INSTITUTIONS, ORGANIZATIONS AND MARKET COMPETITION[*]

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In this essay I would like to apply the new institutional economics to suggest modifications of the theory we employ in economics to make that theory useful for the study of the performance of economies through time. The modifications I shall suggest are in the spirit of Joseph Schumpeter

Formal economic theory has become increasingly mathematical, elegant, and precise. It also increasingly has failed to confront the economic problems of societies. Economics, in consequence, is slowly and painfully moving away from the formal mathematical models built around a frictionless, static conceptual structure. Frank Hahn, one of the pioneers of general equilibrium theory expressed it succinctly: "...there will be an increasing realization by theorists that radical changes in questions and methods are required if we are to deliver, not practical, but theoretically useful results." (Hahn, 1991, 47)

It is not as clear where economics is going. But the direction is suggested by two glaring shortcomings of neo-classical theory: it is a frictionless theory in a world in which the frictions are where the action is and it is static in a world in which dynamic change is going on at an unprecedented rate. Remedying these defects requires that economics builds on its strengths, modifies the unrealistic assumptions that made it frictionless, and incorporates time into the analysis to confront the issues of economic change.

The strength of neo-classical theory has been its uncompromising focus on scarcity and hence competition as the key to economics and its power as an economic way of reasoning, evinced in micro economic theory. Its most unrealistic assumption, which underlies its

[*]. This essay is partly drawn from the Adam Smith lecture given at the annual meeting of The National Association of Business Economists in 1994 entitled “Economic Theory in a Dynamic Economic World”

frictionless character has been the rationality assumption. Finally, time is the dimension in which human learning, the most important source of long run economic change, occurs.

I shall briefly elaborate on the rationality assumption and the role of time in economic change (I); set the scene for dynamic economic growth by describing the historical source of modern economic development (II); suggest the direction that theoretical reconstuction must take to make the theory applicable to solving economic problems (III);and conclude by raising some issues resulting from market competition(IV).

I

The rational choice framework assumes that individuals know what is in their self interest and act accordingly. That may be correct for individuals making choices in the highly developed markets of modern economies but it is patently false in making choices under conditions of uncertainty--the conditions that characterize most of the crucial economic and political decisions that shaped (and continue to shape) economic change.

Herbert Simon has stated the issue clearly:

> If...we accept the proposition that both the knowledge and the computational power of the decisionmaker are severely limited, then we must distinguish between the real world and the actor's perception of it and reasoning about it. That is to say we must construct a theory (and test it empirically) of the process of decision. Our theory must include not only the reasoning processes but also the processes that generated the actor's subjective representation of the decision problem, his or her frame. (Simon 1986 210-211)

But just what determines the actor's perception of the world and reasoning about it? That they vary as between say a communist party official in the former Soviet Union, a Papuan tribesman, and a business woman in the United States is obvious; more important for us is that faced with identical problems these actors would frequently make different choices. The key to their differential perceptions is the kind of learning that the individuals in a society acquire through time. Here I do not refer simply to the learning and experiences of an individual over his/her lifetime but the cumulative experiences of past generations that are embodied in culture. Collective learning (Hayek's term) consists of those "kinds of learning" that have passed the slow

test of time and in consequence have become embedded in our language, institutions, technology, and ways of doing things. It is culture that provides the key to path dependence--the powerful influence of the past on the present and future. The current learning of any generation takes place within the context of the perceptions derived from collective learning. That is, the learning process appears to be a function of the way in which a given belief structure filters the information derived from experiences and the different experiences confronting individuals and societies at different times.

How do the modification of the rationality assumption and the incorporation of time into our framework alter economics? Modification of the rationality assumption means that ideas, dogmas, prejudices, and ideologies matter. It means that the actors making decisions in the face of the uncertainty that characterizes major political and economic choices frequently are doing so with results that are widely at variance with intentions. And specifically it means that we must incorporate into our analysis the belief systems that the actors hold that determine the choices they make. And that brings us to time and human learning.

Time in this context consists of both the past experiences embodied in collective learning and the current learning experiences of individuals. Learning, then, is a cumulative process of cultural conditioning in which the experiences of each generation are filtered through the existing belief system and result in its incremental modification.

II

The source of dynamic economic change is the second economic revolution--a revolution which we are still attempting to assimilate. That revolution is the wedding of science and technology, which is the underlying determinant of modern productivity. It is a revolution because it is a fundamental change in the stock (and flow) of knowledge which entails an equally fundamental change in the organization of human beings and the structure of societies.

The development of the disciplines of physics, chemistry, biology, genetics is the source of the growth in the stock of scientific knowledge. The systematic application of these disciplines to the basic economic problem of scarcity has not only purged the Malthusian spectre

of diminishing returns from our purview but has created the vision of a potential world of plenty. To achieve that potential however, entails a restructuring of economic, social, and political institutions and organizations in order to realize the increasing returns attributes of the technology in which this scientific knowledge is embodied.[1]

The technology requires occupational and territorial specialization on an unprecedented scale and in consequence the number of exchanges grows exponentially. In order to realize the gains from the productive potential associated with a technology of increasing returns one has to invest enormous resources in transacting. In the United States, for example, the labor force grew from 29 million to 80 million between 1900 and 1970; during that period production workers grew from 10 million to 29 million, while white collar workers (the great majority of whom are engaged in transacting) increased from 5 million to 38 million. The transaction sector (that part of transaction costs that goes through the market and therefore can be measured) in the United States in 1970 made up 45 percent of GNP (Wallis and North, 1986).

The transaction sector has been (and still is) growing because of the increasing costs of coordination and enforcement. Necessary to be able to realize the gains of a world of specialization are control over quality in the lengthening production chain and a solution to the problems of increasingly costly principal/agent relationships. Much technology indeed is designed to reduce transaction costs by substituting capital for labor or by reducing the degrees of freedom of the worker in the production process and by automatically measuring the quality of intermediate goods. An underlying problem is that of measuring inputs and outputs so that one can ascertain the contribution of individual factors and the output at successive stages of production. For inputs there is no agreed upon measure of the contribution of an individual input. Equally there is room for conflict over the consequent payment to factors of production. For output, not only is there residual unpriced output, that is waste and pollutants, but also there

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[1]. See my Stucture and Change in Economic History (New York: Norton, 1981) Ch. 13 "The Second Economic Revolution" for an elaboration of this argument.

are complicated costs of specifying the desired properties of the goods and services produced at each stage in the production process.

Another characteristic of this new technology is that firms have large fixed capital investments with a long life and (frequently) low alternative scrap value. As a result the exchange process embodied in contracts has to be extended over long periods of time, which entails uncertainty about prices and costs and the possibility of opportunistic behavior on the part of one of the parties to the exchange. A number of organizational problems emerge from these characteristics associated with this technology.

First, increased resources are necessary to measure the quality of output or the performance of agents. Sorting, grading, labeling, trade marks, warranties, licensing, time and motion studies and a variety of other techniques to measure the performance of agents are all, albeit costly and imperfect, devices to measure the characteristics of goods and services and the performance of agents. Despite the existence of such devices the dissipation of income is evident all around us in the difficulty of measuring the quality of automobile repairs, in evaluating the safety characteristics of products and the quality of medical services, or in measuring educational output. The problems of evaluating performance are even more acute in hierarchies because of the difficulties of achieving low cost measurement of the multiple dimensions of an agent's performance.

Second, while team production permits economies of scale to be realized, it does so at the cost of worker alienation and shirking. The "discipline" of the factory is a response to the control problem of shirking in team production. From the perspective of the employer the discipline consists of rules, regulations, incentives, and punishments essential to effective performance. From the viewpoint of the worker they are frequently viewed as inhuman devices to foster speedups and exploitiation. Since there is no agreed upon measure of output that constitutes contract performance, both are right.

Third, the potential gains from opportunistic behavior increase and lead to strategic behavior both within the firm (labor-employer relations, for example) and in contractual behavior

between firms. Everywhere in factor and product markets the gains from withholding services or altering the terms of agreement at strategic points offer large potential gains.

Fourth, the development of large scale hierarchies produces the familiar problems of bureaucracy. The multiplication of rules and regulations inside large organizations to control shirking and principal/agent problems results in rigidities, income dissipation, and the loss of flexibility essential to adaptive efficiency.

Finally there are external effects: the unpriced costs reflected in the modern environmental crisis. The interdependence of a world of specialization and division of labor increases exponentially the imposition of costs on third parties.

The institutional and organizational restructuring necessary to take advantage of this technology are much more fundamental than restructuring economic organization--although that task, the creation of efficient markets, is complicated enough. The entire structure of society must be transformed. This technology and accompanying scale economies entail specialization, minute division of labor, impersonal exchange and urban societies. Uprooted are all the old informal constraints built around the family, personal relationships, and repetitive individual exchanges. Indeed the basic traditional functions of the family: education, employment (the family enterprise), and insurance are either eliminated or severely circumscribed. New formal rules and organizations and an increased role of government replace them.

The contention of Marxists was that these problems were a consquence of capitalism and that the inherent contradictions between the new technology and the consequent organization of capitalism would lead to its demise. The Marxists were wrong that the problems were a consequence of capitalism; they are ubiquitous to any society that attempts to adopt the technology of the second economic revolution. However, Marxists were right--and the foregoing paragraphs have attempted to make clear that the tension arising between the new technology and organization are a fundamental dilemma.[2] These tensions have only partially been resolved in

[2]. It is surely one of the great ironies of history that Karl Marx who first pointed out the necessity of restructuring

the market economies of the western world. The growth of government, the ever increasing resources that must be devoted to transacting, the disintegration of the family, the incentive incompatability problems in many modern political and economic hierarchical organizations are all symptoms of the consequent problems besetting western economies. These issues will be the subject of the concluding section of this essay.

However, it has been the relative flexibility of the institutions of the western world--both economic and political--that has been the mitigating factor in dealing with these problems. Adaptive efficiency, while far from perfect in the western world, accounts for the degree of sucess that such institutions have experienced. The basic institutional framework has encouraged the development of political and economic organizations that have replaced (however imperfectly) the traditional functions of the family; mitigated the insecurity associated with a world of specialization; evolved flexible economic organization that has induced low cost transacting; resolved some of the incentive incompatabilities of hierarchies and encouraged creative entrepreneurial talent; and tackled (again very imperfectly) the external effects that are not only environmental but also social in an urban world.

III

The second economic revolution is transforming the economies, polities, and indeed the entire structure of human societies. Understanding the nature of that transformation is a prerequisite to confronting effectively the policy issues of both the developed world and the third world. The place to begin is to understand the nature of efficient markets--economic and political--and the way they evolve.

The key to efficient markets is institutions that result in low costs of transacting. Transaction costs are the costs involved in protecting property rights, measuring what is being exchanged, and in enforcing agreements. Goods and services or the performance of agents have

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economic and political organizationyn order to be able to realize the potential of new technologies should have been responsible for the creation of societies that foundered on this precise issue.

multiple valuable attributes and the ability to measure those attributes at low cost is a necessary condition for capturing the gains from trade that were the keys to Adam Smith's Wealth of Nations. But a sufficient condition requires in addition that the contracts embodying the exchange process can be enforced at low cost. As noted above these conditions have been only partially met in the developed economies. They are not met in third world countries and in consequence markets either do not exist or are beset by very high costs of transacting. Because transaction costs will influence the technology employed both transaction and transformation costs will be higher in the factor and product markets of such economies.

The inability to have low cost specification of the attributes being exchanged and enforcement of agreements in economic markets is ultimately a function of the political markets of economies because it is the polity that specifies the property rights and provides the instruments and resources to enforce constracts. But political markets are inherently less efficient than economic markets. Not only are the measurement and enforcement of agreements more difficult and the incentive of the voter to be informed less than that of the buyer in economic markets, but also the complexity of the issues (together with the lack of incentive of the voter to be informed) leads to ideological sterotypes dominating political discourse and decision making. It is the economic and political institutions in a society (together with the technology employed) that determine the efficiency of markets.

It is one thing to define the characteristics of efficient markets at a moment of time; it is quite another to model the way markets evolve through time. To do so we must explore the interaction between institutions and organizations over time. But first it is essential to distinguish clearly institutions from organizations. Institutions are the rules of the game of a society or more formally are the humanly-devised constraints that structure human interaction. They are composed of formal rules (statute law, common law, regulations), informal constraints (conventions, norms of behavior, and self imposed codes of conduct), and the enforcement characteristics of both.

Organizations, too, specify the constraints that structure human interaction inside the organization but in addition they are action groups. They are composed of groups of individuals bound by a common purpose to achieve objectives. They include political bodies (political parties, the senate, a city council, a regulatory agency); economic bodies (firms, trade unions, family farms, cooperatives); social bodies (churches, clubs, athletic associations); and educational bodies (schools, colleges, vocational training centers). Organizations in pursuit of their objectives are the primary source of institutional change. These definitions undergird five propositions that define the essential characteristics of institutional change:

1. The continuous interaction of institutions and organizations in the economic setting of scarcity and hence competition, is the key to institutional change.

2. Competition forces organizations continually to invest in skills and knowledge to survive. The kinds of skills and knowledge individuals and their organizations acquire will shape evolving perceptions about opportunities and hence choices that will incrementally alter institutions.

3. The institutional framework dictates the kinds of skills and knowledge perceived to have the maximum pay-off.

4. Perceptions are derived from the mental constructs of the players.

5. The economies of scope, complementarities, and network externalities of an institutional matrix make institutional change overwhelmingly incremental and path dependent.

Let me elaborate on these propositions. Economic change is a ubiquitous, ongoing, incremental process that is a consequence of the choices individuals and entrepreneurs of organizations are making every day. While the vast majority of these decisions are routine (Nelson and Winter, 1982) some involve altering existing "contracts" between individuals and organizations. Sometimes that recontracting can be accomplished within the existing structure of property rights and political rules; but sometimes new contracting forms require an alteration in the rules. Usually existing informal norms of behavior will guide exchanges, but sometimes such norms will gradually be modified or wither away. In both instances institutions are gradually

being modified. Modifications occur because individuals perceive that they could do better by restructuring exchanges (political or economic). The source of the changed perceptions may be exogenous to the economy--for instance a change in the price or quality of a competitive product in another economy that alters the perceptions of entrepreneurs in the given economy about profitable opportunities. But the fundamental source of change is learning by entrepreneurs of organizations.

While some learning is a result of idle curiosity, the rate of learning will reflect the intensity of competition amongst organizations. Competition is a ubiquitous consequence of scarcity and hence organizations in an economy will engage in learning to survive. But the degree can and does vary. If competition is muted as a result of monopoly power the incentive to learn will be reduced.

The rate of learning determines the speed of economic change; the kind of learning determines the direction of economic change. The kind of learning is a function of the expected pay-offs of different kinds of knowledge and therefore will reflect the mental models of the players and most immediately at the margin, the incentive structure embodied in the institutional matrix (which consists of the framework of interconnected institutions that together make up the formal rules of an economy). If the institutional matrix rewards piracy (or more generally redistributive activities) more than productive activity, then learning will take the form of learning to be better pirates.

Change is typically incremental, reflecting ongoing ubiquitous evolving perceptions of the entrepreneurs of organizations in the context of an institutional matrix that is characterized by network externalities, complementarities and economies of scope among the existing organizations. Moreover since the organizations owe their existence to the institutional matrix, they will be an ongoing interest group to assure the perpetuation of that institutional structure--thus assuring path dependence. Revolutions do occur, however, when organizations with different interests emerge (typically as a result of dissatisfaction with the performance of existing

organizations) and the fundamental conflict between organizations over institutional change cannot be mediated within the existing institutional framework.

Path dependence means that history matters; that the choices we make today and tomorrow are constrained by the past evolution of the belief systems and institutions of the society.

IV

There is no implication in the foregoing propositions about institutional change of progress or growth only of change. A much more difficult question is where are we going? Even when humans do structure economic and political institutions to be efficient in the sense of efficient markets what are the long run consequences? The question is akin to those that Schumpeter raised in Capitalism, Socialism and Democracy

A long enough time horizon might incline one to the view that increasing economic efficiciency as reflected in rising world per capita income is evolving but over the past ten millenia--the period in which I am interested--the result is surely a mixed bag. Not only has growth (even as narrowly defined in quantitative terms) been episodic but even after ten millenia material well being has still escaped almost half of the world's population. And indeed sustained growth is a modern phenomenon and still confined to parts of the world.

Sustaining such growth into the future depends on successfully dealing with two fundamental issues: 1/ that the stock of (useful) knowledge continue to grow at something like constant returns and 2/ that the costs of transactng (reflecting the costs arising from human interacton) do not grow more rapidly than the productivity gains from improvements arising from the increments to the stock of knowledge. I don't regard either of these issues as having necessariy positive outcomes.

The growth of the stock of knowledge at something like constant cost is not exclusively a scientific issue since it also involes the kind of belief systems that evolve as well. I feel less than qualified to say anything about the scientific issues inherent in the question of whether diminishing returns may set in to the growth of scientific knowledge. And it would appear on the

surface that the obvious and demonstrated utility of science would forever banish the institutional and belief constraints that have shackled scientific advance in the past. But the widespread existence of religious fundamentalism and deep distrust of much modern scientific developemnt makes the issue a live one indeed.

The second issue can be put quite simply. Can human beings construct viable political, social, and economic organization in the global economy of worldwide interdependence that is evolving? The developed economies of the modern world offer some heartening evidence that the essential social capital (to use Jim Coleman's felocitous term) has been created to make possible productive economic organization and the historical study of the growth of the transaction sector of the American economy by Wallis and North (1986) offers support.

But "Since 1960 the U.S. population has increased 41%; the gross domestic product has nearly tripled; and total social spending by all levels of government (measured in constant 1990 dollars) has risen from $143. 73 billion to 787 billion--more than a five fold increase. Inflation adjusted spending on welfare has increased by 630%; spending on education by 225%.

But during the same 30 year period there has been a 560% increase in violent crime; a 419% increase in illegitimate births; a quadrupling in divorce rates; a tripling in the percentage of children living in single parent homes; more than a 200% increase in the teenage suicide rate; and a drop of more than 80 points in SAT scores" (Wall Street Journal, March 15, 1993).

Are these rising social costs a temporary phenomenon and irrelavant for economic efficiency? They suggest that modern economies are paying a substantial price for economic development. And the growth of government is both a consequence and a cause of the price. And there are clear implications for the cost of transacting (which is really a surrogate measure for social capital). The clear implication is that the social glue that underlies informal institutional constraints is dissolving. And ultimately it is the strength of the complementary informal constraints that reduce the costs of contracting--that provide the trust, honesty, anf integrity that makes possible complex low cost exchange. When these informal constraints decline in effectiveness we can expect an increase in formal rules and increasing costs of

enforcement which will be reflected in increasing litigation and the growth of government resulting in rising costs of transacting per exchange. Is this development a temporary phenomenon of western economies?