalization of difference is key to the revision of routine. We start with the operating units of the economy: first large, then small, district firms. The distinction can be tenuous given that the latter are often suppliers to and must mesh with the structures of the former, and that decentralization on the one side and centralization on the other produces another kind of convergence. But the discussions we have been canvassing draw this line, and we respect it here if only to show that it is irrelevant to the innovations of interest. Finally we look at some recent work on economic growth and geography which, innocent of any concern for the structure of firms, comes to a

**complementary finding regarding the contribution of diverse settings, rather than (relatively) homogenous and specialized ones, to innovation.**

**Developments in large firms are reflected in the explosive diffusion of standards that create and signal the existence of the preconditions for the creation of formal pidgins or lingua francas for collaboration across firms and areas of expertise. On these are built in turn disciplines that specify processes for comparing alternative solutions to design problem or trouble shooting existing production setups. (Helper, MacDuffie and Sabel, 2000)The most common of the standards is the ISO 9000 series maintained by the International Bureau of Standards in Geneva. It requires simply that firms be able to demonstrate that they can say what they do and do what they say with whatever level of resolution is relevant to their industry. Put another way, the standards require that a firm be able to demonstrate that it can make its “tacit” routines for, say, registering an order, or designing a product, or correcting a manufacturing defect explicit to a potential customer. Certification by a third party under the standard does not, of course, ensure that any actual customer will find the**

**explication sufficiently detailed and reliable for its own collaborative needs. But certification is widely regarded in the automobile, chemical, semi-conductor and computer industries as a precondition of a more demanding examination of a firm's capacity for making its practices transparent enough to be discussed with outsiders. And this is surely indicative of shifting assumptions regarding the "stickiness" or embeddedness of (once) firm-specific knowledge. (von Hippel, 1998)**

**The comparative disciplines, having arisen in practice, not under official aegis, do not have standard names. In design the relevant practice is often called concurrent or simultaneous engineering. A new product is defined initially and provisionally by benchmarking (itself a comparative discipline) a current model against successful competitors, relevant analogues in other fields, and adjusting these comparisons to take account of laboratory innovations likely to be ready for market in the next product cycle. Then the provisional design is decomposed into modules (engine, transmission, seats, instrument panel, heating, ventilation and air conditions system, and so on in the case of automotive vehicles) and each module is then**

presented to the scrutiny of one or more of the corresponding module makers. These module makers then benchmark their systems and suggest refinements in the design, including if necessary changes in the performance specifications of closely connected modules. Once the lead design group adjusts the overall plan and selects module makers from those competing, the process is iterated again, with the chosen module makers decomposing their systems into sub-modules, and revising their plans in the light of their suppliers' suggestions.

This method both shortens design times and increases the reliability of designs, while of course increasing the possibilities for incorporating innovations. This is counterintuitive. It seems reasonable, after all, that successive refinement of a single design will be either quicker, or more reliable than repeatedly correcting a vague initial idea in the light of comparisons of variants, or both. Such in any case was the view in the vertically integrated firm, where the design process was typically seen as a mirror of the process by which the company partitioned itself hierarchically. Concurrent engineering succeeds nonetheless in overcoming an apparently

**inevitable tradeoff because careful comparison of alternatives reveals the defects and virtues of each variant, allowing for quicker, more reliable, and more inclusive choices. (Actually the comparisons involve a kind of double diversification: different projects are compared by design teams whose members, drawn from different specializations, are cognitively diversified. The underlying mechanism of instigating surprise through investigation of difference remains the same.)**

**Similar mechanisms are at work in new regimes for error detection and correction. An example is the five why's: Why is machine A broken? No preventive maintenance was performed. Why was the maintenance crew derelict? It is always repairing machine B. Why is machine B always broken? The part it machines always jams. Why does the jam recur? The part warps from heat stress. Why does the part overheat? A design flaw.**

**Thus error-detection and correction, like benchmarking and simultaneous engineering, discovers unexpected (mis-) connections among the parts of complex endeavors. The cumulative effect of**

**these results is captured in improvements in the benchmark standards for various production processes.**

**Apparently modest, even commonsensical institutions such as these embody a deep innovation in the cognitive capacities of (large) organizations. For benchmarking, simultaneous engineering and error-detection methods like the “five why’s” are procedures for doing just what the tacit-knowledge view of specialized action says cannot be done: routinely questioning the suitability of current routines. Whether in the initial specification of new designs (benchmarking), the concretization of these approximations (simultaneous engineering), or in the course of their practical application (error detection), this disciplined inquiry of routines occurs at just those times when self-interrogation seems most valuable but most difficult.**

**These mechanisms oblige the actors to search for solutions in a circumscribed space of possibilities (the set of best current or potential designs, the activity chains that might have caused a particular breakdown) whose exact contours and contents they could**

**not have anticipated. The outcome of the search is thus likely to be sufficiently unfamiliar and disconcerting to force re-evaluation of habitual responses. The new large firm is thus a member of a new class of institutions defined not by the fixed routines to which they are oblivious, but rather by the routines they use for interrogating and altering their routines. Think of the new institutions as pragmatist: they systematically provoke doubt, in the pragmatist sense of an urgent suspicion that habitual beliefs are poor guides to current problems. They create the pidgins that make collaboration between insiders and outsiders, neighbors and distant acquaintances, and specialists or professionals of radically different kinds possible. (For a thoughtful account of the relation between neo-Schumpeterian theory and the new disciplines that dovetails with the discussion here, see Winter, 2000, pp. 56-58.)**

**The new pragmatist standards and disciplines suppose and foster a distinctive form of industrial organization. In contrast to the tacitly routinized large firm, the pragmatist corporation is federated, not hierarchical and centralized: decisions of higher-level entities are crucially shaped by the decisions of their constituent units. The**

**federation is open, not vertically integrated: components or services crucial to the final product of one firm can be provided by independent companies, and the firm's internal specialized producers can provide outsiders with crucial inputs. These differences repose the question of governance; and the resulting answers prompt reconsider of, among other things, the distinction between weak and strong ties. We return these matters after completing the eclectic tour of discrepant material.**

**Consider next the coordinate changes in the organization of districts and district firms. Some of these changes are of course so directly tied to the pragmatist reorganization of the large firm as to count as part and parcel of the latter, not independent developments. When large firms begin to collaborate more explicitly and continuously in design and production with their suppliers, district firms, as privileged suppliers, must respond in kind or lose a key market. It is not, therefore, surprising to see the new disciplines diffuse within districts. But (hereby probably revealing an irresponsible ignorance) I am unaware of broad-gauge studies that trace the higher order effects**

**of these adjustments on the structure of individual district firms and the relations among them and their large customers.**

**Similar changes emerging from within the districts—endogenously, if you like—are more revealing. Here I am guided by the experience of a two-week stay in the textile district of Prato in 1996. The salient development was the drive to pragmatist formalization of design and production, and the search for adequate institutional structures within which to house the emergent processes, in response to the sheer complexity and pace of product change. Traditionally the spinner, weaver, and finisher were assigned tasks by and communicated largely through the broker who, we saw, marketed the project in which they participated. But when fabrics consist of novel combinations of novel yarns, each under torsion and woven into a structure that precisely balances torque against torque, costly missteps are likely in the absence of richer, more direct communication among the producers themselves. One upshot was the proliferation of explicit handling instructions: booklets that describe how a yarn or fabric is constructed, and how it is to be further worked. Another was the spread of working relations among**

producers, bypassing the brokers. In some cases the finishers, who transform the look and feel of the fabric by sophisticated chemical and mechanical treatments, were using their position at the end of the production process and their expertise in the preceding steps to become brokers of a new type. They were *both* organizing more direct relations among the other collaborators *and* managing their relations, and those of the “group” around them to the final customer. But there was no sense at the time that the changes were coalescing into a new district structure, let alone a new model district. Indeed the social dislocations that went hand in hand with even piecemeal adjustment—especially the pending displacement of brokers and rise of finishers—was undermining the social order underpinning the district’s ability to formulate and decide questions of common concern.

A large body of recent Italian writings on the evolution of districts comes to findings that converge with those of this vignette. The common ground in these debates is the observation of large, “lead” firms in districts:

Competition from low wage countries and large firm restructuring are forcing the industrial districts to compete almost exclusively in quality-conscious markets. At the same time, changes in demand composition, a need for higher intrinsic production quality, shorter delivery times and a more active product commercialization push firms to specialize in their core businesses and develop stable relationships with a limited number of suppliers. Groups are becoming common, and at least in some districts there is an increase in external hierarchy. The adequacy of the collective and local governmental institutions so important in the districts' past is being challenged. (See Whitford, 2001, p.27, ecopy of manuscript, and generally for a comprehensive review.)

The role of these firms is to formalize relations with the market and increase (the self-) control of subcontractors. One side in the discussion—the *aziendalisti*—argues that these changes lead inevitably to hierarchy, and to the demise of the district community. The *distrettisti* counter the new forms of coordination should be seen as jointly managed or bilateral governance structures not hierarchies. (Dei Ottati 1996: 58) Hence even

a district with coordinating lead firms is *still a system* and often is not dependent *only* on those lead firms. It may still need the reproduction of the “old” values and informal mechanisms of coordination, and there may be some collective goods that lead firms and their networks can create only with difficulty. (Whitford, 2001, p.23).

**The view developed here agrees with the statements of the facts but is at odds with both interpretations: It suggests that the “new” district is neither a mere assembly of hierarchical firms and their satellites, nor a system of firms having their true foundation in a local community. Pragmatist governance is in theory both non-hierarchical (joint) and formalizable. My hunch is that a study of districts that took seriously the possibility of an alternative to both the traditional district and the traditional large firm would allow us to see quickly enough if it is worth pursuing the claim that the Third Italy is going pragmatist.**

**The third body of discrepant evidence, from debates in international trade, growth theory and economic geography, bears directly on the value of diversity as against specialization as a source of innovation, but has little to say about the relation of this dispute to firm organization. At the origin of much of this discussion was a puzzle about the pattern of post-War international trade. The theory of comparative advantage predicts that a country richly endowed with capital relative to its endowment of labor will export capital intensive-goods to and import labor-intensive goods from a country whose**

relative endowments are the reverse, regardless of the absolute costs of production in either country. But in the post-War period much of the growth in trade was between countries with similar, not complementary factor endowment: The US exported cars and aircraft to Europe, and bought back (different kinds of) cars and aircraft. A plausible explanation for this intra-industry trade was to see it as the result of positive returns to the mass production of different types of highly specialized products: The US churned out big cars, the Europeans made Beetles or their equivalent. The first mover in each case acquired, because of the increasing returns to scale, a cost advantage that prompted further specialization in the same line. As it became clear that knowledge is a key to economic growth, and that knowledge begets knowledge, positive returns and its relation to specialization have become research topics of broad concern. (See especially E. Helpman and Paul Krugman, 1985)

One branch of this discussion has taken a surprising turn that bears on the argument here. In economic geography Puga and others are finding that diversity, not specialization promotes innovation. A locale is said to be specialized in this context if, relative to the

**national distribution of economic activity, it concentrates in an industry or a broad sub-sector of one—in the way Biella specializes in woolen textiles. It is diverse or diversified if it is disproportionately specialized in several different activities simultaneously. Suggestive findings in this research area include these: In their formative and innovative phase, firms locate in cities with diverse economies. Once they have “innovated”—settled on a product line or process—they move to (district-like) locales specialized in the activities they will continue to pursue. (G. Duranton and D. Puga, 1999 ) Firms adopting new processes, such as programmable automation of metal cutting tools, are, other things being equal, more likely to do so in diverse counties than in counties specialized in metalworking, and so on (Harrison, B., and Kelley, M., 1996).**

**By themselves these results are hard to interpret. They could be an artifact of aggregation. It is hard to imagine, in the absence of any account of the micro-mechanisms at work, just how the diverse airs of a great metropolis or suburban county foster innovation. It is equally hard to see why proximity to cooperatively competitive**

neighbors (talking incessantly, it might seem, about their ingenious plans to outdo you) hinders it.

But taken in the context of the foregoing discussion these findings are less perplexing. If firms are using disciplined comparison of difference to test and adjust their assumptions and structures, why not seek out environments where difference is conspicuously provocative? If you are not sure whether your firm is part of the software industry or the financial services industry, why not “concurrently engineer” your company in an environment where you prototype and compare both at the same time? Of course actors that think this way are unlikely to limit themselves (as the economic geography literature implies they might) to locational decisions. If comparative examination of assumptions is what you are after, why not pursue this both within the firm, through introduction of the new disciplines, for instance, and without, in the choice of environment. Firms that acted consistently in this way would in the end contribute to just the kind of transformation of districts that I suggested are already in course: The “young” firms defines itself by innovative expose to diversity in the big city; once mature, it relocates to a

**district, there to avoid entrapment by unworkable assumptions though the use of the pragmatist disciplines that are, somehow, transforming the district from old to new.**

**Given all the possibilities for continuity amidst change, and vice versa, in the districts, one reaction to all this might be, Why fuss? If “old” districts are so constituted that they can re-constitute themselves as “new,” and we understand their original constitution, why the bright-line distinctions and juxtapositions? The real distinction, after all, is between districts, old and new, and the traditional, hierarchical corporation. And no one is claiming that the latter has rehabilitated itself.**

**Certainly the economic actors find ingenious ways of blurring the lines traditional and craft forms. Think of the German firms that increasingly “apprentice” youngsters to problem-solving teams, rather than master craftsmen, leaving the philosophically inclined to wonder whether socialization into pragmatist institutions produces a “tacit” propensity to doubt assumptions, or something else. Or consider that a numerically controlled machine tool is still a tool, if**

**you are trained to think of instruments as such. Indeed Eric Raymond and others in the Linux world think of programming itself as a craft. (Raymond, n.d.) Surely the tenaciousness of the vocabulary suggests some continuity in fact?**

**Without suggesting that craft and pragmatist institutions are incommensurate (the existence of pidgins is a strong argument against such intranslatability), I want to conclude by briefly emphasizing a conceptual difference between them regarding the social embeddedness of economic activity that returns us to themes sounded at the outset.**

**4.**

**In the tacit-knowledge view economic activity is embedded in society in two ways. First and most obviously, knowledge of substance and process “sticks” to the social structures of networks, communities, and hierarchies. Because it is unintelligible apart from the experience of those structures, it is tacit. But trust—the disposition to assume that one’s potential partners will not take advantage of the vulnerabilities collaboration creates—is socially “sticky” too. Put**

another way, the disposition to cooperate is coincident with, and therefore limited by, the particular social structures in which embedded. In yet another formulation governance is built into a social order that is distinct from economic exchange itself. The neo-Schumpeterian view of the large firm asserts this in a backhanded way by making the formal institution of property—the exclusive ownership that overcomes holdup problems—the precondition for the community of the large firm. But the thrust is the same.

Pragmatist firms, large and small, dis-embed economic activity in both senses. The new standards, disciplines and pidgins, we saw ‘unstuck’ tacit knowledge, allowing local reflection on the assumptions of practice that can cumulate to large-scale changes. How is trust or governance dis-embedded in the pragmatist firm? By the same means. The very same information that permits collaborators to continuously redefine their joint projects across disciplinary and geographic boundaries allows them continuously to assess one another’s probity and capacity to meet joint expectations. Governance problems arise in general because of information asymmetries that allow the knowing part to exploit the ignorant one.

**Pragmatist institutions address these problems largely by symmetricizing information so that the parties are alerted to trouble as it starts. (Just how the pragmatist self-correction of project teams or business units aggregates to or otherwise shapes high-level corporate decisions about which assets to own and which strategies to pursue is still an open question. If it's any reassurance, high-priced talent is probably at work on it in a company near you right now.)**

**Supposing lots, suppose this is right. What, if anything, can we say about the structure of economic activity once it is disembedded?**

**Hierarchies are for many obvious reasons optimal in a stable work where projects can be reliably partitioned into narrow tasks.**

**Accidental agglomerations of craft skill are competitive in a world where hierarchy is too inflexible to respond to changing markets, but different or even distant skills are very hard to connect to each other.**

**What is the "optimal" structure in a world where skills are connectable. Or, to use another locution, what is the optimal network in a world where the distinction between strong and weak ties, or local and long-distance ones, tends towards irrelevance? (Watts, 1999; Dodds, Sabel, and Watts, forthcoming)**

**Those are, given the tendencies sketched above, key questions for the near future. Addressing them will, I think, be of practical importance to economic actors, and a spur to the renewal of reflection of complex self organization as well. (Dobbs, Watts, and Sabel, forthcoming)**

**But looking beyond the beyond, addressing these questions won't be the end of the story. For as soon as we begin to discern "optimal" organizational relations or search procedures in the most successful of the disciplined comparisons of difference, we will want to know what social conditions explain why these relations emerge first and/or flourish better in some places rather than others. And the search for the social preconditions of "disembeddness" will take us back, by a circuitous but (hopefully) upward spiraling route to some of the oldest and most persistent questions about the foundations—if any—of our modernity.**

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