Do Firms Plan?

Richard N. Langlois

Department of Economics
The University of Connecticut
U63 Storrs, CT 06269-1063 USA
(203) 486-3472 (phone)
(203) 486-4463 (fax)
Internet: Langlois@UConnvm.UConn.edu

FIRST DRAFT

January 1994

Paper for the Conference "Frontières de la firme,"
Université Lumière/Lyon 2, January 28, 1994, Lyon, France

English version

> When uncertainty is present and the task of deciding what to do and how to do it takes the ascendancy over that of execution, the internal organization of the productive group is no longer a matter of indifference or a mechanical detail. Centralization of this deciding and controlling function is imperative, a process of "cephalization," such as has taken place in the evolution of organic life, is inevitable, and for the same reasons as in the case of biological evolution.
>
> — Frank Knight (1921, p. 268)

> There is no reason why a polycentric order in which each element is guided only by rules and receives no orders from a centre should not be capable of bringing about as complex and apparently as "purposive" an adaptation to circumstances as could be produced in a system where a part is set aside to preform such an order on an analogue or model before it is put into execution by the larger structure. In so far as the self-organizing forces of a structure as a whole lead at once to the right kind of action (or to tentative actions which can be retracted before too much harm is done) such a single-stage order need not be inferior to a hierarchic one in which the whole merely carries out what has first been tried out in a part. Such a non-hierarchic order dispenses with the necessity of first communicating all the information on which its several elements act to a common centre and conceivably may make the use of more information possible than could be transmitted to, and digested by, a centre.
>
> — F. A. Hayek (1967, p. 74)

Introduction.

The late F. A. Hayek is remembered for what we may call the information-processing critique of central planning.[1] The decentralized price system, he argued, has enormous advantages over planned systems in the critical areas of information transmission and the use of knowledge. In many minds, the recent fall of the Soviet-style economies in Eastern Europe has decisively made that case. But not all are persuaded. The center of gravity of thinking about central planning has long since shifted its attention away from Soviet-style planning toward a less-comprehensive vision of government administrative control to which the demise of the Eastern European economies speaks less clearly. Moreover, the model of central planning that originally impressed Lenin — the modern business

[1] The nature of this argument is widely misunderstood, however. For a correct interpretation, see Lavoie (1985).

corporation — remains in many minds a formidable piece of empirical evidence in favor of the possibility and desirability of centralized administrative control.

At some level, indeed, the modern neoclassical theory of the firm gives credence to this view. In his seminal article in the 1930s, Ronald Coase noted the many much-discussed virtues of the price system, including those Hayek stressed. If the price system is such an effective mechanism for resource allocation, Coase then asked, why do entrepreneurs supersede the market by organizing transactions within a firm? His answer was that there is sometimes a cost to using the price system or, to put it another way, there are benefits to what we can loosely call administrative or non-market modes of resource allocation. And some of these benefits are actually in the nature of informational advantages: entrepreneurs in some cases have knowledge about productive resources that is superior to what one can gain from price signals alone. If firms are actually superior to markets on this ground, then surely there can be no general information-processing case against planning.

Like most paradoxes, this one disappears on closer examination. For example, it is easy enough to dismiss the implied syllogism, typified in John Kenneth Galbraith's portrayal of the New Industrial State, that if a little planning is good, a lot must surely be better. The firm exists in and is constrained by a market system of precisely the type Hayek praised, and its planning ability is strictly limited. This is a quite sensible response. But it leaves intact the impression that Hayek's theory of the market is not fully general: that the business firm is an anomaly or lacuna in his theory of economic order.

This paper takes a different tack. It argues that Hayek's theory of spontaneous order can in fact include the case of such apparently purposive and extra-market forms as the business firm. To put it another way, Hayek's theory of the market as a spontaneous

order has lessons for the theory of the firm that the mainstream Coasean approach has yet fully to absorb.

Specifically, this essay picks up a number of suggestions in Hayek's evolutionary theory of social institutions and uses them to draw a picture of the firm that is somewhat different from what one finds on the easel of neoclassical transaction-cost analysis. In the Hayekian picture, firms and markets are both systems of rules of conduct. And both are systems for economizing on knowledge in the face of economic change, albeit quite different kinds of knowledge and change. Moreover, there is a sense in which the firm exists not in order to centralize control over knowledge but — like the market — precisely to *decentralize* the use of knowledge. In the end, I will argue, the firm is not a model for political planning for one very simple reason: the firm does not plan.

Institutions: planned and unplanned.

Hayek's writings on the informational character of the market[2] are actually part of a larger schema encompassing a theory of social institutions. For Hayek, as for most others who think about social institutions, an institution is a regularity of behavior, and the study of institutions is the study of "systems of rules of conduct" (Hayek 1967). Drawing on a tradition that dates through Carl Menger in the nineteenth century to the Scottish Enlightenment of the eighteenth century, Hayek focuses on institutions that are "spontaneous orders," that is, abstract patterns of behavior whose structure emerges organically from the interplay of individual intention rather than from any grand scheme.

Both parts of the term "spontaneous order" are of interest. What makes a system of rules spontaneous rather than planned is, in effect, a question of origin. In Menger's (1963) terms, such a system can be either *organic* or *pragmatic* in origin. Unlike an

2 Of which Hayek (1945) is the best known.

organic system of rules, a pragmatic structure is one set in motion by conscious intention, and thus, in a sense not yet made precise, such a structure is a creature of planning. At the same time, a system of rules in Hayek's theory can be either an *order* or an *organization.* In an order, the rules that guide behavior are abstract and independent of purpose; in an organization, those rules guide behavior toward more-or-less concrete ends.

This gives us four possibilities, as suggested in figure 1 (Vanberg 1989; Langlois 1993b). Spontaneous orders include such abstract and unplanned institutions as language, the Common Law, money (in Menger's theory), and "the market," broadly understood, itself. Are there any pragmatic orders? If constitutional economists like Buchanan (1990) are right, it is possible consciously to design abstract systems of rules, even if, as Hayek would insist, such designing must consist almost entirely in the selective imitation of rules that evolved spontaneously in other times and places.

Organic(spontaneous) orders	Organic organizations
Pragmatic orders	Pragmatic organizations

Figure 1.

The firm, of course, is an organization, and it therefore falls necessarily in the right-hand column. The upper right-hand box — organic organizations — may seem puzzling. One possible example that comes to mind is government bureaucracies. In the Public Choice view of government, various government organizations (which are oriented toward relatively concrete purposes like defense, redistribution, the provision of public goods, etc.) arise in the interplay of private interests each seeking to divert rent streams in

their own direction or to protect those they already enjoy; that is to say, such organizations do not arise because of the grand design of any individual or group.

Needless to say, we should expect to find the firm in the lower right-hand box. Surely (most? all?) firms are of pragmatic origin, in the sense that an individual or relatively small group of individuals starts a firm with some concrete purpose in mind. We may even want to say that the formation of a firm involves "planning," although we will have eventually to make more precise what exactly the term means.

Now, if we consider only the upper left and lower right boxes in figure 1, we have the familiar Coasean dichotomy[3] between the market (a spontaneous order) and the firm (a pragmatic organization). The portrayal of the firm elsewhere in neoclassical theory reinforces this dichotomy. For the neoclassical firm is not only pragmatic in origin, it is pragmatic by its very nature. That is, the neoclassical firm (at least arguably) is not a system of rules of conduct at all and therefore not an institution.[4] Rather, it is a decision-making unit that consciously surveys a well-defined problem-situation in search of the best course of action. This is by no means inappropriate for the purposes of Marshallian comparative-statics.[5] But, if taken too seriously, the neoclassical portrayal obviously obscures the fine structure and inner workings of the firm as institution. It also leads one quite naturally to the false conclusion that planning — conscious, rational, forward-looking decision-making — is what a firm is all about.

In Hayek's theory, spontaneous orders emerge through an evolutionary learning process. Goal-directed action at the individual level leads to the casting up of a wide

---

[3] In his fiftieth-anniversary lectures on "The Nature of the Firm," Coase (1988) listed as one of his regrets the sharpness with which he had cast that distinction in 1937.

[4] Unless, of course, we view the maxim "maximize profit" as a behavioral rule by default. For a relevant discussion, see Langlois (1990) and Langlois and Csontos (1993).

[5] For some of the relevant methodological issues, see Langlois (1986), Langlois and Koppl (1991), and Langlois and Csontos (1993)

variety of experimental or conjectural behavior patterns. Those patterns of behavior that turn out to be efficacious in relation to the physical environment and the behavior patterns of others are more likely to be repeated. And, with repetition, such behavior patterns become institutions. If, however, we also view organizations as patterns of behavior, then it is quite reasonable to see the process of learning within such organizations as broadly similar to the evolution of more abstract social institutions. The important question becomes: how does the process of learning, and the nature of the rules themselves, differ between abstract institutions and goal-directed organizations like the firm?

Rules, learning, and capabilities.

One approach to connecting the theory of organizations with the theory of social institutions has taken its cue from Constitutional Economics (Gifford 1991; Vanberg 1992). In this view, organizations are indeed systems of implicit and explicit rules, and they have much in common with political systems. As in the dominant transaction-cost theory of the firm (Williamson 1985), when highly specific assets are necessary to generate quasirents from cooperation in production, the firm emerges because it better protects the cooperating parties from the threat of mutual expropriation or "hold up" than does market contracting. In this case, the firm's superiority lies in its constitution, for, as in the political world, a well-designed constitution is a system of rules that constrains group members from unproductive rent seeking and directs their energies toward productive rent seeking.

In essence, then, the constitutional approach to the firm seeks a closer tie between the lower right-hand and lower left-hand boxes in figure 1. By contrast, Hayek's theory of the evolution of social institutions would take us instead in a vertical direction.

When we say that an institution is a system of rules, we can mean the term "rules" in at least two senses (Langlois 1993b). In one sense — and this is the sense most often

meant in Constitutional Economics — a rule is a side-constraint on behavior that is not otherwise rule-following. For example, the implicit and explicit rules of a constitution might constrain the conscious, deliberate quest for rents. In a different, if not completely unrelated,[6] sense, however, a rule can be not so much a constraint as a cause of action, that is, it can be a habit or custom. In this sense, the agent is "programmed" to behave in certain predictable ways (Langlois and Csontos 1993). The most influential version of this idea comes from the work of Herbert Simon (1982), who argues that, because agents suffer from "bounded rationality," they must follow rules or "heuristics" of behavior rather than consciously directing their actions.[7] In the hands of Nelson and Winter (1982), this idea has translated into a theory of the evolution of the industry in which firms are selected on the basis of the "routines" they follow. Routines are rules in Simon's sense, rules that (as Hayek would agree) are often tacit and impossible to transmit to others without a costly process of apprenticeship.

Influenced by Nelson and Winter and others,[8] a growing group of writers is today applying the ideas of rule-following to questions of organizational form (Teece, Pisano, and Shuen 1992; Langlois and Robertson 1993b). These writers point out that the rules

---

[6] In Hayek, rules seem to play these two roles simultaneously: they are both constraints on conscious behavior and programmed routines. "Many of the institutions of society which are indispensable conditions for the successful pursuit of our conscious aims are in fact the result of customs, habits or practices which have been neither invented nor are observed with any such purpose in view. We live in a society in which we can successfully orientate ourselves, and in which our actions have a good chance of achieving their aims, not only because our fellows are governed by known aims or known connections between means and ends, but because they are also confined by rules whose purpose or origin we often do not know and of whose very existence we are often not aware. ... Man is as much a rule-following animal as a purpose-seeking one. And he is successful not because he knows why he ought to observe the rules which he does observe, or is even capable of stating all the rules in words, but because his thinking and acting are governed by rules which have by a process of selection been evolved in the society in which he lives, and which are thus the product of the experience of generations." (Hayek 1973, p. 11.)

[7] In a recent interview, Simon (1992) recognizes some of the similarities between his ideas and those of Hayek.

[8] The others include Edith Penrose (1959), G.B. Richardson (1972), and Alfred D. Chandler, Jr. (1977, 1990).

— the routines — that agents follow within an organization embody (often tacit) knowledge that is useful for action. This knowledge constitutes the *capabilities* of the firm.

As I've already suggested, the capabilities view of the firm differs from the constitutional view in its conception of rules as primarily routines rather than primarily constraints on conscious behavior. But it also differs from the constitutional approach — and from the mainstream of transaction-cost theory — in seeing the essence of organizational structure as lying not in the domain of transaction but in the domain of production. To explain the structure of the firm primarily in terms of its ability to constrain unproductive rent-seeking behavior is to ignore the more difficult and important problem "the constitution" of the firm — its repertoire of capabilities — is actually directed toward solving, namely, what to produce and how to produce it.

Obviously, the approach I'm sugesting is not exclusive of the constitutional approach. (Indeed, it *is* a kind of constitutional approach, not merely in that it sees the system of rules and routines as "constituting" or making up the firm but also in that those rules also serve the functions of constraint and governance to which theorists like Vanberg point.) But a constitutional approach that focuses on the function of governance runs the danger of ignoring the function of a system of rules in production. To put it another way, both transaction-cost economics and the constitutional paradigm tend to draw attention toward the ways in which organizational forms prevent unproductive rent-seeking — and thus away from the ways in those rules generate productive rent-seeking. Moreover, since rules-as-routines are constraining of behavior as well as motivating of behavior, it is entirely likely that the rules that embody knowledge about production are also the rules that solve the problems of rent-appropriation, monitoring, etc., within the organization. Thus the constitutional approach, like the transaction-cost approach, is likely to ignore the

extent to which it is also *production itself*, not just some freestanding "governance structure," that typically serves the function of constraining unproductive rent-seeking.[9]

By thinking about the ways in which productive capabilities are acquired, transmitted, and protected, then, we can begin to formulate a dynamic or evolutionary theory of productive institutions, including, especially, firms.

Spontaneity and planning in the market order.

We began with the Hayekian distinction between the abstract rules of an order and the relatively more concrete and goal-directed rules of an organization. This is an important distinction that must surely inform any depiction of the firm as an evolving systems of rules: the "constitution" of the firm is surely different from that of the market. As Thomas Sowell (1980, p. 41, emphasis original) insists, "'the market' is nothing more than an *option* for each individual to choose among numerous existing institutions, or to fashion new arrangements suited to his own situation and taste." Or, as Brian Loasby (1993) makes more precise, the market is an institution that provides options for future contracts, whereas the firm is an institution that consists in contracts for future options. At the same time, however, one can argue that firm and market are ultimately made of the same "stuff," namely capabilities. Both organizations and markets are composed of individuals who know how to do certain things and who pursue various goals. The issue is how — and why — those capabilities sometimes cohere into an organization.

[9] Gilson and Roe (1993) have pointed out that much recent scholarship on Japan has these same blinders. Most authors attempt to explain the functioning of Japanese institutions in terms of their ability to reduce transaction costs and to eliminate problems of rent-sharing, monitoring, etc. — without noticing that these institutions also serve the function of reducing production costs. Moreover, it is partly *because* these institutions are effective in production that they reduce (as an unintended consequence) transaction and governance costs.

Langlois and Robertson (1993b) have proposed a theory of the boundaries of the firm that takes capabilities and routines as the fundamental unit of analysis.[10] In this theory, one of the principal determinants of the form business institutions will take is the nature of the uncertainty — or, if you prefer, the innovation — involved. The second critical factor is the existing structure of relevant capabilities, including both the substantive content of those capabilities and the organizational forms under which they are deployed in the economy.

One pattern typical in the history of business institutions emerges when a *systemic* innovation is feasible that would create significant new value. To be successful, such a systemic innovation requires simultaneous change in several stages of production.[11] This would likely render obsolete some existing assets and, at the same time, call for the use of capabilities not previously applied in the production of the product. If, in addition, the existing capabilities are under separate ownership — or, to put it loosely and somewhat inaccurately, the existing production system is coordinated through market mechanisms — then we arrive at one important rationale for the institution of the business firm. Under this scenario, the business firm arises because it can more cheaply redirect, coordinate, and where necessary create the capabilities needed to make the innovation work. Because control of the necessary capabilities in the firm would be relatively more concentrated than in the existing organizational structure, such a firm could overcome not only (1) the recalcitrance of asset-holders whose capital would have creatively to be destroyed but also

[10] The remainder of this section draws on Langlois and Robertson (1993a).

[11] This usage follows Teece (1986). The opposite of a systemic innovation is an *autonomous* one, in which change can proceed in one stage of production without requiring coordination with other stages.

(2) the "dynamic" transaction costs[12] of informing and persuading new input-holders whose capabilities are necessary to the success of the innovation.

This scenario accurately describes the situation surrounding the creation and growth of many of the enterprises Alfred Chandler chronicled in *The Visible Hand* (1977). With the lowering of transportation and communications costs in the America of the nineteenth century, there arose profit opportunities for those who could create mass markets and take advantage of economies of scale in mass production. Examples range from steel and farm machinery to cigarettes and branded goods. In all these cases, profitable improvements in product attributes and costs required the creative destruction of existing decentralized systems of production and distribution in favor of systems involving significantly different capabilities. Gustavus Swift's creation of the system of refrigerated meat-packing (Chandler 1977, pp. 299-302) was a systemic innovation that rendered obsolete the older network of live-animal distribution. Swift was forced to integrate into both refrigerated railroad cars and wholesale distribution in order to overcome the opposition of vested interests and to persuade others in the chain of production of the value of his innovation (Silver 1984, pp. 28-29).

In this picture of the rationale for the firm, the superiority of centralized control of capabilities lies in the ability to redeploy those capabilities in the service of an entrepreneurial opportunity when such redeployment would otherwise be costly. The firm overcomes the "dynamic" transaction costs of economic change.

However, the scenario just depicted is by no means the only important one, let alone the only possible one. The superiority of the firm rested on its ability cheaply to redeploy, coordinate, and create necessary capabilities in a situation in which (1) the

[12] More generally, dynamic transaction costs — or, more generally still, dynamic *governance* costs — are the costs of not having the capabilities you need when you need them. (Langlois and Robertson 1993b, chapter 2).

entrepreneurial opportunity involved required systemic change and (2) the necessary new capabilities were not cheaply available from an existing decentralized or market network. In situations, however, in which one or both of these conditions is missing, the benefits of the firm are attenuated, and its rationale slips away.

In many circumstances, for example, change — even sometimes rapid change — may proceed in autonomous fashion. A prime example of this occurs when the attributes buyers desire can be provided in the form not of a preset package but of a *modular system* (Langlois and Robertson 1993, chapter 4). Stereo systems and IBM-compatible personal computers are prominent examples, but there are many others as well, including cases in the realm of process technology (Langlois 1992). For present purposes, the key feature of a modular system is that the connections or "interfaces" among components of an otherwise systemic product are fixed and publicly known. Such standardization creates what we might call *external economies of scope* (Langlois 1992) that substitute in large part for centralized coordination among the wielders of complementary capabilities. This allows the makers of components to concentrate their capabilities narrowly and deeply and thus to improve their piece of the system independently of others.

Moreover, in highly developed economies, a wide variety of capabilities may be available for purchase on ordinary markets, in the form either of contract inputs or finished products. At the same time, it may also be the case that the existing network of capabilities that must be creatively destroyed (at least in part) by entrepreneurial change is not in the hands of decentralized input suppliers but is in fact concentrated in existing large firms. The unavoidable flip-side of seeing firms as possessed of capabilities — and therefore as accretions of habits and routines — is that such firms are quite as susceptible to institutional inertia as is a system of decentralized economic capabilities. Even though firms may have a strategic decision-making function, they may yet be unable to reorient themselves in the face of rapid change (Langlois and Robertson 1993, chapter 6).

Economic change has in many circumstances come from small innovative firms relying on the capabilities available in the market rather than existing firms with ill-adapted internal capabilities.

Sometimes, of course, large firms are able to catch and overtake the innovators — or the innovators themselves become large firms, as in many of the nineteenth-century cases Chandler chronicles. But when the innovation involved is not systemic, innovation may actually proceed faster in a decentralized system because of its ability to utilize a more diverse set of information (Nelson and Winter 1977). A case in point is the present-day microcomputer industry. Here technological change, volume production, and unit-cost reductions are proceeding at a pace to rival any Chandlerian industry in history. But these gains have come in the virtual absence of large firms integrated across the stages of microcomputer production. Although some of this advance is surely the result of internal economies in firms like Intel and Microsoft, even those firms are relatively narrowly focused. Large established firms, which have been able in other industries to overtake innovative first movers, have a record of dismal failure in this industry (Langlois and Robertson 1993, chapter 4). They have missed opportunities at every turn, and have shown themselves unable to compete with the more nimble independent marketer-assemblers. The Japanese have made few inroads. And IBM's record has been that of a technological follower living off its brand-name capital. Indeed, IBM's success with the original standard-setting PC in 1981 was based on a strategy of buying inputs on the market rather than according its internal divisions their accustomed privileged access to resources — a strategy the firm subsequently abandoned to its detriment.

Do firms plan?

We are now in a position to shape a tentative outline of the answer to the question this essay posed. Do firms plan? No, they don't. Or, rather, they "plan" in a sense quite different from the meaning usually given that term in discussions of central planning.

At the most abstract level, what it means for a system to plan is that, as Hayek (1967, p. 74) says, the system somehow "preforms on a model" the actions it takes. That is, the system sets aside a part of itself (like a brain in a biological system) with which to create a model of the future. The system then uses that model as a guide to the courses of action the whole will take. Do firms plan in this sense? Of course they do. Indeed, Frank Knight (1921, p. 268) is right in saying that the very rationale of the firm lies in the need for "cephalization" of this sort.

It's important to notice what this *doesn't* mean, however. The firm does not plan — the firm does not exist — because "cephalization of the deciding and controlling function" (Knight 1921, p. 268) is innately superior to the polycentric or non-cephalic alternative under all circumstances. As I have tried to show — and as Knight understood — cephalization is (sometimes) necessary, or at least (sometimes) superior to the available alternatives, "when uncertainty is present." Thus, the value of a cephalic order does not lie in its ability accurately to forecast the future, an ability that is essential to central planning as it is commonly understood. Indeed, it is precisely in situations of structural uncertainty[13] or radical economic change that "planning," understood along traditional rationalist lines, is least effective (Lavoie 1985). The more uncertain — the more unpredictable — the future, the less likely that any model of that future will lead to desirable courses of action. As I have argued, it is not the *correctness* of the "plan" the

[13] On structural uncertainty see Langlois (1984). For an argument that this was also Knight's understanding of the term uncertainty, see Langlois and Cosgel (1993).

firm embodies that counts but rather its *synoptic* character. A cephalic system of rules — a firm — arises because, when a possibly superior configuration of rules differs systemically from the existing configuration, subsystems in which the deciding and controlling functions are centralized have an advantage in bringing about the necessary adjustments. That is, as I have argued, such subsystems are better at overcoming dynamic transaction costs under particular circumstances.

Thus firms are not superior *ex ante* because they "plan" in the rationalist sense, even if they may tend to look superior on this ground *ex post*. In an evolutionary system, whether it be a biological one or a cultural one, it is only adaptedness *ex post* that counts. Foresight is of limited usefulness, and it may be a positive detriment to the extent that it is based on a model formed from a set of past experiences that have become inappropriate. Thus, firms exist not because they plan but because they *planned*, that is, because they (or their founders, at any rate) set in motion a reconfiguration of capabilities in the economy. Even this kind of planning need not be as rational(ist) as one might think. As Schumpeter (1934) insists, entrepreneurship requires something more in the nature of intuition — a kind of vision. This is still planning in Hayek's sense. The visionary entrepreneur has a model of the future in his or her head, even if that model cannot be stated in words or derived from explicit premises. (Entrepreneurship too is an economic capability consisting in part of tacit knowledge.) Thus the firm is less a matter of "planning" than it is of coherent conjecture, of hypothesis (Loasby 1976; Eliasson 1990).

Notice that, in keeping with figure 1, I have so far stressed the question of origins. I have tried to suggest why firms arise and the nature of the "planning" their origins involve. But the matter of origin is logically quite distinct from the issue of ongoing functionality, that is, from the question of how, once established, a system of rules maintains itself — and changes — over time. And it is precisely in the context of ongoing functionality that much confusion about "planning" within the firm arises.

In the entrepreneurial theory of the firm I sketched above, the rationale for the firm lies in the ability of central direction to reconfigure a system of rules of conduct. How that system develops — and, in particular, whether and to what extent it remains a coherent organization — over time will depend on the relative learning abilities of the organized subsystem itself and of the larger system in which it is imbedded. In effect, the founding (or, in some cases, the "reengineering") of the firm is a historical event that keys a path-dependent process of learning through the accretion and improvement of routines. Under some — but by no means all — circumstances, such a process may result in a large, complex organization. And, as was once the case for biological organisms, such coherent organizations may easily be misinterpreted as being the creatures of conscious design. The *founding* of Apple Computer in 1976 was surely an act of conscious design, even if founders Jobs and Wozniak had quite different visions of what the organization was and could become. But it would be nonsense to say that the corporation called Apple Computer that exists *today* is the result of conscious design. The corporation grew in what is in effect an organic fashion through the slow accretion of routines and capabilities. A firm thus begins in the lower right-hand box of figure 1. But if it lives very long, it eventually moves into the upper right-hand box as it grows and learns organically.

As I've already hinted, the neoclassical portrayal of the firm as a rational decision-making unit rather than as a system of rules of conduct contributes to a widespread intentional fallacy in the understanding of the large firm. As a number of writers have suggested in various contexts, the neoclassical model implies that the firm has an unbounded capacity for decision-making and strategic reorientation. But even writers who are quite inclined to see the firm as an institution sometimes tend to invest that institution with far more unbounded managerial capabilities than an evolutionary approach would suggest as warranted. For example, it is possible to read Alfred Chandler (1990) and some of his followers (Lazonick 1991) as investing the institution of professional

management with an almost heroic quality. In this reading, the "managerial revolution" that replaced the family firm with salaried professionals bestowed upon the large corporation abilities in the administration of existing structures and in innovation that are both inherently superior to those of the market.

David Hume, always a good antidote to excessive rationalism, long ago noticed the tendency to ascribe the abilities of an evolved order to the conscious design of those who wield capabilities inherited from the past.

> Were this world ever so perfect a production it must still remain uncertain, whether all the excellencies of the work can justly be ascribed to the workman. If we survey a ship, what an exalted idea must we form of the ingenuity of the carpenter, who framed so complicated, useful, and beautiful a machine? And what surprise must we entertain, when we find him a stupid mechanic, who imitated others, and copied an art, which, through a long succession of ages, after multiplied trials, mistakes, corrections, deliberations, and controversies, had been gradually improving? Many worlds might have been botched and bungled, throughout an eternity, ere this system was struck out: Much labour lost: Many fruitless trials made: And a slow, but continued improvement carried on during infinite ages in the art of world-making (Hume 1980, p. 36).

And what was true of Hume's workman is also arguably true of Chandler's manager.

This is a little too facile, of course. Let me try to make the argument a bit more carefully. There are two issues: (1) the ability of managerial hierarchies to administer existing structures and (2) the ability of managerial hierarchies to innovate. I will take these in order.

I have been at some pains elsewhere (Langlois 1993a) to argue that firms are not inherently superior to markets in the administration of existing structures of capabilities. The entrepreneurial theory of the firm suggests that firms are born in the crucible of economic change, often change of the entrepreneur's own making. That a firm persists over time suggest that it is in some kind of stasis with its environment, which means that

the organization can fine-tune its routines to that environment, which in turn may have a feedback effect that further stabilizes the environment. But if the original *raison d'être* of the coherent organization is its ability to redeploy capabilities, it is not clear that such coherence accords the firm any superiority in the quite different task of refining capabilities for a steady state environment. Markets (meaning an increasingly decentralized or polycentric organization) have the advantage of high-powered incentives (Williamson 1985), whereas, in the true Marshallian long run, the transaction costs of arms'-length exchange decline as behavior becomes more routine and external social institutions arise to mitigate opportunism (Langlois and Robertson 1993b, chapter 2).

Indeed, decentralization is very much the imperative for any organization once it becomes successful and established. The case of Henry Ford is instructive. Langlois and Robertson (1993b, chapter 3) argue that Ford's success with the Model T resulted in large part from his strategy of vertical integration, which allowed a systemic reinvention of the process of making automobile parts, a process that had previously been the domain of a decentralized network of suppliers. Yet, once that new system of production was in place, the system could be (re)decentralized along the new lines he and his staff had marked out.

> We started assembling a motor car in a single factory. Then as we began to make parts, we began to departmentalize so that each department would do only one thing. As the factory is now organized each department makes only a single part or assembles a part. A department is a little factory in itself. The part comes into it as raw material or as a casting, goes through the sequence of machines and heat treatments, or whatever may be required, and leaves the department finished. It was only because of transport ease that the departments were grouped together when we started to manufacture. I did not know that such minute divisions would be possible; but as our production grew and departments multiplied, we actually changed from making automobiles to making parts. Then we found that we had made another new discovery, which was that by no means all of the parts had to be made in one factory. It was not really a discovery — it was something in the nature of going around in a circle to my first manufacturing when I bought the motors and probably ninety per cent. of the parts. When we began to make our own parts we practically took for granted that they all had to be made in the one factory — that there was some special virtue in having a single roof over the manufacture of the entire car. We have now developed away from this. ... So now we are on our way back to where we started from — excepting that, instead of

> buying our parts on the outside, we are beginning to make them in our own factories on the outside (Ford and Crowther 1923, pp. 83-84).

Once the innovation of mass production of parts became assimilated and disseminated, centralization became more costly and less beneficial. At Ford, the ensuing decentralization took place within a vertically integrated ownership structure for reasons of what it is now fashionable to describe as path dependency.

Now, one of the central arguments associated with the work of Chandler is that the managerial revolution was accompanied by the M-form organizational structure. The M-form is in fact an innovation in decentralization, separating out the strategic function of management from the day-to-day function of administration. Thus relieved of day-to-day concerns, top managers, in this view, are free to focus their attention on new profit opportunities and on the problems of economic change facing the company. In this sense, then, the M-form gave the modern corporation the ability both to manage existing structures well and to reorient those structures strategically when necessary. And all of this is no doubt true to some extent.

On the one hand, however, it is by no means clear that managerial hierarchies have been as innovative in practice as this theory would suggest. Chandler and Lazonick both cite the example of Britain in the late nineteenth and early twentieth centuries, where "personal capitalism" — meaning firms in which a strong individual or family retained some measure of both day-to-day and strategic control — failed, in their view, relative to the professionally managed firms of the United States. One has to keep many *cetera* (like the extent of the market) *paria* in such a comparison, however. And anyone inclined to accept personal capitalism as the cause of British failure might want to remember that the IBM of the early 1960s, which made a brilliant gamble on the 360 series of mainframes, was a "family firm" under the tight control of Thomas Watson, Jr., whereas the IBM of

the 1980s, which failed to seize the opportunity of the personal computer, was a professional managerial hierarchy (Carroll 1993).

Moreover, recent work on the capabilities theory of the firm (Teece, *et al.*, 1993) has cast theoretical doubt on the ability of firms — even M-form firms — to do all things equally well. In this new view, firms who distance top management too greatly from day-to-day productive operations run the risk of straying from their "core competences" and thereby losing the competitive advantages those competences create. Managerial capabilities are not as unbounded as it once seemed, and there may well be an unavoidable trade-off between the ability to administer existing routines effectively and the ability to create new routines.

Abstractness and economic change.

Despite my skepticism about managerial hierarchies, I do think there is an important lesson in the theory of the M-form structure. In fact, I want to propose this lesson as a general hypothesis, albeit one in need of further elaboration and refinement.

Williamson (1985, pp. 279-285) gives a cybernetic interpretation to the M-form: the separation of the strategic function from the function of day-to-day administration is effectively a separating out of deviations in kind (what we can call structural variation) from deviations in degree (parametric variation). We can give this a Hayekian twist by noting that the rules or routines that the strategic managers follow are necessarily more abstract than those of the day-to-day managers, who must deal with the concrete details. To the extent, then, that managers at the strategic level are able to redirect the lower level capabilities of the firm, it is precisely because they possess more abstract capabilities. Clearly, managers at the day-to-day level can adjust their routines to deal with small variations in the environment. Managers at the strategic level, free from the burdens of

concrete administration, may be able to deal with more severe or qualitatively different variations. As the 1980 and early 1990s have made clear, however, even teams of strategic managers are often unable to redirect lower-level capabilities effectively, and even more abstract institutions — like the market for corporate control or the bankruptcy laws — must come into play. As Hayek suggests, the more abstract the rules of a system, the better able that system is to coordinate a diversity of concrete purposes. Concrete rules are limited by the purposes they embody, and so are necessarily ill-adapted to circumstances that necessitate a change — especially an unpredictable change — of concrete goal.

The hypothesis I propose generalizes this idea: *the more radical the change — the more radical the deviation from the customary path — the more abstract will be the institutions necessary to change, create, or otherwise redirect concrete capabilities in an effective direction.*

If this hypothesis is right, then, the best way for an organization to plan for the future, especially an unpredictable future, is to emulate in some degree a spontaneous order.

Bibliography.

Buchanan, James M. 1990. "The Domain of Constitutional Economics," *Constitutional Political Economy* **1**(1): 1-18.

Carroll, Paul B. 1993. *Big Blues: The Unmaking of IBM.* New York: Crown Publishers.

Chandler, Alfred D., Jr. 1977. *The Visible Hand: the Managerial Revolution in American Business.* Cambridge: the Belknap Press of Harvard University Press.

Chandler, Alfred D., Jr. 1990. *Scale and Scope: the Dynamics of Industrial Capitalism.* Cambridge: the Belknap Press of Harvard University Press.

Coase, Ronald H. 1937. "The Nature of the Firm," *Economica* (N.S.) **4**: 386-405 (November).

Coase, Ronald H. 1988. "The Nature of the Firm: Origin, Meaning, Influence," *Journal of Law, Economics, and Organization* **4**(1), Spring.

Eliasson, Gunnar. 1990. "The Firm as a Competent Team," *Journal of Economic Behavior and Organization* **13:** 275-298.

Ford, Henry, with Samuel Crowther. 1923. *My Life and Work*. Garden City: Doubleday.

Galbraith, John Kenneth. 1968. *The New Industrial State.* Boston: Houghton-Mifflin.

Gifford, Adam. 1991. "A Constitutional Interpretation of the Firm," *Public Choice* **68**: 91-106.

Gilson, Ronald J. and Mark J. Row. 1993. "Understanding the Japanese Ketretsu: Overlaps Between Corporate Governance and Industrial Organization," *Yale Law Journal* **102:** 871-906.

Hayek, F. A. 1945. "The Use of Knowledge in Society," *American Economic Review* **35**(4): 519-530.

Hayek, F. A. 1967. *Studies in Philosophy, Politics, and Economics.* Chicago: University of Chicago Press.

Hayek, F. A. 1973. *Law, Legislation and Liberty.* Volume I: Rules and Order. Chicago: University of Chicago Press.

Hume, David. 1980. *Dialogues Concerning Natural Religion and the Posthumous Essays.* Indianapolis: Hackett Publishing.

Knight, Frank H. 1921. *Risk, Uncertainty, and Profit.* Boston: Houghton Mifflin.

Langlois, Richard N. 1984. "Internal Organization in a Dynamic Context: Some Theoretical Considerations," in M. Jussawalla and H. Ebenfield, eds., *Communication and Information Economics: New Perspectives.* Amsterdam: North-Holland, pp. 23-49.

Langlois, Richard N. 1986. "Rationality, Institutions, and Explanation," in R. N. Langlois, ed., *Economics as a Process: Essays in the New Institutional Economics.* New York: Cambridge University Press, pp. 225-55.

Langlois, Richard N. 1990. "Bounded Rationality and Behavioralism: A Clarification and Critique," *Journal of Institutional and Theoretical Economics* **146**(4): 691-695 (December).

Langlois, Richard N. 1992. "Capabilities and Vertical Disintegration in Process Technology: The Case of Semiconductor Fabrication Equipment." Working Paper 92-10, Consortium on Competitiveness and Cooperation, University of California, Berkeley, November.

Langlois, Richard N. 1993a. "Capabilities and Coherence in Firms and Markets," Paper for the Conference on Evolutionary and Resource-based Approaches to Strategy, August 27-29, Copenhagen. (To appear in a volume edited by Cynthia Montgomery.)

Langlois, Richard N. 1993b. "Orders and Organizations: Toward an Austrian Theory of Social Institutions," in Bruce Caldwell and Stephan Böhm, eds., *Austrian Economics: Tensions and Directions*. Dordrecht: Kluwer Academic Publishers.

Langlois, Richard N., and Metin M. Cosgel. 1993. "Frank Knight on Risk, Uncertainty, and the Firm: A New Interpretation," *Economic Inquiry* **31:** 456-465 (July).

Langlois, Richard N., and László Csontos. 1993. "Optimization, Rule Following, and the Methodology of Situational Analysis," in Uskali Mäki, Bo Gustafsson, and Christian Knudsen, eds., *Rationality, Institutions, and Economic Methodology.* London: Routledge.

Langlois, Richard N., and Roger G. Koppl. 1991. "Fritz Machlup and Marginalism: A Reevaluation," *Methodus* **3**(2): 86-102 (December).

Langlois, Richard N., and Paul L. Robertson. 1993a. "Business Organization as a Coordination Problem: Toward A Dynamic Theory of the Boundaries of the Firm," *Business and Economic History* **22**(1), Fall.

Langlois, Richard N., and Paul L. Robertson. 1993b. *Firms, Markets, and Economic Change: A Dynamic Theory of Business Institutions.* Manuscript.

Lavoie, Don C. 1985. *Rivalry and Central Planning.* New York: Cambridge University Press.

Lazonick, William. 1991. *Business Organization and the Myth of the Market Economy.* New York: Cambridge University Press.

Loasby, Brian J. 1976. *Choice, Complexity, and Ignorance.* Cambridge: Cambridge University Press.

Loasby, Brian J. 1993. "The Organization of Industry," manuscript.

Menger, Carl. 1963. *Problems of Economics and Sociology.* Trans. F. J. Nock. Urbana: University of Illinois Press. [First published in 1883.]

Nelson, Richard R., and Sidney G. Winter. 1977. "In Search of More Useful Theory of Innovation," *Research Policy* **5:** 36-76 (Winter).

Nelson, Richard R., and Sidney G. Winter. 1982. *An Evolutionary Theory of Economic Change*. Cambridge: Harvard University Press.

Penrose, Edith T. 1959. *The Theory of the Growth of the Firm*. Oxford: Basil Blackwell.

Richardson, G. B. 1972. "The Organisation of Industry," *Economic Journal* **82**: 883-96.

Schumpeter, Joseph A. 1934: *The Theory of Economic Development.* Cambridge: Harvard University Press.

Silver, Morris. 1984. *Enterprise and the Scope of the Firm*. London: Martin Robertson.

Simon, Herbert A. 1982. *Models of Bounded Rationality.* Vol. 2: Behavioral Economics and Business Organization. Cambridge: MIT Press.

Simon, Herbert A., *et al.*, eds. 1992. *Economics, Bounded Rationality, and and the Cognitive Revolution.* Cheltenham: Edward Elgar.

Sowell, Thomas. 1980. *Knowledge and Decisions.* New York: Basic Books.

Teece, David J. 1986. "Profiting from Technological Innovation: Implications for Integration, Collaboration, Licensing, and Public Policy," *Research Policy* **15**: 285-305.

Teece, David J., Gary Pisano, and Amy Shuen. 1992. "Dynamic Capabilities and Strategic Management," Working Paper, University of California, Berkeley.

Teece, David J., Richard Rumelt, Giovanni Dosi and Sidney Winter. 1993. "Understanding Corporate Coherence: Theory and Evidence," *Journal of Economic Behavior and Organization* (in press).

Vanberg, Viktor. 1989. "Carl Menger's Evolutionary and John R. Commons' Collective Action Approach to Institutions: A Comparison," *Review of Political Economy* **1**(3): 334-360.

Vanberg, Viktor. 1992. "Organizations as Constitutional Systems," *Constitutional Political Economy* **3**(2): 223-253 (Summer).

Williamson, Oliver E. 1985. *The Economic Institutions of Capitalism.* New York: The Free Press.