FIVE PROPOSITIONS ABOUT INSTITUTIONAL CHANGE*

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The five propositions about institutional change are:

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

2. Competition forces organizations to continually 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 provides the incentives that dictate 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.

Part I Explanation

I

The study of institutions and institutional change necessitates as a first requirement the conceptual separation of institutions from organizations. Institutions are the rules of the game and organizations are the players The interaction between the two shapes institutional change.

Institutions are the constraints that human beings impose on human interaction. They consist of formal rules (constitutions, statute law, common law, regulations) and informal constraints (conventions, norms and self enforced codes of conduct) and their enforcement characteristics. Those constraints define (together with the standard constraints of economics) the opportunity set in the economy.

Organizations consist of groups of individuals bound together by some common objectives. Firms, trade unions, cooperatives are examples of economic organizations; political parties, the Senate, regulatory agencies illustrate political organizations; religious bodies, clubs are examples of social organizations. The opportunities provided by the institutional matrix determine the kinds of organizations that will come into existence; the entrepreneurs of organizations induce institutional change as they perceive new or altered opportunities. They induce it by altering the rules (directly in the case of political bodies; indirectly by economic or social organizations pressuring political organizations); or by altering, deliberately and sometimes accidentally, the kinds and effectiveness of enforcement of rules or the effectivess of sanctions and other means of informal constraint enforcement.

Informal constraints will be altered as organizations, in the course of interaction, evolve new informal means of exchange and hence develop new social norms,conventions and codes of conduct. In this process "obsolete" informal constraints will gradually wither away to be replaced by the new ones.

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II

New or altered opportunities may be perceived to be a result of exogenous changes in the external environment which alter relative prices to organizations or a consequence of endogenous competition among the organizations of the polity and the economy. In either case the ubiquity of competition in the overall economic setting of scarcity induces entrepreneurs and the members of their organizations to invest in skills and knowledge. Whether it is learning by doing on the job or the acquisition of formal knowledge, the key to survival is improving the efficiency of the organization relative to that of rivals.

While idle curiosity surely is an innate source of acquiring knowledge among human beings, the rate of accumulating knowledge is clearly tied to the pay-offs. Secure monopolies, be they organizations in the polity or in the economy, simply do not have to improve to survive. But firms, political parties or even institutions of higher learning faced with rival organizations must strive to improve their efficiency. When competition is "muted" (for whatever reasons) organizations will have less incentive to invest in new knowledge and in consequence will not induce rapid institutional change. Stable institutional structures will be the result. Vigorous organizational competition will accelerate the process of institutional change.

III

There is no implication in the foregoing proposition (Proposition 2 explained in the preceding paragraph) of evolutionary progress or economic growth--only of change. The institutional matrix defines the opportunity set, be it one that makes the highest pay-offs in an economy income redistribution or one that provides the highest pay-offs to productive activity. While every economy provides a mixed set of incentives for both types of activity, the relative weights (as between redistributive and productive incentives) are crucial factors in the performance of economies. The organizations that come into existence will reflect the pay-off structure. More than that, the direction of their investment in skills and knowledge will equally reflect the underlying incentive structure. If the highest rate of return in an economy comes from piracy we can expect that the organizations will invest in skills and knowledge that will make them better pirates. Similarly if there are high returns to productive activities we will expect organizations to devote resources to investing in skill and knowledge that will increase productivity.

The immediate investment of economic organizations in vocational and on the job training will obviously depend on the perceived benefits; but an even more fundamental influence on the future of the economy is the extent to which societies will invest in formal education, schooling, the dissemination of knowledge, and both applied and pure research which will mirror the perceptions of the entrepreneurs of political and economic organizations.

IV

The key to the choices that individuals make is their perceptions, which are a function of the way the mind interprets the information it receives. The mental constructs individuals form to explain and interpret the world around them are partly a result of their cultural heritage, partly a result of the "local" everyday problems they confront and must solve, and partly a result of non-local learning. The mix among these sources in interpreting one's environment obviously varies as between for example a Papuan tribesman on the one hand and an economist in the United States on the other (although there is no implication that the latter's perceptions are independent of his or her cultural heritage).

The implication of the foregoing paragraph is that individuals from different backgrounds will interpret the same evidence differently; They may, in consequence, make different choices. If the information feedback of the consequences of choices were "complete" then individuals with the same utility function would gradually correct their perceptions and over time converge to a common equilibrium; but as Frank Hahn has

succinctly put it, "There is a continuum of theories that agents can hold and act upon without ever encountering events which lead them to change their theories." (Hahn, 1987, p. 324) The result is that multiple equilibria are possible due to different choices by agents with identical tastes.

V

The viability, profitability, and indeed survival of the organizations of a society typically depend on the existing institutional matrix. That institutional structure has brought them into existence; and their complex web of interdependent contracts and other relationships have been constructed on it. Two implications follow. Institutional change is typically incremental and is path dependent.

It is incremental because large scale change would harm existing organizations and therefore is stoutly opposed by them. Revolutionary change will only occur in the case of "gridlock" among competing organizations, which thwarts their ability to capture gains from trade.

The direction of the incremental institutional change will be broadly consistent with the existing institutional matrix and governed by the kinds of knowledge and skills that the entrepreneurs and members of organizations have invested in. That is, institutional change will be path dependent.

Part II Discussion

VI

Let me justify each of the five propositions.

Proposition 1: The study of institutions has been bedeviled by ambiguity about the meaning of the term. It is not possible to develop a theory of institutional change that mixes up the rules of the game and the players. Institutions are the rules of the game and organizations are the players and they entail different modelings to understand the way they operate and interact. Modeling institutions is modeling the man-made constraints on human interaction that define the incentive structure of the society. Modeling organizations is theorizing about the structure, governance (including the constraints defining the incentive structure internal to the organization), and policies of purposive entities.

While individuals are the actors it is typically individuals in their capacities as part of organizations that make the decisions that alter the rules of the game or gradually evolve new informal constraints in the process of human interaction.

Proposition 2: This proposition restates the fundamental postulate of economics and specifically applies it to the organizations of an economy. It bears emphasis, however, that the stock of knowledge the individuals in a society possess is the deep underlying determinant of the performance of economies and societies; changes in that stock of knowledge are the key to the evolution of economies. The rise of the western world was ultimately a consequence of the kinds of skills and knowledge (not only "productive knowledge" but notably knowledge about military technology) that were deemed valuable to medieval political and economic organizations. The key point is that learning by individuals and organizations is the major influence on the evolution of institutions.

Proposition 3: The institutional matrix has reflected the bargaining strength of those able to make or change the rules. Their perceptions with respect to the gains to be made by redistributive versus productive policies will shape the rules of the game and the resultant opportunity set. That opportunity set in turn will shape perceptions about the kinds of skills and knowledge that will pay off. Throughout most of history to date the players have more often than not perceived the game as one where the highest rewards accrued to military conquest, exploitation (such as enslavement), formation of monopolies, and so forth; in consequence the kinds of skills and knowledge worth investing in have been aimed at furthering such policies. In contrast the perception that there is a high pay off to investment in skills and knowledge that make the individual, organization and economy more productive will result in long run economic growth.

Proposition 4: Where do the perceptions that individuals possess come from? Neo-classical theory simply skips this step under the assumption that people know what they are doing. This may be true in evaluating opportunity costs at the supermarket; but it is wildly incorrect when it comes to making more complicated choices in a world of complex problems and incomplete information, and in which subjective models are used to analyze problems and interpret that incomplete information.

What we mean by rationality requires explicit specification for social scientists in general but particularly for those who employ rational choice models. If we are going to employ the choice-theoretic approach we must be explicit about just how people arrive at the choices they make. Explicit specification entails defining the subjective models people possess to interpret information and the information they receive.

Proposition 5: Why can't economies reverse their direction overnight? This is surely a puzzle in a world that operated as neo-classical theory would have us believe. That is in a neo classical world abrupt, radical change should immediately result from a radical change in relative prices or performance. Now it is true that on occasion accumulated pressures do produce an abrupt change in institutions akin to the punctuated equilibrium models in evolutionary theory. But it is simply a fact that the overwhelming majority of change is incremental and gradual. We take it for granted but why do we take for granted something that is inconsistant with the theory we employ. Revolutions are extraordinary and even when they occur turn out over time to be far less revolutionary than their initial rhetoric would suggest.

Path dependence could mean nothing more than that yesterday's choices are the initial starting point for today's. But path dependence appears to be a much more fundamental determinant of long run change than that. The difficulty of fundamentally altering paths is evident and suggests that the learning process by which we arrive at today's institutions constrains future choices. The institutional structure builds in a set of constraints with respect to downstream changes that biases choices.

Part III A Research Agenda

With these five propositions about institutional change we can lay out a specific agenda for the study of institutions that is different from game theoretic or spatial political modeling of institutions. The focus here is a transaction cost approach to institutions and a cognitive science approach to "rational" choice. While the former--the transaction cost approach--is at least partly complementary to game theoretic approaches, the latter suggests a distinct departure from much of the current rational choice theory. Let me take each approach in turn.

VII

Game theory can define the conditions that will provide an hospitable environment for the solution to the more complex political and economic exchanges essential to economic growth. Therefore game theory is an essential tool in helping us specify the problems of cooperation that are at stake. It does not, however, tell us how to achieve such results. My concern is with how such cooperation came about and why such cooperation has not occurred in other settings. How institutions evolve and the specific way they affect transaction and transformation costs is, I believe, the direction research should take.

Understanding how institutions evolve entails a far greater understanding than we now possess of the interrelationship between institutions, learning, and organizations. The assertion made in North (1990, ch. 9) was that the institutional framework not only dictates the opportunity set that defines the kind of organizations that will come into existence but also creates the incentives that will shape the kind of knowledge and skills that the organizations will invest in. Just what kinds of skills and knowledge will lead to sustained economic growth and what kind to stagnation? Since the human capital "revolution" of the 1960s, the answer has been investment in education-- both formal and on the job training. Clearly there is a relationship between investment in education and

economic growth (unfortunately third world countries frequently have misdirected the educational investment into higher education rather than put it into primary education, which has much the higher social rate of return). An emphasis on formal education reflected the view that there was complementarity between physical and human capital: educational investment was essential to be able to realize the potential of modern technology. Richard Easterlin's presidential address to the Economic History Association in 1980 reflected the widespread optimism that education was the solution for economic growth. (Easterlin, 1981) But while investment in education may be a necessary condition, it is clearly insufficient, as the recent evidence from third world countries and particularly the Eastern European economies will attest. Easterlin's own data (and his discussion) point to poor countries such as Roumania and the Philippines that had long histories of educational investment above the threshhold level that he thought would make a difference but did not result in sustained growth; the former Soviet Union had both high levels of formal education and a skilled labor force. Equally important are the incentives which lead economic and political organizations to invest in productive institutions.

The issue has crucial modern day policy implications. How do we get institutions that will produce sustained economic growth? Will they come about automatically if we get the "prices right"? The implications of my five propositions provide little support for such a view. The nature of path dependence, the characteristics of political markets and the mental constructs of the players all suggest fundamental obstacles to successful economic growth.

We simply are ignorant about path dependence. One of the most fundamental of historical regularities is the persistence through time of patterns of human interaction that appear to be the deep underlying source of performance. Historians have, for the most part, taken this persistence for granted rather than made it the subject of research. Brian Arthur(1989) and Paul David(1985) called our attention to this phenomenon in technological change and linked it to the increasing returns characteristics of the technologies that produce path dependence. By implication they have suggested that the same forces may be operative in overall societal or economic path dependence. But institutional path dependence does not, I believe, result from increasing returns in the same way as technological change does. Nor do small chance events typically alter the path of institutional change in the way that Arthur and David suggest occurs with technologies. I have suggested that network externalities, complementarities, and economies of scope are the source of institutional path dependence.1 What is at stake here is much more than simply today's choices being influenced by the current institutional matrix derived from the past. It is that there is something about the way the institutional framework has evolved that constrains choices to shape the long run direction of economies. I believe that the informal constraints of norms, conventions, and codes of conduct that have deep seated cultural antecedents are particularly important as sources of path dependence. There has been some suggestive research on cultural values, behavioral beliefs and economic performance but we are just beginning such research.2

How institutions affect transaction and transformation costs takes us to issues of credible commitment. While Shepsle (1991) has correctly pointed out that credible commitment is not a panacea for the problems of development, the reduction of uncertainty in economic and political exchange is perhaps the central historical issue influencing economic growth. And, I believe it to be a central issue in creating the conditions that would foster the growth of the economies of central and eastern Europe today.

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1. In a wide-ranging paper David(1988) explores imaginatively a variety of sources of path dependence.

2. For a recent review of some of this literature with interesting hypotheses about the relationship between cultural beliefs and economic performance see Greif(1991).

The uncertainty arising from the lack of credible commitment does manifest itself in predictable ways--specifically the non-existence of markets that require impersonal exchange such as capital markets and the biasing of economic activities into (relatively inefficient) molds that can circumvent the consequent problems. The result is either no exchange or exchange with high transaction and/or transformation costs.

How can institutions make credible commitment possible? In the case of economic institutions--property rights--the impartial enforcement through a judiciary and other governmental agencies can create credible commitment. But how does one get the property rights established to begin with and how does one carry out impartial enforcement? It is the polity that is the issue. The suggested solutions have varied from disarming governmental discretion to establishing norms of behavior that shift the locus of enforcement from government to the participants. Yet the first is imperfect, at best. If the government has the coercive power to enforce property rights, it also has the power to act in the interest of factions--to use Madison's felicitous term. And disarming government as Madison attempted to do is far from ideal, as the history of the 5th amendment--the takings clause--will attest. And we simply don't know how to achieve the second even though we do observe a variety of informal norms that do just that.

A transaction cost approach to political markets suggests the sources of the difficulty of making credible commitment in such markets. Transaction costs are the costs associated with the measurement and enforcement of agreements. In economic markets such costs consist of the measurement of the physical and property rights dimensions to goods and services and of the performance of agents. While such measurement can frequently be costly, the physical dimensions have objective characteristics (size, weight, color, etc.) and the property rights dimensions are defined in standard legal terms. Competition plays a critical role in reducing enforcement costs. The judicial system provides coercive enforcement. Even so, economic markets throughout history and in the present world are frequently very imperfect, beset by high transaction costs and defined by institutions that produce incentives that work against economic efficiency. In fact, creating institutions that provide low cost transacting in economic markets is the key to creating productive economies, but it is the polity that defines and enforces the property rights.

Political markets are far more prone to inefficiency. It is extraordinarily difficult to measure what is being exchanged and in consequence to enforce agreements. What is being exchanged are promises for votes. The observable dimensions of the promises are agreements between constituents and their representatives (in a democracy), between the representatives, between representatives and the executive, etc. The new political economy has provided us with elaborate models of the way institutions structure Congress and its committees to reduce measurement and enforcement costs in such settings.(Weingast and Marshall, 1988). But the transaction costs between constitutents and representatives and between representatives and agents enacting the policies are far greater. The powerful role played by competition in the economic market place is far less effective here. The weapon of the constituents is periodic elections at which the representative can be held accountable and the opposition candidate has the incentive to promulgate his or her deficiencies. But that is a very dull instrument as congressional elections will attest. For a variety of simple, easy to measure and important to constitutent well being policies, something like the rational choice model of the new political economy has explanatory value. Transfer payments fit this criterion. But the crucial issues that influence the long run performance of economies and polities are complex, subject to contradictory theories that cannot be resolved with the information available even if the constituents did have the incentives to invest in information.3 Ideological stereotypes take

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3. For an excellent study in political/ economic history that is a telling indictment of the rational choice assumptions and most of the consequent political economy

over and provide the basis for choices in such contexts, which leads me to rational choice models.4

VIII

We will never come to grips with effectively modeling choices--and particularly choices in the polity--until we seriously undertake an exploration of the information the mind receives and how the mind interprets the information it receives. Surely this subject should be at the top of the research agenda for scholars who believe institutions are important since there are no institutions needed in a world of substantive rationality. The very existence of institutions as real constraints on choices is a contradiction of simple rational choice models. Institutions exist to reduce uncertainty in human interaction precisely because of the limited information we possess to evaluate the consequences of th actions of others and the limits of the models we possess to explain the world around us. As Simon has pointed out

> If we accept values as given and constant, if we postulate an objective description of the world as it really is, and if we assume the decionmaker's computational powers are unlimited then two important consequences follow. First, we do not need to distinguish between the real world and the decisionmaker's perception of it: he or she perceives the world as it really is. Second, we can predict the choices that will be made by a rational decisionmaker entirely from our knowledge of the real world and without a knowledge of the decisionmaker's perceptions or mode of calculation (We do, of course, have to know his or her utility function). (Simon, 1986, p S 210)

Values are not constant; there is no objective description of the world as it really is; and while cognitive science research reveals that the mind is an extraordinarily adaptive and creative "instrument," its computational powers are severely limited.

There is more to the rationality issue. Part of the explanation of path dependence must come not only from the way institutions bind alternatives but the way perceptions equally limit the choice set. The complex interaction between institutions and the mental constructs of the players together shape downstream developments. Surely the past 70 years in which communist ideology shaped the economic and political policies of much of the world should be convincing evidence of the power of ideological perceptions to influence choices.

IX

Let me conclude with a specific research agenda:

1. Cognitive science has come a long way in modeling how the mind and brain receive, store, process and interpret information but there has not, to the best of my knowledge, been significant research on the role that institutions play in that process. That is cognitive scientists have been preoccupied by research exploring the way in which the mind and brain attempt to "make sense" out of the environment. Making sense consists of learning from experiences which generate the mental models that individuals possess and therefore are the sources of the choices that individuals make. Different experiences will generate different mental models and hence different choices. But there is a complex (and little understood) interplay between the cultural heritage which is the source of much early learning, the formation of consequent mental models, and the particular institutions that will result. If we accept the proposition that institutions exist to reduce uncertainty in human interaction, they are clearly an extension of the mental constructs the human mind

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models see Anne Kreuger's (1991) study of the political economy of sugar in the United States between 1934 and 1987.

4. For any early discussion of ideology and voting see Downs (1957). For an elaboration of the argument presented in this essay see North, "A Transaction Cost Theory of Politics"(1991)

develops to interpret the environment of the individual. Clearly there is a connection; research on the nature of that connection would be a major step in understanding more about the formation of institutions.5

2. Analyzing political markets in a transaction cost framework that takes into account the incomplete information and mental constructs of the players and the path-dependent pattern of institutional evolution would begin to give us a handle on the persistence of the poor political and economic performance that characterizes most economies throughout history and the present day. The concentration of the talent of the new political economy on the U.S. polity is not only a misallocation of resources but has blinded most of the players to the limitations of rational choice models. A brief glimpse into the polities of third world countries would be salutory medicine.

3. We need to learn how norms of behavior come about and disappear and what their relationship is to cultural beliefs? We also must learn how they interact with formal rules and influence economic performance.

4. The research on path dependence must not only specify what it is about institutions that constrains downstream choices but how institutions and mental constructs of the players interact in that process.

Progress on this research agenda would not only provide us with an enormously improved framework to better understand history but also provide a solid base for policy making in the reconstruction of Eastern European economies--an ongoing activity that provides depressing testimony to our ignorance of these issues.

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5. Ronald Heiner in an important essay (1983) does make the connection between the way the mind attempts to solve problems and the existence of institutions. For an excellent synthesis of the cognitive science literature see Holland et al (1986) and specifically for the parallel distributed processing literature, Clark (1989)

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