Stabilization Through Reorganization?

Some Preliminary Implications of Russia's Entry into World Markets in the Age of Discursive Quality Standards

by

Charles F. Sabel

and

Jane E. Prokop

In Roman Frydman, Andrzej Rapaczynski, and Cheryl Gray, eds., Corporate Governance in Central Europe and Russia Volume II World Bank/Central European University Privatization Project Publication (Budapest: CEU Press, 1996)

June 11, 1995

Without the knowledgeable assistance of the Economic Committee for the Development of the Urals Region, and particularly of Sergei Vozdvizhenskiy and Evgeniy Popov, we could not have conducted the discussions with factory managers on which this essay is based. We are grateful for their help. The names of factories used in the essay and some characterizations of their products have been altered to preserve the anonymity of our interlocutors. We also benefited greatly from discussions with Ron Gilson, Jeffrey Gordon, and Reinier Kraakman, and especially David Charny, all of whom kept us looking as we leapt.
1. Dissenting from the Common Sense of Economic Adjustment

The common sense conversion of plan to market economies makes stabilization of prices and the creation of private property relations the first steps to the reconstruction of firms and the rearrangement of production. The argument has the self-evidence that comes from endless repetition: Unless domestic prices are stable, and freed of distorting subsidies, tariffs and taxes, no one can determine which combinations of labor and capital will result in products competitive on world markets. Unless property has not only been released from state tutelage, but also placed under the exclusive control of a private owner liable for the consequences of bad decisions but entitled to the rewards of good ones, no one has an incentive to make use of the information provided by stable, undistorted prices. Hence the common sense preoccupation of international creditors and the post-soviet governments who must respond to them with plans to stabilize domestic prices and privatize property so as to create markets within which reconstruction takes care of itself. [1]

In its most general form, of course, the common sense view is eminently sensible: absent information as to potentially competitive production arrangements and incentives to use such information as is available, there will surely be no conversion to world markets. But it is hardly self evident that the only way to provide such information and incentives is through the price mechanism and apportionment of control to exclusive owners; still less is there warrant to assume that information and incentives provided this way are sufficient to assure restructuring. To the extent that there are efficient alternatives or necessary complements to these mechanisms, and these alternatives and complements can be encouraged by distinctive forms of public action, then current stabilization programs, in their haste to translate common sense into institutional blueprints, may do little to advance and may even obstruct realization of the ends to which they are addressed.

The purpose of this essay is precisely to describe and present evidence of the increasing centrality to firms the world over subject to international competition of an adjustment mechanism in which price and property operate in the background, not the foreground of decision making, and to different effect than in the standard understanding. In this alternative system market
prices set very general boundary conditions on the possibility of continuing exchange. International standards of a new kind provide finer grained information about potential partners and their ability to make efficient use of factors of production. These standards do not directly specify features of products or even production processes. Rather they measure the capacity of a firm to promise credibly to produce what its customers want and to detect and correct shortfalls in performance. Firms that learn what is required for certification under such standards signal their competence to discuss design, production and continuous improvement of their products with their customers. We will refer to the type of production in which the parties know they depend on such discussion as collaborative, and the standards registering their capacity to engage in it as discursive.

The collaborative flow of information between consumers and firms and firms and their suppliers undermines, we argue, the current, broadly persuasive understanding of ownership of a firm as residual control over its (non-human) assets, where residual control means the owner's exclusive authority to determine the assets' use except as restricted by prior contractual or other obligations. As understood in the advanced countries, ownership as residual control rests on two assumptions: the complementarity of assets and the irreducible ambiguity of contracts (Hart 1988; Hart 1989). Because assets are complementary, their value depends crucially on the precise form in which they are combined; because contracts are in the end incomplete or ambiguous, parties can never specify fully in advance the optimal form of combination given all contingencies. Changes in circumstance or, more broadly, the sheer limits of human foresight mean, therefore, that during the life of an agreement some party will likely have the opportunity to exploit contractual ambiguities so as secure more favorable terms as the price of continued participation. This prospect dulls the incentives to enter such agreements in the first place. Ownership as residual control breaks the logjam: In acquiring property in the most complementary of the assets required for production of a certain type, the owner of a firm gains the right to resolve eventual ambiguities in arrangements as self interest determines. Non-owners will go along for fear that they will be denied access to the use of the (predominantly physical) assets without which their own complementary (primarily human) assets have little value. Thus the owner as claimant of residual control--responsible for the firm's losses, entitled to benefit from its gains and correlative empowered to direct its activities--responds to the need of post-Soviet transition economies, to make the economic actors bear the consequences of their actions and the need in the advanced economies to overcome the paralysis that results when the actors assume each to be responsible only to itself.
But in a system of collaborative production, we will see, the notion of ownership of the firm as the right to residual control of its assets loses its purchase. Firms in collaborative production do not have a central, directing agent with the knowledge effectively to choose amongst ambiguous arrangements the means to a self-interested end, nor, for that matter, could such an agent define in isolation the self interest of the firm with sufficient resolution to guide strategic choice. The power to decide unilaterally questions that one can not decide alone is a power one does not have. Accordingly, a system of coordination and incentive that works primarily by creating owners with, and rewarding them for effective use of a kind of control irrelevant to their actual purposes and possibilities is out of place.

The coordinating mechanism and system of incentives for good performance that do work in such a collaborative world are provided by a new and rapidly diffusing class of agreements among those who jointly control production that is inspired by, but no longer directly tied to the innovations of post-War Japanese manufacturing. The central feature of these agreements is to link evaluation of performance and the fairness of the distribution of returns--monitoring--to discussion of the possibilities for improvement and the re-evaluation of goals generally--learning. I therefore refer to them, and the system of coordination they undergird, as learning by monitoring (Sabel 1994). These arrangements allow wary parties to establish provisional goals and organizational means for prosecuting them, and to refine both even as they evaluate the advisability of collaborating with one another in the current of any other project. The institutional problem in such a setting is not, as commonly supposed in debates about the construction of transition economies or reform of corporate governance in the advanced ones, the exigent and perhaps insoluble task of transferring proprietary control from the state to entrepreneurs or corporate monitors motivated and capable to organize production or to pick managers who can. The task is rather the more forgiving one of encouraging creation of de facto productive partnerships or collaborations among groups within and among firms in which the distribution of returns to particular streams of projects are mutually fixed and jointly adjusted to changing circumstances through disciplined discussion, without need to determine initially or even eventually an owner of last resort for the ensemble of producers as a whole.

The operation of this alternative system in the former plan economies, we will argue further, can paradoxically reverse the sequence of development underlying the commonsense view of conversion. As restructuring is informed by the application of discursive standards and does not require determination of
ownership in the conventional sense, restructuring in the ex-plan economies can precede and even contribute to stabilization. The more competitive firms become through restructuring, the better able they are to pay their debts to each other and to the state, as well as to pay lump-sum compensations to the parts of their workforce or staff that do not find a place in the reorganizing entity. Reductions in interfere debt and tax arrears then reduce inflationary pressures by making firms less dependent on an accommodating monetary policy and the state better able to service its debt; compensation of losers allows firms to pledge an increasing share of their revenue streams to the remuneration of active participants in production and so allows them to draw boundaries around themselves that may have the form—but not, as we will see, the substance—of corporate entities that look conventional by traditional Western standards. But stable prices and the emergence of corporate entities are supposed to be the preconditions, not the result of restructuring. Curioser still, we will find that within certain limits indefinite monitoring arrangements actually encourage the formation of the managerial teams and structures required for successful adjustment, rather than hindering such progress as the common sense view suggests.

The particulars with which we illustrate and develop these general claims are drawn from current developments in Russia, and specifically from detailed discussions of restructuring projects in progress with managers from ten leading firms, mostly large and mostly in the metalworking sector, centered on Ekaterinburg in the Urals. But although much of our evidence and the core of our discussion will thus be localized and limited, our claims concerning the growing importance of discursive standards and collaborative production claims are literally global in the sense of pertaining to the character of world markets as a whole. Indeed the changes in adjustment mechanism we describe must be global in sweep, or nearly so, if they are to be of significance for new and less capable entrants to those markets such as the former plan economies. Otherwise it would be reasonable to assume, as the common sense view routinely if silently does, that the ever more demanding conditions of competition in the advanced countries, whatever their effect on adjustment mechanisms there, leave space for less developed economies to compete by rules under which exclusive property arrangements and adjustment by price do make sense. Our argument, on the contrary, is that there is little or no such space, and that the fall of communism and the opening of markets has, under current conditions, created a single world economy where all, despite differences in their capacities, must respect the same new rules. We will accordingly refer to evidence from economies such as Brazil, India, Turkey and
Mexico that are also entering into world markets to corroborate the claim that there is indeed only one game in town.

For readers still possessed of their common sense, claims like the foregoing will likely appear implausible, if not simply unintelligible. To secure the suspension of disbelief that any novel argument, regardless of its eventual merits, requires for a reasonable hearing, we therefore examine at the outset two related and particularly plausible grounds for incredulity in the hope of inducing you to wonder about your own assumptions regarding the underpinnings of economic development in the way you may already be wondering about ours.

The first goes to the aptitude of any economy, post-soviet or not, for advanced forms of cooperation, however these are best understood. In one form this concern expresses a familiar worry about the development capacities of "backward" economies. Surely, the argument goes, a precondition for mastering the most advanced form of capitalism is mastery of the more basic ones?[2] But then only as developing countries shake the habits of tradition or the central plan, as the case may be, can they acquire the experiences and beliefs--the economic culture--required for the next cooperative steps. Even if the institutional requirements for adjustment were different from and less exigent than those in the standard conception in the way we suggest, why assume that Russians, or anyone else in their place, could make use of the theoretically available opportunities?

In another form this concern expresses a more recent worry about the developmental capacities of the advanced countries themselves. Could it not be that the very most advanced forms of cooperation--those exemplified, say, by the most successful Japanese firms--require as preconditions forms of sociability, and particularly a disposition to forbearance and trust among economic actors, which are simply given as an historical legacy to some cultures but not others? Taken together the two worries are mutually reinforcing and compel the despairing questions, How can transition economies, inexperienced in capitalism and divided by the struggle to adopt it, dream of mastering the most advanced forms of cooperation if many of the most experienced and consolidated capitalist economies doubt their own ability to do so?

The difficulty with these worries is that they have been an extremely poor guide to actual economic developments in the last century and particularly the post-War period. In the late nineteenth century "late" developers such as
Germany and Italy caught up with and in many ways leapfrogged the pioneer of industrialization, Great Britain (Gerschenkron 1962). In the last two decades "late late" developers such as South Korea and Taiwan have shown that they can catch up with and perhaps surpass more developed competitors (Amsden 1989; Wade 1990); and we shall see that the list of the latest developers is longer still. There is, furthermore good evidence that the advanced countries, despite differences in their cultural endowments are capable of substantial adjustment themselves. Ten years ago, for example, it was widely suspected that US managers and workers could not learn Japanese production methods (the lineal ancestors of the production system described below), and this, ironically enough, because they had learned the capitalist lesson of individualism all too well to be suited for team work (Dore 1983). Today certain US automobile makers have successfully adopted and perhaps even improved Japanese methods (Helper 1994; Nishiguchi 1994); the methods have been widely applied and further developed in many other industries as well; and the problems of firms struggling to master them are widely regarded as company, not cultural problems.

The coarse-grained lesson of these experiences is simply that religions, economies and political systems contain vast repertoires of complex, often conflicting experiences and interpretations; that is why they have the wherewithal to adapt to new environments, and the extinction of a whole society that has survived into the modern age is the rarest of events. Consider only the example of Confucianism: Thirty years ago, the Confucian ethic, with its emphasis on the fixed mutual responsibilities of particular social groups and its apotheosis of stability was regarded as an impediment to economic development in East Asia. Today it is regarded as encouraging growth, particularly by disciplining state officials to act in the public interest rather than their own, as they are otherwise inclined to do (Johnson 1982; Tai 1989). To assume cultural obstacles to learning is therefore to make strong assumptions not just about what a "cultural" group does, but what it can imagine doing; and assumptions about the limits of a group's powers of imagination and self-reinterpretation more often than not reveal the limits of capacities of those doing the assuming.

A second source of incredulity concerns institutional rather than cultural backwardness. Surely, this objection goes, even in the unlikely case that collaboration in the advanced countries does proceed without the supervision of a residual corporate owner, then this is only possible because so many experienced monitoring institutions, ranging from banks to financial markets, oversee company behavior in the background and punish mistakes before losses
can be transferred to the economy as a whole. Together these institutions form a loosely defined but effective system of governance which detects faults in the self-monitoring capacities of firms, alerts creditors and other partners to the potential risks, and imposes sanctions if appeals for redress are ignored. Developing countries, Russia, perhaps, first and foremost, lack such background institutions; unsupervised collaboration, however much it looks like advanced forms of cooperation, will thus certainly lead to disaster there.

There is truth in this argument, but of a kind that points as much to the limits of the common sense understanding of restructuring as to the need for caution in the interpretation of our own findings. The valid core of the objection is that in the last instance firms in the advanced countries are held accountable for their mistakes, and the pressure of this accountability does drive them to restructure in distress, often with success. The disquieting admission accompanying the claim is that in the advanced countries the governance institutions whose purpose is to detect and correct failed strategies before they lead firms to the brink of disaster have proven to work much less well than imagined; and no one has clear, systematic ideas of how pressures for reorganization arising inside and outside of firms combine in any country to actually encourage reconstruction. In the equity systems typical of the Anglo-Saxon countries the problem is that the equity owners' portfolios are too diversified, and their holdings of outstanding shares in individual companies too small for them to have, as a rule, the motive or capacity for informed, self-interested monitoring of particular firms (Gilson and Kraakman 1991). In the bank monitoring systems typical of Germany and Japan, managers eventually escape the discipline of periodically refinancing bank debt by financing their projects from retained earnings, issuing corporate bonds, and in other ways; and banks, thus cut off from a steady flow of information about corporate performance, then lack the expertise to discipline managers by voting shares or proxies they hold.[3]

Nonetheless, even in the absence of effective supervisory governance substantial restructuring is occurring in both the advanced and developing countries[4]. What we know from horseback empiricism is that firms and groups of firms cut off from state aid and in distress will seek to reorganize themselves with the help of such external partners as they find. The caricatural extension of this observation is that governance does not matter at all: All that is required for successful performance is the pressure for adjustment provided by competitive product markets and some simple mechanism for making managers act in the interests of residual corporate owners (by, for example, giving them a sufficient ownership interest in their firms to benefit directly
from appreciation in company value, but too little to entrench themselves against the influence of the actual owners).\[5\]

But this summary dismissal of governance questions is at once too optimistic and too resigned: It is too optimistic because not all firms or even national economies in dire situations succeed in equal measure; and surely there is a difference between duress in, say, Russia, and duress in the advanced countries. "Not to worry" would strike those who can not take sanguine outcomes for granted as cavalier and polyannish counsel. But it is too resigned because it assumes, without warrant, that no monitoring institutions will ever to do better under the emergent conditions than the ones discredited by current adjustment. Still less does it entertain the possibility that developing-country firms in distress could in their need pioneer these new governance methods or adopt them rapidly from advanced countries once their efficiency is demonstrated there. For the moment, and for present purposes our ignorance about the operation of governance mechanisms is finely balanced: Not having a system of background governance that is indeterminately effective in the current environment may or may not be an obstacle to creating a system better suited to a new one. At the least, adjustment in Russia should not be ruled out because Russian institutions do not provide an answer to a problem that, so far, puzzles our institutions as well.

The argument proceeds in three steps. The first shows how changes in the conditions of competition are moving manufacturing firms to abandon vertical integration as an organizing principle in favor of a decentralized system of collaborative manufacturing (part 2). This joint control, we argue, appears sufficient to guide reorganization under current conditions. But it does not make governance structures in the standard sense of back-stopping supervision superfluous; nor is it immediately obvious how monitoring institutions might be designed to both learn from and instruct collaborative producers (part 3). Traditional forms of governance may, furthermore, be supplemented or replaced by the mutual monitoring of collaborators using discursive standards, to exercise joint control of production. Price becomes under these conditions a boundary condition on, rather than the most informative signal regarding the possibilities of exchange (part 4). We then present circumstantial evidence for the claim that such an alternative system is coming to dominate transactions in the developing as well as the advanced countries, especially where it counts most--at the margin of activity where new investments are made (part 5). The next step is to show that these principles are indeed at work in restructuring in the Urals (part 6); but as in any exploratory investigation our intent is more to illustrate and establish the plausibility of our claims than to show how they
trump all alternative explanations. An exploratory and speculative essay of this kind is by nature provocative, not conclusion. So by way of conclusion we give an general formulation to our provocative findings and derive from them a counsel of caution for those presumed to be of counsel to the transition economies..

2. From Vertical Integration to Collaborative Production

A brief juxtaposition of the principles of industrial organization in the world of relatively stable international markets that prevailed roughly until 1975 with those in the world of fragmenting, fluctuating markets that have come to dominate the global economy thereafter indicates why relative prices recede into the background as a guiding principle of coordination within and among firms and discursive standards, in various forms, come to the fore (Piore and Sabel 1984; Porter 1990). It also explains why this change goes hand in hand with a reconceptualization of the relation between property and actual control of the use of resources. Two qualifications to our stylization of these changes are best entered here to avoid confusion later. First, for present purposes what matters is that such changes occurred, not why; and we will consequently pass over this latter, complex question simply by jumping from before to after. Readers who want to know more on this score can find ample, if inconclusive, treatments elsewhere (Boyer 1986). Second, partly as a result of compressing discussion into a lapidary contrast, what follows may suggest that the new model of organization is as consolidated and well understood as the old. Do not be misled. Although there is broad agreement on how the new differs from the old, and on some of the general features of the new model organizations that take account of these differences, there is no agreement even in the advanced countries on how whole corporations singly and in collaborative association should be constructed and monitored in conformity with these organizational innovations. Although the style of exposition will temporally suggest otherwise, we will thus argue in this section not only that there is one, novel world economy for all the economic actors, but also that even those with the most experience of this novel order have not been able to make full institutional sense of what they are creating.

In a world of stable markets and product designs, design costs were a small fraction of total production costs because they could be amortized over long production runs. Design times were a matter of indifference because, however long, they were only a moment in very long product life cycles. This same stability also induced firms to produce key components on dedicated or special purpose machines, whose cost could likewise be amortized over the long
production runs. As such capital equipment was good for producing any one make or model of a final product, the firm that manufactured the final product had strong incentives to own it: An outside owner, after all, might threaten to withhold production of an indispensable part unless the sale price were renegotiated in its favor. Hence the vertical integration of production widely remarked as characteristic of this period and, concomitantly, an understanding of property as residual control. The reason firms owned so many of the units that supplied components of their final products was precisely to eliminate through exclusive ownership the possibility that an outsider could use gaps or ambiguities in contractual agreements to hold up the vulnerable customer.

By the same logic relations with suppliers not owned by the end producer were regulated primarily by price. Such suppliers worked to detailed specifications provided by the customers. The average quality of the output had to meet certain standards; but quality levels could vary around the average requirements without substantially inconveniencing the customer because with stable markets the costs of maintaining inventory reserves against defects were thought to be insubstantial. Large customers had no reason to prefer one potential supplier over another except for price—the cheaper the better. New entrants to world markets could thus find their footing by supplying less demanding components or products to firms in the advanced countries that designed, performed such assembly as was required, and then sold the final product. Firms that began in this way were thought to acquire through practice the capacity to take on more demanding and rewarding tasks. This view of economic apprenticeship as organized by price negotiations among residual owners continues, on our reading, to inform much of the common sense of reconversion, although it is seldom formulated explicitly.

In the world of fluctuating markets that prevails after 1975 design costs and times do matter, and in ways that undo the logic of special-purpose machines, vertical integration, coordination of supply through price, and apprenticeship through low-cost production. As demand fluctuates and differentiates, product life cycles become shorter and shorter and products become more and more complex and shifting combinations of rapidly changing technologies. Not even the largest firms can command the expertise and investment capital necessary to keep abreast of all the developments relevant to current and anticipated production needs. Under these circumstances large and small firms world-wide have begun to adopt a model of organization that grows out of, but is today no longer directly tied to, the efforts of Japanese manufacturers to improve the US system of mass production while adopting it the conditions of their own post-War economy (Shimokawa 1993; Wada 1991).
The solution with regard to design is co-development (Clark and others 1987). Instead of designing products as integral wholes, firms decompose them into discrete subsystems or modules, specify the performance requirements of each, and then entrust further elaboration of the specification and design to independent firms specializing in the respective lines of work. This economizes on development costs and times in several mutually reinforcing ways. First, the customer benefits from expertise the specialist has acquired solving related problems for other clients, and pays, in effect, a pro-rated share of the costs of producing such knowledge, rather than assuming them in whole. Second, the concurrent efforts of all systems suppliers to master the tasks set them produces a steady flow of suggestions about how to modify the overall design or significant parts of it. This simultaneous problem solving directs attention to solutions that might have escaped notice if design work had proceeded sequentially from the most important component to the next and the next. By the same token it reduces total design time. This is just a variant of the total familiar idea that conception can often be expedited by execution, as in the low-budget film device of finishing an incomplete screen play by taking cues from each day’s shooting.

Analogous changes reshape the organization of production (Shingo 1989). Because production runs are short, defects in design that affect manufacturability have to be detected before production is running, not afterwards. This means that module or part designers must exchange information about potential difficulties and ways of eliminating them with the shop floor just as they would exchange information on other aspects of design among themselves and with the designers responsible for the product as a whole. Again because production runs are short, dedicated equipment is uneconomic. What is required instead are flexible machines or assembly layouts that can cheaply and quickly be converted from production of one part or module to another. Finally, when production runs are short and product change-overs frequent the penalties for low or fluctuating quality levels become prohibitive. The cost of maintaining reserves against defects become intolerably high as modules proliferate and product life cycles shorten. To make matters worse, the chances and costs of missing a market entirely if supply of the product is disrupted by defective parts increase correspondingly. The solution is inventoryless or just-in-time production, where parts are made in effect one at a time so that defects are immediately detected and their causes eliminated as a work piece passes from station to station, ideally without ever entering inventory.
These changes lead away from vertical integration as a principle of industrial organization and towards the system of collaborative manufacturing sketched above (Nishiguchi 1989; Smitka 1991). In the fluctuating-world system we have been describing direct ownership of (most) design and production facilities by the end-product manufacturer is not a paying proposition. Firms want to reduce their pro-rated share of development costs by having module designers acquire expertise at the expense of other customers. A design firm that is not dependent on any single customer is de facto an independent firm; and the more large customers want their design partners to diversify their clientele, the less their (design related) motives for owning them outright. Moreover, the less predictable the direction of technological development—and such unpredictability is, of course, among the premises of the fluctuating economic world—the less willing a final producer will be to make a long-term investment in a particular area of technical expertise, diversification of the expert's market aside. Similarly, the switch from dedicated to flexible machines and from buffered to inventoryless production reduces the motives for designers to own (most) manufacturing facilities. Indeed, just as final-product producers want to benefit from the economies of scope—the greater the range of products, the cheaper the cost of extending the range—acquired by module designers through diversification, so module designers want to benefit from the economies of scope in manufacturing that their producers may gain in switching set-ups frequently to accumulate many and constantly changing clients.

The linchpin of this system is learning by monitoring as a principle of coordinating the decentralized parts by disciplined goal setting. Recall that it links discussion of actual performance by the cooperating parties to discussion of how to improve operations given that performance. Just-in-time production provides a particularly clear example because the organization of production itself directly embodies the principle of coordination: A defect introduced at one work station literally stops the flow of production, so discussion of improving the production setup by identifying and eliminating the disruption becomes a precondition for continuing production at all. Strictly analogous disciplines allow groups to set goals and metrics for assessing progress in achieving them in relation to design (value-added engineering) or production projects (statistical process controls, single-minute exchange of dies) undertaken jointly with other groups, and then jointly to revise both goals and metrics as the progress advances (Nishiguchi 1994; Smitka 1991).

Notice that learning by monitoring addresses the problems of ambiguity endemic to a volatile world by identifying and reducing them through explicit
discussion rather than by assigning responsibility for their resolution to an owner with rights to residual control. In learning by monitoring, the normal gap between the promise to perform an action and performance is so reduced by the exchange of information that differences of perspective are detected before they harden into differences of interpretation and thence into disputes requiring arbitration. "Long term supply agreements" of the kind now proliferating through US industry, in fact, specify only the forms of information exchange and provide no separate machinery for dispute resolution (Esser 1993).

There is, finally, the question of incentives. To participate in collaboration of the kind we are describing, individuals and groups must be assured, on the one hand, that the resulting flows of information will not be used to their disadvantage. Otherwise, they will obstruct such flows. On the other, they must be assured that extraordinary efforts at problem solving will be rewarded; otherwise, they have no incentive to exceed the ordinary. In the Japanese system, "lifetime" employment (defined as ending for practical purposes at age 55) and long-term, renewable contracts are the means for meeting the first conditions for, respectively, employees and subcontractors who meet expectations of acceptable performance. Promotion to higher-level tasks—coordinating the problem-solving of one or more work groups, coordinating the efforts of lower tiers of (sub-) subcontractors for suppliers—is the reward for superior performance (Koike 1988). Promotions are awarded by what Aoki calls a "ranking hierarchy," whose purpose is precisely to identify the individuals and groups best able to change the organization (Aoki 1988). But these institutions are merely particular cases—with distinctive problems[7]—of a general class of solutions whose boundaries and precise definition are being explored by firms the world over as they introduce the new methods of organization and coordination with experimental compensation mechanisms of their own devising.

Next we want revisit the standard notions of ownership and residual control and price as the principle mechanism of economic coordination to show how these are being transformed by the spread of collaborative production.

3. The Factor-Controlled Firm

It follows directly from the new logic of decentralization of production and the ensuing discussions among collaborators that the very idea of residual control has, at best, a ghostly significance in the emerging system[8]. What is at issue in the discussions between "customer" and "supplier" is precisely the joint regulation of "proprietary" control. We put the familiar terms of subcontracting
arrangements in quotation marks to indicate how awkwardly they fit in the new setting. If one firm assesses the ability of another to exchange information to produce results so novel that they influence the subsequent behavior of both in unpredictable ways, then surely neither supposes itself able to give definitive instructions to the other. Neither, on reflection, can know precisely what it will become as a result of the association. It is as natural to think of both as partners or collaborators as it would be artificial to declare one or the other in possession of ultimate control. Whereas in the standard corporation the equity owners buy or rent the factors of production and use them at their discretion, subject only to explicit terms of the purchases or leases, in the collaborative alternative it is, at the limit, the factors of production--suppliers of goods, labor and capital--who jointly exercise residual control.

To see how the factor-controlled firm arises spontaneously from collaborative production yet by its operation neither automatically creates the forms of self-monitoring required for governance nor adapts existing governance institutions to that task, consider a skeletal collaborative venture consisting of a manager-operator, a single supplier, and a single bank creditor. The manager-operator designs the product with the supplier's help, then finds financing for its production and markets it. She is paid a small fixed salary and a large bonus that increases with revenues and the difference between revenues and costs. The supplier co-designs the product and manufactures it. It is guaranteed a fixed share (100 per cent) of the production of the co-designed product at an agreed (but periodically decreasing) price, plus a fixed share of the proceeds of productivity gains in excess of those needed to meet the moving price target. The bank provides credit at a fixed rate of interest, but also efficiency-improving information such as advice about possible co-investments, the advantages and disadvantages of alternatives to proposed investments, and sources of low-cost finance. It is guaranteed a fixed, 100 per cent share in all rounds of debt financing. All thus benefit directly from decisions that increase the long-term output of the firm and directly or indirectly from decisions that reduce the cost of the input each supplies to the company. The manager and the supplier, for example, each stand to gain twice from a redesign of the product that cuts its cost of production and the cost of subsequent improvement--once because the new design may lead to increased revenues, and once again because costs decrease even if revenues remain constant. Similarly, the bank stands to benefit twice by providing information that reduces the risk of an investment along with the investment capital--once by increasing the firm's chances of successful, continual expansion, and again by reducing (via lower, risk-adjusted reserves) the cost to itself of providing funds to a customer.

Imagine further that the nominal owner of the "final" producer is a family trust
whose beneficiaries, the founders' heirs, are content to leave the manager-operator to her own devices so long as they receive, as they do, returns on their investment at slightly above the risk-free rate. And for the sake of completeness, finally, imagine further that by agreement among the collaborators and the trust, any economic residual--the remainder of proceeds less all costs of production, new investment, dividends and taxes--is set aside in a reserve fund to provide assistance to any of the collaborators in the case of distress connected to the joint venture.

The paradox of such an entity, given current understandings of the well ordered corporation is this: On the one hand the collaborators possess residual control of their activities, at least in whatever sense that term is still relevant in their situation. Periodic decisions to approve, redefine, or abandon projects as experience warrants reshape their economic identities; and what is residual control if not the power to determine which of the many economic interests at play in joint production shall determine action in the future? But, on the other hand, it is unclear how the factor-controlled firm might organize review of its normal collaborative practices so as to avoid the errors against which conventional governance structures would protect firms, if only they worked. Nor is clear how conventional governance systems can be modified to supervise effectively the new forms of collaborative exchange.

Looked at from either perspective the problem is the same: Collaborative production works because of the extraordinarily informative, mutual relations it creates; but the kinds of decisions typical of governance matters--whether to abandon a whole line of business, acquire a new firm or sell the corporation to an outsider--are now normally made by entities disconnected from and, more fundamentally, operating by different forms of deliberation from those engaged in the new collaborative relations. To monitor such relations, it seems, a governance structure would have to become in effect one of the collaborators, exchanging information on like terms with the others. There are, indeed signs that this is occurring. On the one side, evaluation of performance and especially performance measures (and the accounting practices to which they are related) by work teams and production units is broadening into a more and more comprehensive and higher and higher level review of corporate goals and performance (Kaplan and Norton 1992; Kaplan and Norton 1993). On the other, pension funds and banks are being urged to participate more actively in the monitoring of corporations they own and fund; and in acquiring and providing firms the kind of efficiency improving information necessary to make such activism effective, they would by stages transform themselves from disciplinarian monitors to collaborators (Coffee and others forthcoming 1995).
But it is hard to see how to pass from such beginnings to a mechanism that addresses the hard questions of governance, such as the sale of jointly controlled assets or the purchase of new ones, without resorting to an exercise of authority inconsistent with the principles of day to day collaboration. For such matters are normally decided by vote, with votes weighted to reflect ownership of the firm's assets, whereas decisions made by the deliberative logic of learning-by-monitoring relations turn on the actors' knowledge of the situation and its possibilities, not on rights anterior to and independent of the questions at hand. Nor is it possible to reconcile this conflict by assimilating the factor-owned firm to the familiar form of the partnership as embodied in the law firm or the cooperatively owned dairy. This partnerships function, it has been observed, because the partners supply similar if not homogeneous inputs; and valuation of their contributions and hence their claims to carry a corresponding weight in constitutional decisions is (relatively) easy to assess (Hansmann Fall, 1988). This precisely not the case for the factor-owned firm, which is defined by the heterogeneity of its de facto owners. Learning by monitoring renders this heterogeneity tractable day to day; whether it can be extended to constitutional questions is still an open question.

On one interpretation, therefore, the current situation is a stalemate, or rather interregnum, characteristic, of transitions from one great principle of economic organization to another. Mass production demonstrated its efficiency advantages over certain kinds of craft production in the last third of the nineteenth century. Yet it took decades more before the mass-production corporation was consolidated as an institution (to say nothing of the consolidation of the macroeconomic policies on which the stability of that corporation was based). Seen this way the present is a similar time betwixt and between: after the first convincing demonstrations of the advantages of collaborative production in volatile markets, yet before the consolidation of the mechanisms by which such collaboration can effectively police itself. At all events, the fact that the Russians, too, are without answers to these questions, should not be counted as a reason to be especially skeptical of their results.

But on a second interpretation it is also possible that we are looking too hard for a new answer to an old question whose significance dwindles with the passing of the world in which it arose: The more firms monitor one another in collaborative production, the less necessary traditional forms of monitoring by "outside" governance structures may be. That is speculative. What is beyond doubt is that such mutual monitoring has become more extensive formalized; that under these conditions, prices become boundary conditions on cooperation; and that actual coordination is conducted in the disciplined language of
discursive standards. These are the next and final themes of our contrast between the worlds of stable and volatile production.

4. Target Prices and Discursive Standards

Given long production runs, recall, suppliers' bids to produce a given part at a particular price provide sufficient criterion for selection because the customer, who provides the design, can easily judge performance, and shortfalls within wide limits are in any case tolerable. But when designs are, in contrast, fixed only after exchanges among different design specialists and between them and manufacturing facilities, prices become boundary conditions for transactions, not a sufficient mechanism for selecting partners. Prices still matter because if the selling price of a particular class of final good exceeds certain limits, the good becomes effectively unsaleable in its usual market, regardless of performance characteristics. To avoid this, firms in the fluctuating economy estimate the optimal sale price of planned products—the target price—and then set further sub target prices for individual modules in relation to the overall ceiling. Violation of these limits plainly puts the planned project at risk (Asanuma 1989; Sako and Helper 1994; Smitka 1991).

But just as plainly, offers to provide designs, modules, or components at or below the target prices are, by themselves, simply not informative enough to allow the customers to choose among competing suppliers. The bid alone tells the customer only that the supplier can very probably provide a product that meets the initial minimum performance specifications at the proposed price. What the customers need to know in addition is how likely the supplier is to develop and realize more ambitious designs or more efficient production setups in collaboration with others, and how timely and reliable its performance will be. As the bid is effectively a promise to do something the supplier has never, in that precise form, done before, and which the customer alone cannot do or even fully define, the bid, so long as it meets the target price, is meaningless unless accompanied by a reliable assessment of the supplier's capacity to do as promised.

Here is where discursive standards now sweeping through the world economy come in. Conventional standards specify and thus permit measurement of various combinations of two types of performance characteristics. The first are attributes of products: the tensile strength of various grades of steel, the weight per unit length of yarn, the dimensions of paper, or the number of instructions executed per second by a microprocessor. Such standards allow buyers and sellers to know they are talking about the same thing when they conclude a
transaction for a particular product. The Deutsche Industrie Normen provide countless examples of such specifications. Other standards put greater emphasis on the attributes of production processes by specifying by what procedures a particular operation is to be conducted or how the results of particular operations are to be certified or both. Welds completed in compliance with such standards, for example, will have been executed using methods fixed according to the alloys concerned and the environment to which they will be exposed, then tested for conformity with requirements; and the results of these tests will be documented as further specified by the standards. Such, for example, are the standards maintained by the American Petroleum Institute; they assure not only that buyer and seller are referring to the same things in their negotiations, but that the buyer can expect the seller to have diligently verified the accuracy of all representations and to be able to trace, with the help of obligatory documentation, the origin of defects that somehow escaped detection.

Judged against such conventional certification procedures, the new discursive standards appear thin, even vacuous. They specify neither the characteristics of products nor features of production processes—nor do they even prescribe methods for documenting the latter. What they do instead is establish procedures by which firms can be certified as competent to assess, and in that sense warranted to make claims regarding, their capability to perform as promised.

Under the most comprehensive and widely acknowledged of these standards, the ISO 9000 series maintained by the International Office of Standards in Geneva, Switzerland, a production facility is certified as capable of designing and delivering products and services to customers' requirements in all areas of economic endeavor (Clements 1993; Lamprecht 1993; Peach 1992). To obtain certification a firm must convince a registrar (whose authority derives from association with the standard-maintaining body) that it can respond systematically to systematic challenges to its assertions of competence. Typically, therefore, the registrar will raise such questions as, How does the firm know that it understands its customers' expectations? How does it assures itself that it can deliver the designs and products it promises to provide in accordance with those expectations? How would the firm detect and correct shortfalls in performance? Answers are judged correct to the extent that they reflect both a good fit between firms' organization, technology, and procedures and the environment of expectations within which these operate, and an understanding by the firm of how it would have to adjust to variations in that environment. In theory, therefore, the ISO standards do not require firms to
adopt any particular technology, form of organization or procedures at all, although in practice some ends can be obtained by such a limited range of means that to pursue them does entail particular operational choices. What certification under the standards does do, as we noted at the outset, is qualify a firm as a reliable interlocutor in eventual discussion about its performance capacities. As you will have already noticed, it is precisely such warranted information about performance in relation to promises that customers in the new, volatile economy need to supplement price bids in choosing collaborators. Certification does not, of course, replace detailed discussion of projects and assessments of the chances of their realization; but it does establish that the collaborators are likely to understand particular assertions by the other because both can assume a common understanding of criteria by which such assertions can be justified. ISO certification and the many self-monitoring disciplines to which it is related provide, rather, the dialects of the language in which such discussions are conducted.

5. The Central Significance of Change at the Margin

As our argument regarding the significance of the new conditions of competition is an all-or-nothing proposition--either the new disciplines are influential everywhere, or else from the vantage point of remote corners of the world economy they might as well be influential nowhere--we must address, briefly, the questions, How widespread is the new system? How influential does it give sign of becoming? Evidently the bufferless production systems and collaborative supply arrangements have been diffusing to the United States and Great Britain and Southeast Asia from Japan via transplants since the mid-1980s and from the US to the rest of Western Europe and much of Latin America more recently. How far have they gone?

The most reliable surveys of the speed of the new methods in the US, as measured by the diffusion of clusters of organizational innovations such as quality circles and work teams that organize the flow of production themselves, suggest apparently modest results: About ten percent of American industrial firms are operating by the principles set out above.[11] This estimate is supported by the repeated observation by those with expert knowledge that almost every local economy in the US has a few--but only a few--examples of firms succeeding by the new methods. But with regard to the propagation of any radical innovation--and the shift from mass to inventoryless production is certainly that--diffusion to ten percent of potential adopters is more progress than it seems: Before the ten percent threshold is reached, firms hesitate to adopt the innovation for fear of paying a penalty for pioneering; after the
threshold has been crossed they are prompted to introduce it for fear of otherwise paying a penalty for lagging.

That the situation is shifting from experimental to routine deployment of these methods in the US is further corroborated by a look at the margin of development defined by new investment in plants and equipment. It has now become standard practice in undertaking such investment in automotive-engine, semiconductor, or petrochemical plant to review the performance of technologies and organizations in use in the most efficient comparable facilities worldwide, and to apply the results of this benchmarking to design choices in the investment project. Investment plans prepared in this way, therefore, constitute surveys of the universe of best-practice plants of their type; and an examination of a half dozen documents of this type from diverse sectors in the last several years makes it clear that, without exception, major new projects are conceived with some version or other of the new principles in mind, both with regard to the organization of production within the planned facility and its relation to suppliers. All of this is accompanied, the foregoing would suggest, by acceleration in the growth of interest in the new discursive standards. Discussion of reorganization underway in the advanced regional economies of Western Europe such as Baden-Württemberg point in the same direction (Kern 1994; Kern and Sabel 1994).

Spread of the methods to developing countries is likewise explosive. The most recent survey of the deployment of computer numerical control equipment in Brazil, Mexico, India, Turkey, and Venezuela shows that use of such equipment is growing at rates far above those estimated in the mid 1980s. Less than a decade ago knowledgeable observers in these countries knew first hand of almost all the relevant machines in the domestic economy (Edquist and Jacobsson 1988); today they have trouble keeping count of new installations (Alam 1994; Ansal 1994; de Quadros Carvalho 1994; Dominguez and Brown 1994; Tamayo 1994).

From the point of view of our argument it is particularly revealing that firms in all these countries give as their principle reasons for adopting these machines the need to meet the current, demanding quality standards of their customers; and that their use is typically accompanied by the same kinds of changes in organization that accompany introduction of the fluctuating world model in the advanced countries; and that in combination the new technologies and organizations do allow the firms to substantially increase their flexibility: The set-up times for the machines are thus reduced from hours to (single) minutes and the distribution of output by lot size shifts dramatically to shorter
production runs--just the results observed in advanced countries that have mastered the use of the new methods, often after several expensive tries. Firms using new technologies, moreover, tend to increase exports as a share of their output, and to levels that exceed the average share of exports of industrial goods in the national economy. In Venezuela, to take an extreme case, virtually the only metalworking firms exporting their goods appear to be those using the CNC technologies (Tamayo 1994). Finally, although the new machines cost more than the equipment they replaced, their greater flexibility and precision made it possible to deploy them more intensively at a greater range of tasks; and there was no evidence in the survey that increasing capital costs absolutely or per unit of output creates barriers to entry. Indeed, some of the most successful firms in the survey were newly founded small companies that started off by using CNC technology.[14] The most recent general work on production organization in the developing economies captures this movement nicely in its title: "Easternisation" (Kaplinsky 1994) [15].

Case studies confirm and deepen those impressions. A report on a Mexican automobile assembly plant, the subsidiary of a US-Japanese joint venture, describes an experimental system of team work and job rotation so effective at encouraging acquisition of skill and the resolution of problems by production workers that the plant matches the quality levels of the best performers in the parent corporations without the need for a distant cadre of craftworkers specialized in set-up or maintenance (Shaiken 1990). A case study of the Malaysian textile industry revels a breathtakingly rapid shift to extremely sophisticated production technology as labor markets tighten and recent-vintage Japanese equipment comes onto the second-hand market (Rasiah 1993). What gives these reports particular weight is the authors' surprise, verging on amazement, at their own findings. The author of the automobile study is a former skilled tradesman with long experience in the US auto industry. The idea that production workers-- in Mexico--can learn to do almost all the tradesmen's work without benefit of apprenticeship plainly intrigues and disconcerts him. The author the Malaysian textile industry study was not searching for rapid productivity gains. Rather, he was drawn to the case by the puzzling finding that wages in that industry were rising rapidly despite a political regime inimical to unions and dedicated more generally to keeping wages low to safeguard competitiveness. In social science, as in science in general, unexpected findings have the truest ring.

On this evidence the opening of markets and the fall of communism have indeed unified the economic world; but the one world that is emerging has little place for the forms of industrial apprenticeship supposed in the common sense
account of the conversion from plan to market economies. However much this circumstance has escaped attention in official and academic discussion in the advanced countries, it is well known and of decisive importance to firms from the former plan economies trying to enter world markets, as we shall see next in our discussion of industrial adjustment in the Urals.

6. Reorganization amidst Instability

The Sverdlovsk region in the Northern and Middle Urals, centered on Ekaterinburg, its capitol, is well situated to test our beliefs about the global reach and orienting influence of the new discursive conditions of competition. It is far enough from Moscow-- 889 miles and two and a half hours by air--to be at the margins of the intrigues of the central elite, and far enough, too, from borders with the advanced countries (Berlin is roughly two thousand miles to the West, Tokyo about 3,800 miles to the East) to discourage dreams of economic salvation through amalgamation with a prosperous neighbor. Flights of desperate fancy aside, firms here know they are on their own. At the same time the region is a major industrial center, with a proud history of repeatedly mastering demanding technologies rapidly and effectively. Its 4.7 million inhabitants (3.2 per cent of Russia's population) produce 14.5 per cent of Russia's ferrous metals, 17.3 per cent of non-ferrous metals, 4.3 per cent of construction materials, and 3.8 per cent of metal-working and machine-building products (Fund, 1993).

The core of the modern economy grows out of the mining and metallurgy firms established at the beginning of the 18th century in connection with Peter the Great's drive to industrialize Russia. By the end of the century, the Urals' heavy industry produced two-thirds of Russia's iron and ninety percent of its copper. The region boomed in the early years of the 19th century upon discovery of new deposits of gold, platinum, and precious stones. After a bust in the mid-19th century, the arrival of the railroad in the 1880s led the way to further industrial development. Sverdlovsk became a major supplier to Asiatic Russia and the Orient of pig iron, rolled metals, gold, platinum, copper, timber, grain, meat, butter, and flax. It became a major armaments producer during World War II, when approximately 200 industrial plants were evacuated there from European Russia. According to unofficial estimates, in 1990 more than one-third of the workforce of the region was employed in defense-related enterprises. Pipelines laid in the Soviet period made Sverdlovsk a distribution hub for oil and natural gas produced in the surrounding regions of Perm, Orenburg, Tyumen, and Komi; and much of the large machine-building industry in the region makes the capital goods needed to keep these resources...
flowing. Forty three per cent of industrial employment is concentrated in this sector, although it accounts for less than one per cent of regional exports, which are dominated by ferrous and non-ferrous metals and other raw materials.

Sverdlovsk is only the largest of the seven regions that together constitute the Urals. Similarly dependent on heavy and defense industry, and increasingly convinced of their distinct subnational (though not ethnic) identity, these regions have begun to create common political and economic institutions. One of the first, and probably the most influential, is the intergovernmental Association for the Development of the Urals Region. Its Economic Committee, which connects several networks of industrial managers, financiers, government officials, and scientists, acts as the discussion forum and lobby for much of the generation of enterprise managers that came of age under the old order but is trying to adjust to the new. There is also talk of creating a Urals bank and regional television network.

By design we concentrated our attention on the metalworking and electro-mechanical sectors as against metallurgy. The differential between (low) Russian and (high) world market prices for copper, aluminum, platinum and other metals has, at least until recently, created arbitrage opportunities so great that domestic metals producers with export licenses could enrich themselves without giving a thought to restructuring. For our purposes the firms of interest were those that cannot survive by arbitrage, are too detached from Moscow ministries to count on substantial subsidies, and recognize that the inferior quality of their products makes them unsaleable even in developing countries. They realize, therefore, that they must reorganize to produce marketable products or go bankrupt. Almost all the larger manufacturing firms in the Urals are in that situation. Several of our interlocutors told us early in discussions that one of the most humiliating experiences of their lives was the discovery that goods they once proudly made were now disdained by former customers in Turkey (or India, or Syria) who had come to expect better things. We investigated a group of firms generally held to be typical of those squarely facing the resulting choices.

By common-sense standards the whole region should have come to a standstill. Inflation--which hovered over 25 percent per month for most of 1992 and 1993, and averaged 7 to 8 percent per month for the first half of 1994--results in interest rates so high that industrial firms can seldom get credit from local banks even on usurious terms (Systems, 1994). Even leaving aside the unavailability of credit, it is hard to say whether firms are operating in a price regime of any kind, let alone a regime of world-market prices. Most firms are
indebted to their suppliers, in arrears to their employees, and owed money by their customers; and their liabilities and assets are so hard to evaluate that it is almost meaningless to attempt any conventional financial evaluation of the companies. Payment for current sales and current purchases, furthermore, is often delayed, or settled by barter, so that it is difficult to arrive at a reliable assessment of costs and revenues. A new tax system imposes what enterprises regard as a confiscatory levy on profits; by some estimates it reaches 90%. In any case the system is complex enough so that a company's tax burden depends crucially on how successive operations are reported to the tax authorities and how the authorities interpret the reports. A procession of substantial assessments for underpayment of taxes and legal suits—many of them successful—to overturn those claims demonstrates, in any case, the potentially ruinous ambiguities of the situation. Under these conditions firms should be unable to know what they are looking for by way of products, and still less how to begin making them.

If the absence of a price regime should have been as a common-sense proposition disorienting, so amorphousness of the property regime in the Urals should have been demotivating. Most of the industrial firms in the region have been privatized in recent years under the second of the three provisions of the Privatization Program of 1992, which allowed current employees to acquire 51 percent of their company's initial stock for a nominal price that reflects the firm's pre-inflation book value. (The few exceptions were firms whose products were deemed essential to national defense or public health by their respective ministries, or which had acted under earlier laws to establish themselves as lease enterprises or cooperatives.) This form of privatization certainly freed the firms from control by the state. But rather than concentrate property in the hands of a residual owner, this form of privatization diffused and collected it within the firm in a way that—again as a common-sense proposition—should have paralyzed reorganization.

Because of their connection to military production and because of features of the plan economy we will take up in a moment, most of the firms are obviously active in areas of production that will not be sustainable under market conditions; because of the general inefficiency of Soviet production, moreover, even firms that are engaged exclusively in potentially viable activities currently employ far too many workers by international standards. In either case, therefore, reorganizations will mean substantial layoffs. Since only a few managers and workers can be sure of their indispensability, and the great majority will be, at best, unsure of its prospects, diffusion of ownership to the collective of incumbent employees should lead to paralysis: Every investment
plan should reasonably be vetoed by a majority fearful that the minority associated with it will divert the benefits to itself and socialize costs. The result would be a stalemate in which the new private owners can only agree on the need to secure new state subsidies.

These expectations to the contrary, the firms we saw were extraordinarily purposeful and deliberate in restructuring. They are learning to select investment projects that allow for the piece-by-piece reorganization of the firm, produce financial returns, and suggest further projects, often in association with outsiders. The broad orientation of these efforts results almost directly from the general desolation of the post-Soviet economy: The entire industrial infrastructure of Russia--the pipelines, the power transmission and switching equipment, and so on--will have to be substantially improved if domestic firms are to produce the range of goods typical of advanced economies. Firms that can supply replacements that are compatible with the installed capital base, and can therefore link this on the one hand and components made to international standards on the other, will have large markets, as will a second group of firms supplying capital goods, likewise compatible with Russian and international standards, to the first. The surprise, for which you are prepared, is that the property regime, despite its diffusions, does not hinder reorganization, and that discursive standards help guide that reorganization in the absence of informative prices. We consider each in turn.

The property regime allows reorganization precisely because, as increasingly in the advanced countries, it operates as a mechanism for regulating the distribution of the gains and costs of adjustment, not a device for establishing an exclusive locus of control over resources. The key to the arrangement is a widespread, if usually implicit bargain in which employees--workers and managers alike--obtain such security as is obtainable in return for letting experimental reorganization proceed. Diffusion of ownership among employees means that shifting coalitions of workers and managers can discipline decision makers of whom they disapprove by threatening to or actually selling their shares to outsiders who will replace the incumbents, or, upon obtaining more than 25 percent of the outstanding stock, secure the power to veto their decisions. In most cities, not to mention isolated company towns, the threat of riot further deters unpopular decisions.

To be sure, managers as a group own a disproportionate and probably growing share of stock in their own companies; and it might seem that they were free to pursue their distinct interests at the expense of restructuring. But within very broad limits, the size of the managerial share has indeterminate effects on
reorganization. Managers in restructuring firms are not a cohesive group; they stand to gain or lose proportionately as much or more than other employees from the--unpredictable--results of the experimental use of assets. Peering into the future from behind this veil of ignorance, they acquiesce in reorganization on more favorable terms but for reasons like those of other employees.

Under these conditions, employees can correctly assume that decision makers will do whatever possible to protect the well-being of the work force, including continued payment of wages at the highest level consistent with the survival of the company and maintenance of the social welfare institutions traditionally operated by large Soviet firms. All this is tantamount to, and is taken by managers themselves to be, a guarantee to distribute the proceeds from current and future ventures to the employees in accordance with local, mutually understood standards of equity. In return for this guarantee the employees allow the firm to form new entities that it owns in whole or in part, and by means of which it can undertake reorganization or new ventures with or without the participation of outsiders, domestic or foreign. Individual employees thus expect to get something from all the new projects, and reckon that the sum of these somethings will be worth more than what they would get by exercising their veto rights and liquidating the firm, even if they do not draw a place in a successful venture.

But although it is widely understood by this reckoning that these entities must enjoy substantial autonomy from central management if they are ever to contribute to the firm's well-being, there is little agreement on the optimal institutional design for securing such autonomy, and arrangements concerning the distribution of equity; and the determination of transfer prices between the unit and others in the firm vary substantially even within a single company depending on opportunities and the accumulation of experience. Reorganization along these lines is, moreover, still marginal in the twofold sense that, taken together, these entities account for only a small fraction of employment and production, and taken one by one they are fragile and at the mercy of events. Nonetheless, they are proliferating rapidly and are increasingly regarded as the response of choice to the problem of reorganizing large firms.

As an example of such efforts at decentralization that also displays their institutional diversity consider the Ekaterinburg Mechanical Factory (EMF), a military enterprise producing missile-related hardware, that began experimenting in 1985 with reorganization in connection with state-sponsored efforts to promote conversion to civilian production. By 1990 a small shop
(with about 30 workers) was incorporated into a joint venture with Phillips to assembly video players; when the central government funds used to purchase the parts stopped flowing to the venture, production stopped too. In the same period the firm established more robust and apparently self-sustaining joint-ventures with the Yugoslav-German firm "Kostyer", the British firm "Brown", and a Russian firm in Nizhniy Vartovsk. In all four of these, 40 per cent of shares are held by EMF as a whole, 40 per cent by the outside partner, and 20 per cent by the employees of the joint venture itself. Contemporaneously, subdivisions began transforming themselves into independent profit-centers (filialy) and EMF itself formed a series of wholly owned small enterprises. By summer 1994 there were ten profit-centers within the factory, and five small enterprises. New facilities have been built for some of the profit-centers/subsidiaries, so that they can be easily separated from the main plant and thus made more attractive to potential joint-venture partners.

The profit-centers, small enterprises, and joint-ventures are relatively small; the largest employ only about 70 workers each. At most, therefore, they employ 1350 persons, which would be almost half of the 3,000 employees engaged in civilian work, but not quite 20 per cent of the total work force of 7,000. Opinions as to the prospects of these units varies widely. One high-level manager in the company told us that many were doing well and would probably survive; but the director of what that same official told us was one of the very best projects asserted that with the exception of his unit, few of the new entities would succeed. Regardless of their assessments of individual units, both managers expressed their general approval of the strategy and emphasized the indispensability of pursuing it.

To assess just how pervasive and compelling the strategy of experimental decentralization is, we tried to determine why the few large firms known to reject it did so. To that end we investigated one of the largest local advocates of centrally directed reorganization: Urals Heavy Machinery. The company began as a producer of equipment for the gold-mining industry in the early 1800s, then turned out drilling equipment for the oil industry until it was converted to military use in the 1930s and began to produce artillery pieces. Although conversion began in 1990, as of mid-1994 seventy percent of its production was still military related. It employed approximately 8,000 workers in 1994.

The firm's current strategy is to find several high-volume products whose production requirements match their stock of capital equipment as replacements for the artillery pieces, thus allowing preservation of Urals Heavy Machinery as a whole. Its best bet appears to be specialized pumps for the oil
industry, output of which accounted for forty percent of total production in mid-1994. Pump production could then be supplemented by diversification into consumer goods and transportation equipment, if possible with the help of foreign joint-venture partners.

High-level managers were forthright in explaining this strategy as compelled by the firm's high degree of vertical integration and the physical layout of its production equipment, both of which resulted from adaptation to the Soviet plan environment. In general, operation under the plan system encouraged an extreme form of the vertical integration characteristic of Western mass producers before the onset of instability: Large industrial firms in the Soviet-type economies could sell everything they could make, and the more they protected themselves by in-house production against disruption in supply on the part of suppliers who did control their own input, the more they could produce.

This was particularly true in the case of a firm like Urals Heavy Machinery, whose military customers were extremely reliable and well financed, and where products demand constantly changing combinations of a wide range of manufacturing technologies. Thus, guided by the motto "Vse sdelai sam" -- "Do everything yourself"--the firm became a microcosm of the metalworking industry as a whole, building up a huge machine park in which tools were grouped by type: lathes in one shop, milling machines in another. This guaranteed the company maximum flexibility so long as there was an assured market for complex mechanical products that could be made with the entire ensemble of machines.

But the same set-up looks prohibitively cumbersome given changing markets for small runs of different products, each built with a different combination of machine tools. The managers at Urals Heavy Machinery were well aware that the company could, in theory, build any of many mechanical products likely to be demanded on Russian markets. But by their calculations the cost of removing the machines required for any such product from their respective shops and mounting them in a production line, added to the cost of disrupting operations in the areas from which they were taken, made reorganization by product line unworkable. Hence the decision to seek substitutes for the artillery pieces that did not require dismantling the old shop structure. But this strategy was clearly regarded as a desperate measure; and even those who supported it plainly wished they had other choices. Some operating managers just below the peak of the firm, moreover, were convinced that the centralized strategy would fail and that Urals Heavy Machinery would eventually have to decentralize authority for product development and production to the workshops, whose
capacity for adjustment was in their view demonstrated by the success of such reorganization at another local firm previously organized on the principles of "Vse sdelai sam." Thus the exception, whether it remains one or not, proves the rule that Sverdlovsk firms see decentralization through formation of substantially autonomous undertakings as the precondition to reorganization and regeneration.

The cumulative result is a pattern of reconstruction that both in its defining features and its remaining indefiniteness resembles the reconstruction of large western firms adjusting from stable markets instability. First, like Western firms such as IBM, General Motors, or Volkswagen, the Urals firms are using learning-by-monitoring institutions to create profit centers, subsidiaries and joint ventures with the autonomy and incentives to learn through experimental use of their resources while keeping the parent sufficiently informed of their progress so that the latter can provide aid or cut losses in the case of distress. The parent agrees on a project and an initial budget with the new entity, and makes periodic demonstration of progress towards the agreed end a condition for refinancing. Obligatory, periodic evaluation of results forces the new venture to act decisively to make good on its promises, allows both parties to redefine their joint goals if they like, and allows the parent to redeploy its capital if the old goals seem unreachable and their redefinition implausible. The continual, evaluative discussion that results from this discipline is the analogy in relations between business units to those established between production stations by the removal of inventory buffers: The parties learn from what is not working what needs to be improved, and whether it can be.

Second, like Western firms in the midst of restructuring, the Urals firms secure the consent of the work force, workers and managers alike, by guaranteeing it as much security as possible--but only that much. This pattern is, if anything, clearer in the West than in the firms we visited, but the bargain was fundamentally the same. Thus first General Motors, then Volkswagen, to continue with familiar examples, have offered their employees periodic guarantees of employment security for limited periods, then used those periods to define new organizational structures in which it is possible to determine which employee can be productively employed in the next round. This is also the open secret of reorganization in the Urals. As revealed by behavior, employees' calculations of the best returns to the bargaining power they acquire through incumbency, however defined formally, are the same.

Third, as in the West, internal reorganization and decentralization blurs the boundaries of the firm and creates collaborative production arrangements that
fly in the face of the notion of property as exclusive control. We saw that Western firms must increasingly design and produce products in collaboration with independent partners who achieve economies of scope in learning to meet the demands of different customers. Willy nilly, firms in the Sverdlovsk region are moving in the same direction. The new entities that we have seen are designing their products and production processes with the help, on the one hand, of one or more research institutes in the region or elsewhere, and with the cooperation of their (usual industrial) customers and suppliers on the other. But the entities are also calling for, and receiving, help from various laboratories and production infrastructure services within the parent company. The more complex each of these groupings becomes, and the more each partner, in seeking economies of scope and reducing the effects of any one failure, enters into similar relations in other settings, the harder it will be to ever draw a firm institutional boundary around the parties to even the largest projects. The more likely it will be, conversely, that the collaborators regulate relations among themselves by defining how gains are to be shared project by project, as increasingly in the US biomedical and semiconductor and related industries.

Fourth, there is no more certainty in the Urals than in the advanced countries (Japan included) as to how, precisely, to institutionalize these collaborative arrangements; but arguably there is no less certainty in the firms we saw, either. Design teams in the advanced countries are routinely under pressure to develop components with internal units with some claim to the required expertise rather than outside suppliers. Production units are likewise under pressure to use internal process-design staff, maintenance services, tool-and-die shops, or equipment builders rather than to work with outside vendors or take responsibility for such tasks themselves. There are plainly such pressures within the Sverdlovsk firms; and managing directors were well aware that they could leash decentralized entities by raising the transfer costs of the enterprise services these entities still needed, or by stopping reinvestment of revenues generated by the new ventures. Bargaining over such matters would strike managers in the advanced countries as familiar. If there is some hidden but systematic and insurmountable obstacle to collaboration of the type under discussion, we in the advanced countries will have a first-hand inkling of it long before news of failures in the Urals arrives. But, to anticipate a theme to which we will return in the conclusion, if there is no such flaw, it is hard to see why an innovative advance in institutionalizing the new form of cooperation might not as easily come from Russia as from, say, Brazil, Mexico, or Thailand. Many of the organizational barriers to collaboration in the advanced countries come from the resistance of strong organizations that stand to lose by the changes. Why exclude the possibility that, as so often before in world
history, innovation will occur in the guise of imitation in those countries where the old organizations are dramatically weakened and reconstruction--naively?--takes for granted the viability of structures that are still suspiciously novel in advanced countries?

The role of discursive standards, as you will again already have surmised, is to allow the Sverdlovsk firms to define and refine the internal structure of the reorganizing entities even in the absence of ongoing relations with demanding customers. In the advanced countries, we saw, the standards evolve as a language for discussion between customer and supplier. Starting at the boundary defined by what each expects of the other, they encourage detection and correction of procedures that lead to misunderstandings and shortfalls; and in that process they help define or articulate the responsibilities and connections among internal work groups in both.

In the Urals, in contrast, the quality laboratory as keeper of the new standards temporarily substitutes for and prepares the internal units for eventual exchanges with demanding customers the firms do not presently have but whom they, by common consent, must eventually satisfy if they are to enter world markets. To do this the quality laboratory simply evaluates current production and the organizations that guided it by standards potential customers will use to assess whether the company can credibly make the promises expected of collaborators. So long as the highest-level managers support such evaluation, it produces just the kinds of pressure for self reevaluation common in advanced country firms while accelerating certification under the standard that allows the already qualified firms to recognize the likes of themselves.

As a paradigmatic instance of this kind of anticipatory reorganization at work, consider the case of the Katerina Pipe Factory, a large maker of pipes, primarily for the petrochemical industry. Katerina was started in the early 1960s as part of a program of modernization and expansion of Soviet industry. It currently employs 11,500 workers. Although the firm is well situated, for reasons discussed earlier, to benefit from the modernization of the decayed Soviet industrial infrastructure, it quickly realized that its prospects for survival depend crucially on the ability to meet the DIN, American Petroleum Institute, and ISO 9000 standards: Large-scale reconstruction of domestic pipelines will likely involve participation of foreign companies or consortia who will take compliance with those standards for granted. And "even" such developing countries as Turkey, India, and Syria, to whom Katerina might reasonably expect to export its products, the managers told us with chagrined bewilderment, had become in this regard equally demanding.
Hence the current effort to obtain certification and the continuous discussions of quality--convened by specialists from the quality laboratories or informed by information they provide--at all levels of the firm. Laboratory specialists meet with each production shop weekly. The firm's technical director gathers all of the shop heads together to compare performance and discuss quality once a month. Moreover, quality information is combined with financial data in daily meeting where the general director and his deputies gauge each subdivision's overall performance and allocate current revenues.

In the light of these developments several monitoring institutions developed in the Soviet economy to overcome its own inefficiency and stagnation may paradoxically prove useful in the transition to market conditions. The first are the many institutes built as observatories to track and assess developments in the capitalist countries. It has long been recognized by many Eastern European and Soviet economists that the plan economies compensated for the lack of internal incentives to innovate by observing innovations in the West, and adapting them to Soviet conditions once they had matured into standard designs. In that sense the Soviet economy was a copy of its competitors; and one of the reasons it fell out of the race after 1975 is precisely that it was unable to adjust to a world so turbulent that designs never stabilized enough to be copied.

But now that the advanced countries, partially in response to the disruptive effects of that very turbulence, are learning to render the information necessary for design coordination in a way independent of particular products and processes, institutionalized observatories skilled in scanning the world for design information and with well established relations to a wide range of firms suddenly look like an institution every economy will need, not brickabrack from a failed economic experiment.

Here, judging by our experience in the Urals, Russian firms may indeed have an unexpected asset. The traditional Soviet institutional arrangement for new product introduction brought the design and engineering departments of enterprises into continual contact and collaboration with a range of external organizations, such as industrial research institutions, the Academy of Sciences, science and production associations (NPOs), interbranch scientific technical complexes (MNTKs), and universities. Different stages of product development were often as not divided among the different organizations. Foreign models were consciously used as yardsticks for new product and equipment design (Lawrence and Vlachoutsicos 1990). Of course, in the absence of strong external imperatives to improve product quality, the successive iterations of
prototypes and documentation and their mandatory approval by multiple interministerial commissions led to excruciatingly long product introduction cycles. But the close institutional links forged during the Soviet period may well prove adaptable to the new conditions. Everywhere one looks, they are being utilized by dynamic firms with clear ideas of how (and how quickly) they need to bring production up to international standards; for example, by a Urals pharmaceuticals company planning the total reconstruction of its plant with the objective of installing special clean rooms for the manufacture of medical products. Before even securing financing for the project, the company had reached agreement on the technical side of the reconstruction with design institutes from Bashkiria and Moscow.

Similarly the various systems of Soviet quality control that grew out of the horrifying discovery of just how little of quality the plan economy produces may serve as the scaffolding, if not the foundations, for building new institutions for certifying firms under international standards. The system of quality management that in many variations became the most widespread among Soviet manufacturing enterprises from all branches, the KSUKP system of Comprehensive Management of the Quality of Output, had two features that may help prepare the way for the introduction of new standards in Russian firms. First, KSUKP exhibited some of the discursive characteristics of ISO 9000 standards. The system called for enterprises to generate their own product standards in discussion with customers and suppliers and, in the best cases, to assist the latter in raising and systematizing their quality standards. Relations between scientific research and design organizations and the enterprise were deemed of critical importance. In theory, at least, discoveries of defects at the level of the individual work-station were used as the occasion to open ongoing communications between workers and foremen that cut across the boundaries of groups, shops, and divisions (Parfenovskiy and Lukashin 1986; Prokhorenko and Kurulev 1977).

Second, benchmarking of foreign products and practices was an integral part of the KSUKP system, which was intended to work in concert with the system of state product attestation. After 1965, with the introduction of the "Mark of Quality" award, the Soviet government made a conscious attempt to compensate for the lack of market pressures by granting this award to products that were considered to meet the same requirements as analogous products sold by non-Soviet manufacturers on the world market. Estimates from 1979 put the share of Mark-of-Quality-certified output at 30% to 45% for most group "A", or heavy industry, branches. That these numbers were not pure fiction is suggested by the palpably correct official figures given for building materials.
and light industry: 3.7% and 4.4%, respectively (Hill and McKay 1988; Lapusta 1980).

These points of contact aside, however, the KSUKP did differ in crucial ways from the discursive ISO 9000 standards. Despite the rhetorical call for personal responsibility and accountability on the part of each employee for the results of his or her work, actual measurement and verification of quality was carried out in each factory by teams of full-time "controllers" whose judgment of conformance was ultimately highly subjective. In many accounts, this led to resentment and resistance by workers, on the one hand, and bribery of controllers, on the other. To the extent that KSUKP became just another way for upper-level managers to monitor, from afar, the honesty and industriousness of shopfloor workers, it stopped short of institutionalizing continuous discussions between subunits that allowed for joint formulation of expectations and their flexible revision as circumstances changed. In this regard, however, it had as many affinities with earlier, failed waves of quality reform in large Western firms as with the disasters of the Soviet economy. Nonetheless, and despite these shortcomings, in the best of the firms that we saw managers indicated that their experience with the KSUKP system had provided points of reference with the aid of which they were able to introduce modern ISO-compatible practices more quickly, if not less painfully.

By way of conclusion we indicate how a reoriented economic policy could make use of these institutions and the partial successes of the firms' adjustment strategies more generally to encourage the transition from plan to market economy in Russia.

7 What Competition Creates

The fall of the Soviet-type economies and the success of their market competitors shows, if anything can, the superiority of an economic pluriverse of independent actors over an economic universe in which the risks of each become the responsibility of all. Where the former stifles the experimentalism that leads to new products, processes, and institutions, the latter encourages, even compels it. Yet in the common-sense view of the transition this experimentalism stops short of the building blocks of the market: the firms, and the relations among them. Competition, it seems, creates unlimited new possibilities, except the possibility of creating new forms of competition. For this reason the timeless, textbook version of capitalism, in which the agents are firms controlled by residual owners and coordination among them is principally by price, is a blueprint for the construction of new market economies.
But set in the firmament of late twentieth-century thought this is a darkling assumption indeed. It is, after all, a central tenant of that thought that every conceptual scheme--particularly all those of the natural sciences--must be rethought given the answers to the very questions that it itself poses. Conversely, it has proved impossible to find categories of investigative conceptualization that did themselves have to be reconceptualized in the light of investigation (Davidson 1985; Kuhn 1970; Putnam 1994). Would it not be wondrous if the categories of practical economic investigation as embodied in the precise definition of autonomous economic agents and the relations among them alone rested on unchanging foundations?[18]

If the ideas presented here are right, then this assumption is not wondrous but wrong. For our central claim is precisely that market experimentalism has produced actors and market relations that call into question standard notions of ownership, control, and coordination by price. We claim further that the new forms of collaboration diffusing rapidly through the world economy are in some ways as unsettling to the advanced countries as to transition economies; or, put another way, the transition economies are trying to find their way to market economies that are trying to find themselves.

If these findings are credited at all, they counsel at the least prudence in the dispensation of counsel, and greater circumspection still in the authoritative imposition of economic institutions in transition economies. At a minimum the advanced countries should not be aiming the establish organizational forms and patterns of competition in the transition economies that are being disavowed on their home grounds, nor, correlatively, should they dismiss every feature of the transition economies that deviates from the textbook notion of competition as a vestigial but potentially lethal attachment to central planning. Victory intoxicates. The fate of victorious generals who fight the last war is well known. History has not been kinder to victors who draw the terms imposed on the vanquished from their own war propaganda, or who neglect to learn the lessons of the successes and failures of their own wartime economies.

Footnotes

[2] In the US such _marxisant_ arguments draw on motifs found most clearly in (Rostow 1960).

Return to _Stabilization through Reorganization_ paper at footnote reference 2.


Return to _Stabilization through Reorganization_ paper at footnote reference 3.

[4] See, for examples close at hand, the discussion in (Coffee 1994; Stark 1994; Stern 1994).

Return to _Stabilization through Reorganization_ paper at footnote reference 4.

[5] For discussion of an adjustment system of these lines, see Shleifer, this volume.

Return to _Stabilization through Reorganization_ paper at footnote reference 5.

[6] Notice further that in this regard learning-by-monitoring relations differ from and resolve problems associated with relational contracts, the form of coordination often said to be suited to regulating collaborative exchanges in volatile environments. Relational contracts go beyond standard or neo-classical contracts in that they acknowledge the impossibility of specifying all contingencies in complex joint efforts and provide rules for arbitrating disputes arising from conflicting interpretations of the agreement (Williamson 1986, pp. 104-105). But constant arbitration produces a web of precedents and rules that so bind adjudication of disputes that, in a turbulent world, it becomes impossible to resolve fundamental disputes without threatening the understandings that maintain peace among the parties (Kolb 1983).

Return to _Stabilization through Reorganization_ paper at footnote reference 6.
[7] See, for example, the discussion in (Gao 1994; Ramseyer 1991; Sabel 1995).

[8] The notion of an interregnum between governance structures and the notion of a factor-controlled firm owe much to discussions with Reinier Kraakman and Ronald Gilson, who are, of course, not accountable for our debts.

[9] A speculative interpretation of key episodes of restructuring in, for example, the US and Germany is that outside directors or their equivalent are reducing the power of the managers at the head of the corporate hierarchy to encourage decentralization. Keeping track of the reorganization that ensues plainly absorbs the monitors' attention. But eventually they will be pressed to address the problem of how to monitor the new entity whose creation they are superintending; and it would be surprising if the same governance institutions that are good at decapitating hierarchies proved adept at supervising the operation of decentralized institutions.

[10] The ISO 9000 series originated in standards developed by the British government during World War Two to assure quality in munitions production. The rapid conversion of civilian firms inexperienced in munitions manufacture to military production, combined with wartime shortages of skilled workers, made quality problems almost unavoidable. As the enemy could not be expected to report the performance of munitions fired against them, methods were devised by which firms could secure the quality of their products by monitoring their production processes, and inspectors could evaluate the reliability of their self monitoring (Clements 1993), pp 6-7.

[11] (Osterman 1994) finds that some 30 per cent of firms surveyed had introduced at least one such innovation. Assuming that some of these firms consider such measures as experimental, but that there is little incentive to
multiply unpromising experiments, it is reasonable to raise the bar and count companies as having adopted the new model of organization only if they have in place at least three of the programs by which it operates. Only ten per cent of the firms in Osterman's survey meet that test (Teixeira and Mishel 1993).

Return to *Stabilization through Reorganization* paper at footnote reference 11.

[12] See, for example, (Company 1991a; Company 1991b), on file with the author. A composite of reports from the trade press and academic sources illustrates these developments in almost every industry. The most "innovative" of the big three US automobile makers, for example, now signs 4-year contracts with its suppliers, with whom it also co-develops modules and systems in just the way described (Helper 1994; Raia 1994). According to the vice president for procurement and supply and general manager of large car operations at Chrysler, suppliers "have seats at the table on every new car and truck project we undertake--and they're aboard from day one....More than 300 supplier personnel now have offices inside our Technical center...." (Raia 1994), p. 45 A Coopers and Lybrand survey found, as such increased participation would require, that "Midwest auto suppliers are adding engineering support in overwhelming numbers to meet auto makers' design demands" (Barkholz 1994). German auto makers establishing US subsidiaries are hiring executives from Japanese transplants and pursuing the same forms of collaboration with suppliers in an explicit effort to experiment with forms of organization that can then be applied in Germany (Lowell 1994); and so on.

Return to *Stabilization through Reorganization* paper at footnote reference 12.

[13] For example, despite widespread skepticism of their ability to act in concert (Zuckerman 1994), General Motors, Ford, and Chrysler, working through the Automotive Industry Action Group, have also agreed to standardize their supplier audits in conformance with the ISO standard. For example, second- and third-tier suppliers that pass muster in one firm's audit will not be reaudited by the others for at least two years (Plumb 1993). Two questions regarding management's responsibility in the maintenance of quality systems taken from the evaluation form provided to suppliers in anticipation of audits suggest the organizational criteria underlying the standard:

"Is a multi-disciplinary approach used in the design process with direct input in decision making?"
Is company level data focusing on competitors and/or appropriate benchmarks used for improving quality, productivity, and operation efficiency?" (GM 1994), pp. 8-9.

[14] The explosion of interest in certification under the ISO standard in developing countries is news. ISO certifications of Brazilian companies have increased from 18 to 410 in the last three years; government projections are that 5,500 firms will be certified by the end of 1997 (Brooke 1994). There are frequent references to ISO in the trade press as a "de facto minimum requirement for those wishing to compete globally." (Sprow 1992). p. 77.


[16] In a recent interview, Russian Deputy Prime Minister Aleksandr Shokhin confirmed the emergence of dynamic groups of firms throughout the Russian economy: "It is only today, in the fall of 1994, that we can say that the crisis is indeed beginning to acquire a structural character. What does that mean? In every industry, even in those which have fallen on very hard times, such as the textiles and the defense complex, there have emerged stable groups of leading enterprises which have not simply adapted themselves to the new, market circumstances, but which are quickly asserting themselves on the market, beating their rivals and showing vigorous growth... [these] groups of leaders each include 10, 15, or even 20 percent of all enterprises, depending on the individual industry" (Shokhin 1994).

[17] Estimation of that share is, in any case, difficult because surreptitious concentration of property has continued after privatization. See (Blasi 1994; Pistor 1993).
[18] For the view that the foundations of the market economy, once determined
by experiment, are for practical purposes unchanging, see (Hayek 1973).

Return to paper at footnote reference 18.

Return to Stabilization Through Reorganization paper.

Go to top of paper.

Return to list of available titles.

BIBLIOGRAPHY

Alam, Ghayur. Impact of NCMTs on Economies of Scale and Scope: the Case
of India. Institute for New Technologies, United Nations University,

Amsden, Alice H. Asia's Next Giant: South Korea and Late Industrialization.

Ansal, Hacer. The Impact of New Technology on Economies of Scale and
Scope: Evidences from Turkish Case Study. Institute for New Technologies,

Aoki, Masahiko. Information, Incentives, and Bargaining in the Japanese

Asanuma, Banri. "Manufacturer-Supplier Relationships in Japan and the
Concept of Relation-Specific Skill." Journal of the Japanese and International

Barkholz, David. "Suppliers Add Engineers to Meet Maker's

Blanchard, Olivier, Rudiger Dornbusch, Paul Krugman, Richard Layard, and
Lawrence Summers. Reform in Eastern Europe. WIDER World Economy
Group, 1990.


Dittus, Peter and Stephen Prowse. *Corporate Control in Central Europe and Russia: Should Banks Own Shares?* Paper presented at the Conference on


Humphrey, John, ed. Industrial Organization and Manufacturing Competitiveness in Developing Countries. Special Issue of World Politics 23 (1 January, 1995), 1995.


Sabel, Charles F., John R. Griffin, and Richard E. Deeg. "Making Money Talk: Towards a New Debtor-Creditor Relation in German Banking." In Relational


