

UNDERSTANDING INSTITUTIONAL CHANGE:
MODELING CHINA'S ECONOMIC TRANSFORMATION SINCE 1978¹

Daniel W. Bromley
University of Wisconsin-Madison

Yang Yao
China Center for Economic Research
Peking University

Over the past quarter century, the Chinese economy has proven to be one of the more dynamic and rapidly changing regimes in recent history. This profound growth performance is the empirical manifestation of sweeping institutional reform and innovation carried on since the late 1970s. The empirical evidence is abundant and need not be recounted here. To economists interested in the relation between institutional arrangements, individual behavior, and economic performance, the last twenty five years offer a natural experiment that demands an explanation. Can we draw on concepts central to contemporary economic theory to develop an explanation of this rapid institutional change? And if it is possible to develop such a theory, would this theory offer insights into the development problems facing transition economies in the former Soviet Union, and poor countries in sub-Saharan Africa and elsewhere? We believe that understanding institutional change in China is profoundly important for informing the economic theory of institutions, and for clarifying the role of institutions in other developing countries.

¹ Presented at the meetings of the Allied Social Sciences Associations, Chicago, January 6, 2007.

I. Conceptual Issues in Modeling Institutional Change

We here offer a brief synopsis of contemporary ideas about institutional change. We will then spell out our alternative conceptualization of the issues.

A. The Standard Approach

The accepted view tends to see institutional change as an endogenous response among economic agents seeking their best advantage under particular economic and/or political settings and circumstances. Douglass North suggests that a theory of endogenous institutional change could produce a grand synthesis whereby all of the social sciences might be unified under the general axioms of individual rational choice behavior central to contemporary neoclassical economics. North writes that:

Defining institutions as the constraints that individuals impose on themselves makes the definition complementary to the choice theoretic approach of neoclassical economic theory. Building a theory of institutions on the foundation of individual choice is a step toward reconciling differences between economics and the other social sciences. The choice theoretic approach is essential because a logically consistent, potentially testable set of hypotheses must be built on a theory of human behavior. The strength of microeconomic theory is that it is constructed on the basis of assumptions about individual human behavior (even though I shall argue for a change in those assumptions....). Institutions are a creation of human beings. They evolve and are altered by human beings; hence our theory must begin with the individual. At the same time, the constraints that institutions impose on individual choices are pervasive. Integrating individual choices with the constraints institutions impose on choice sets is a major step toward unifying social science research [North, 1990, p. 5].

It remains an open question whether or not the other social sciences would find this grand synthesis predicated on neoclassical economics a compelling proposition. From the perspective of political science, Peter Hall and Rosemary Taylor suggest that there are certain advantages—

and some serious difficulties—in modeling institutional change using game-theoretic approaches. One of the claimed advantages is that game theory might allow us to generate a precise relationship between institutions and behavior, this relationship then allowing an explanation concerning “why existing institutions continue to exist [Hall and Taylor, 1996, p. 952].” However, Hall and Taylor are clear about the contradiction here:

The “equilibrium” character of the rational choice approach to institutions embroils such analysts in a contradiction. One implication of this approach is that the starting point from which institutions are to be created is itself likely to reflect a Nash equilibrium [Hall and Taylor, 1996, p. 953].

While Greif and Laitin, recognize the difficulties, they have nonetheless taken up this challenge in their effort to elaborate a game-theoretic approach of endogenous institutional change [2004]. They note:

A challenge that this line of research faces, however, is the difficulty of addressing the issue of how institutions change endogenously. After all, a self-enforcing institution is one in which each player’s behavior is a best response. The inescapable conclusion is that changes in self-enforcing institutions must have an exogenous origin [Greif and Laitin, 2004, p. 633] (emphasis added).

This recognition of the exogenous origin of institutions represents the inspiration for the current effort to develop a more comprehensive understanding of institutional change. The fundamental challenge is to reconcile the apparent contradiction recognized by Hall and Taylor. Our point of departure in this reconciliation effort, therefore, is to elaborate the concept of an institution, and to illustrate the essential interplay between institutions as both exogenous and endogenous rule structures. The endogenous aspect is apparent in the writings of North, Hall and Taylor, and Greif and Laitin. Specifically, here we see institutions as patterns and norms of individual behavior that emerge from an arena in which agents are interacting (in a game) and seeking, through that interaction, their best advantage. Under this formulation, these interactions

and behavioral tendencies evolve in some fashion to “become” an institution—a rather predictable pattern of interactions. Here is an evolved sharing rule in public-goods situations [Axelrod, 1984; Samuelson, 2005]; here is an evolved custom of relational contracting among firms [Kronman, 1985; Macaulay, 1963]; here is how ranchers and farmers work out the problem of corn fields and straying cattle [Coase, 1960; Ellickson, 1991; Sanchez and Nugent, 2000].

Notice in the above examples—sharing norms, relational contracting among firms, straying cattle—that the emerging institutions (behavioral norms) appear as the inevitable and quite necessary rational outcome of the autonomous working out of best advantage among interacting parties. It is worth noting, however, that one cannot use game theory to model these evolved norms unless the precise game form has been specified exogenously before the game gets underway. When torture became politically and legally unacceptable, prosecutors were put in a disadvantageous position. Suddenly a new institutional setup was necessary if prosecutors were to regain their prior advantage in dealing with reluctant criminal suspects. Under new institutional arrangements, one first requiring the specific permission of various legislative and judicial entities, the advantage soon shifted away from criminals and back to prosecutors. And this new institution concerning the specifics of plea bargaining soon resulted in a new norm of behavior among apprehended suspects. We know it as the Prisoners’ Dilemma. Here is a new problem (shifting advantage between apprehended suspects and prosecuting attorneys), soon followed by a new exogenous institutional arrangement (legislative permission for prosecutors to engage in plea bargaining), soon followed by a new endogenous institutional change—different behavior of prosecutors, and thus newly induced behaviors among criminal suspects. We see that the Prisoner’s Dilemma is a “dilemma” for the isolated prisoners only because the prosecuting attorney has been given explicit permission to undertake the prosecution game in a

new way that is more conducive to the extraction of confessions in the absence of torture. Notice the exogenous as well as the endogenous elements here. This ongoing recursive process provides the animating idea behind our theory of institutional change. To that we now turn.

B. The Alternative Conceptual Approach

We start with a stylized description of contemporary democratic nation-states. At the highest level we find a small group of individuals (called justices or judges) who exercise oversight of a founding charter. Here are the Constitutional Rules of the Society. These rules indicate, for example, who may and who may not vote, what issues shall be determined by which members of the polity, which rules are legitimate for others (parliaments, city councils, Boards of Directors of large and important companies) to craft, and how the charter itself may be modified (amended) by subsequent citizens. The charter spells out many other things that need not concern us here.

This foundational charter establishes a second group of citizens whose job it is to consider and to formulate the Instrumental Rules of the Economy. This group of individuals belongs to entities that are generally called parliaments or legislatures. Here we encounter ordinary “law-making.” Examples of instrumental rules are strictures concerning the age at which one might drive an automobile, the specific conditions whereby a group of individuals might form a limited liability company, the precise chemical composition of industrial wastes making their way into the atmosphere, and the number of immigrants from Ethiopia who might be allowed to enter in the following calendar year. Other instrumental rules might entail the legal number of hours per week that hourly (wage) employees may work, the required rate of pay if necessary work exceeds that number, and the inspection schedule of all meat-processing

facilities. These instrumental rules of the economy also reach into households and define socially acceptable rules of individual behavior—the legal duties of parents to have their children in school until a particular age, who and who may not may get married, at what age this may occur, the marginal tax rate for households of different composition, and what must be done if the marriage contract is to be sundered.

Finally, at a third level, we come to the Working Rules of Going Concerns. Such working rules might indicate, for instance, the pay scale for people employed at a particular firm, they indicate the length of paid vacation per year, and they indicate the steps that must be taken if an employee with a particular level of seniority in the firm wishes to request a day off from work to care for a sick child.

Our model stipulates three “layers” of economic institutions: (1) the constitution; (2) the instrumental rules of the economy and society; and (3) the working rules of going concerns. It is essential to see these institutions as comprising a nesting of rules—rather like Russian *Matryoshka* dolls. The Instrumental Rules of the Economy are nested within—are constrained and liberated by—the Constitutional Rules of the Society. The Working Rules of Going Concerns are nested in—are constrained and liberated by—both the Constitutional Rules of the Society and the Instrumental Rules of the Economy. The rules at a higher level trump the rules at a lower level. It should be obvious that individual choice and action of agents are defined by this layered institutional web. These rules specify opportunity sets—domains of choice—for individuals. The constitutional rules frame the polity and its governance processes, the instrumental rules frame the economy and the other matters of daily import, while the working rules frame firms and households as going concerns. We see here the multi-layered institutional architecture of an economy.

This picture of the layering of institutional arrangements is useful in developing a theory of the essential interplay between exogenous and endogenous institutional change in an economy. We will do so in the context of the profound economic reforms in China since 1978. This particular illustration will be a concern, no doubt, to those who will insist that China is not a democracy as spelled out immediately above. The issue here is to use the illustrative case of China to demonstrate the generality of the theory under development. That is, democracy is not necessary for the theory, and its illustration in an economy where democracy is still under construction will suggest a broader applicability than if our theoretical structure required mature democracy. In the instant case, the Central Committee of the Chinese Communist Party has the explicit task of expressing and upholding a set of institutional arrangements that comprise the Chinese Constitution. As in all societies, the Constitutional Rules of Society represent the fundamental political document defining the Chinese state. These rules indicate who may and who may not vote, who may and who may not join the Chinese Communist Party, what issues shall be determined by which members of the polity, which rules are legitimate for others (the National People's Congress, local congresses, provincial officials, village communes) to formulate, and how the Constitution itself may be modified.

This foundational charter recognizes and establishes a second group of individuals (the National People's Congress) and it indicates how that body is to be constituted—and the rules by which it shall function. The Central Committee of the Chinese Communist Party, and perhaps the National People's Congress, periodically issue new Instrumental Rules of the Economy. These instrumental rules (laws) are specific strictures concerning such routine issues as service in the military, the specific structure of administrative organizations, the annual operating budgets for all government entities, the creation of new special enterprise zones, allowable levels

of pollution from specific industries, and which among thousands of state-owned enterprises will be privatized in the coming year. And, as above, these instrumental rules also reach into households—they indicate the allowed number of children, the required fine if that number is exceeded, procedures to be followed to mitigate the fine, and the terms of social insurance.

Finally we come to the Working Rules of Going Concerns. Each going concern will have specific rules of action—the work rules of a village agricultural enterprise, the specific obligations and benefits of working for a particular TVE, and specific sick-leave policies. The working rules are the evolved “shop rules” that define what individuals in firms can and cannot do, may and may not do, etc. Households also evolve working rules concerning the division of labor, employment habits, and other matters in response to these imposed institutions that are exogenous to households. These working rules may have the force of law behind them, but they cannot be at odds with the law. That is, the law (The Instrumental Rules of the Economy) will allow a company to dismiss a worker, but that dismissal may not be arbitrary, and specific procedures must be followed.

To summarize, the task before us is to illustrate this interplay between institutions (rules) that are imposed on lower level entities in an economy, and the endogenous response emerging from these lower level going concerns.

III. The General Model

A. Institutions

Consider Figure 1—an adaptation of a figure borrowed from Dani Rodrik [2003]. At any moment we can describe the economy in terms of three physical building blocks. There is a

stock of natural capital—soils of various quality, trees, mineral deposits, rivers, coastal ecosystems, and stocks of living resources in territorial waters. In addition, there is a stock of man-made capital—factories, machinery, railroad tracks and rolling stock, other transportation assets, and energy production facilities. These indigenous assets can be augmented in any period by imports. The other building block is the stock of human capital at a given time. In each of these cases it is important to understand that there are both quantity and quality aspects to this bundle of endowments.

Notice in Figure 1 that we refer to this bundle of factor endowments as nominal endowments. They are nominal because they are not yet mediated by the institutional architecture of the economy. For example, the nominal endowment of forests might cover 10 percent of the total area of China, but if 50 percent of that is protected in forest reserves—an institutional arrangement decreed by central or provincial governments—then the real forest endowment available for productive purposes is only 5 percent of total area. While this particular institution is endogenous to the Chinese polity and economy, it is exogenous to firms, households, and lower-level political entities that might wish to make use of the forest. On the population side, let us assume that the potential labor force is 780,000,000. This would leave a dependent population (young and retired) of approximately 420,000,000 (assuming China's total population is 1.2 billion). However, if 15 percent of the potential labor force of 780,000,000 is continually unavailable because of maternity leave, sick leave, or other reasons, the effective (real) labor force is 663,000,000.

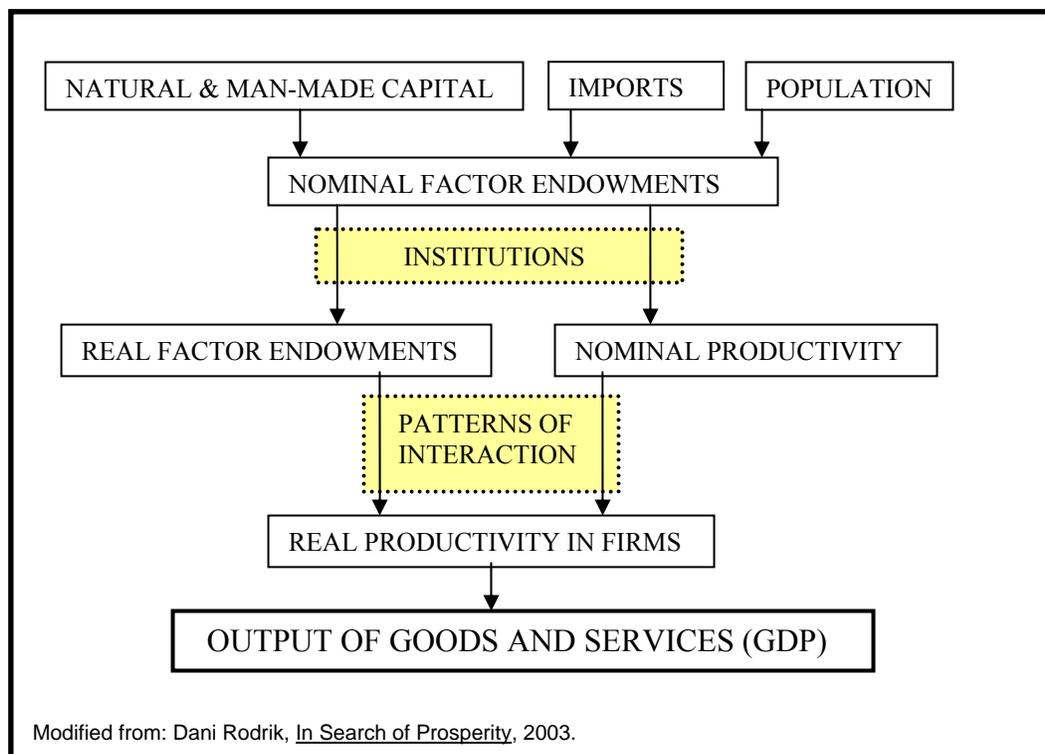


Figure 1. The Stylized Chinese Economy.

Institutions provide the mediation that transforms nominal endowments into real (deployable) endowments upon which economic activity can be based. A second role of institutions is to define the environment inside of firms where labor and management are deployed in conjunction with the (real) factors of production. Here we encounter, *inter alia*, terms of employment, work conditions, wage rates and salary levels, terms of engagement between workers and bosses, ownership or rental arrangements for agricultural land, and taxes on labor or net income. Notice in Figure 1 the concept of “nominal productivity.” While institutions specify the nature and extent of real factor endowments, these institutions cannot fully parameterize the intricate incentive issues associated with the classic principal-agent problem. That is, the formal working rules of the economy cannot possibly determine the real productivity of labor, management, and capital. Workers and bosses and others involved in the

production process are themselves engaged in game-theoretic interactions—the sum total of which we can consider as giving rise to actual (real) productivity. The evolution of norms and standardized behavioral characteristics associated with endogenous institutional change occur at this level.

We see that the entire constellation of institutions can be understood as providing the legal foundations of the economy [Commons, 1995]. In general, institutions indicate what

Individuals *must* or *must not* do (duty), what they *may* do without interference from other individuals (privilege), what they *can* do with the aid of the collective power (right), and what they *cannot* expect the collective power to do in their behalf (no right) [Commons, 1995, p. 6].

The significance of our distinction between imposed institutional arrangements and the subsequent induced institutional arrangements cascading down through the economy should now be obvious. That is, the imposed institutional arrangements are the conscious and purposeful instruments of national (and provincial) economic policy. These institutions are under the control of the Central Committee of the Chinese Communist Party and lower law-giving bodies. That is, these entities issue sets of rules—imposed institutions—whose purpose is to parameterize individual and behavior in particular realms of economic activity. In response to these new structures, induced institutional arrangements will then be worked out (and specified) in a manner consistent with the general parameters set by the exogenous institutions. For example, agricultural producers and village communes might be given permission to undertake particular institutional innovations, but not others. Agricultural land must not be privatized, but other forms of contracts among farmers and local officials may be worked out. We see that imposed institutions do not simply constrain individual and group behavior—they also liberate behavior. Under these new institutional structures, individual farmers and others at the village

level will experiment and begin to interact in new ways. In so doing, we see endogenous institutional change at work—and correlated evolved behavioral patterns.

B. Diagnosis in the Service of Institutional Analysis

We start with the basic point that it is the state and its authoritative agents who define the legal foundations of the market economy. All market economies rest on a fluid and dynamic legal substrate that is simply the institutional foundations of the economy. Economic institutions offer feasible and predictable structure without imposing rigidity, and they offer a degree of flexibility without at the same time fostering anarchy. The economy is always in the process of becoming. If the legal substrate (the institutional arrangements) did not change to accommodate new scarcities, new technical opportunities, and new ideas about how to address the future, economic processes would soon become locked into counter-productive structures and patterns of interaction. Institutional ossification must be avoided if an economy is to remain adaptable and hence viable. The process of institutional change redefines arenas of permissive and proscribed action among economic agents. New institutions redefine individual opportunity (choice) sets. And it is from this continual redefinition of the legal foundations of the economy that market processes offer opportunities for human improvement. We are concerned here with the general outlines of a theory of that ongoing process of institutional change and renewal. It is this process that explains economic change and the general process of economic development.

The conceptual approach offered here differs from the standard prescriptive approach so familiar to students of development economics and of economies in transition. The Washington Consensus stands as the exemplar of this standard prescriptive urge. In contrast, our approach represents the pragmatist's challenge to *a priori* consequentialism and its associated

preoccupation with assured and confident deductive prescriptions. Our purpose here is to spell out a pragmatic theory of economic institutions, and of institutional change. The approach is predicated on volitional pragmatism [Bromley, 2006].

As discussed previously, the durable quest in the new institutional economics has been for models that would render institutional change explicable in terms of individual utility maximization and associated claims about the a priori rationality of individual action [North, 1990]. This quest for endogeneity is misguided precisely because it misses the logically prior step of new rules emanating from authoritative agents known as Central Committees, judges, parliaments, and city councils. The endogeneity program invokes rational calculation at the individual level to explain social (collective) arrangements. Doing so implies that institutions are no longer objects of human choice but follow necessarily and mechanistically from new relative prices (and from circular notions of efficiency). A focus on endogeneity reduces institutional change to a machine process.

What is needed is not mechanism. What is needed is a theory of institutions and institutional change built on the concept of prospective volition. Prospective volition is the human will in action, looking to the future, and deciding how that future ought to unfold for those who will inhabit that future, and for their descendents. In human affairs, the prospect of attaining particular outcomes in the future constitute the reasons for undertaking specific events today—whether acting as individuals, or acting collectively in those entities (legislatures, administrative agencies, courts, the Central Committee of the Chinese Communist Party) created precisely for the purpose of considering and implementing institutional change. When we get a grip on those reasons we will get a grip on why institutions change. Our model of institutional change spelled out below recognizes the centrality of purpose in human action. Indeed,

recognition of the centrality of purpose concerns what philosophers mean by the concept of final cause, "...the final cause of an occurrence is an event in the future for the sake of which the occurrence takes place...things are explained by the purposes they serve [Russell, 1945, p. 67]." (emphasis added).

Modeling institutional change as purposeful public policy allows us to stipulate that new policies represent collective action in restraint, liberation, and expansion of individual action. Notice that the purpose of all public policy is to change individual and group behavior so that new—presumably more desirable—outcomes are realized in the future. Because individual and group behaviors are informed and parameterized by the legal foundations (the institutions) of an economy, public policy necessarily concerns the institutional architecture of that economy. The best way to alter individual behavior is to modify the positive and negative incentives and sanctions that stand as the plausible reasons for those particular behaviors thought to be in need of modification. Institutional change modifies individual choice sets. Public policy has no purpose except to affect human behavior by modifying institutions. The effect of new public policy is therefore new institutions and the resulting new—hoped for—behavior. New institutions redefine who must or must not undertake some specific action (we call this a duty), new institutions redefine who may undertake certain actions without interference from other individuals (we call this privilege), new institutions redefine who can undertake certain actions with the explicit aid of the collective power (we call this a right), and new institutions redefine who cannot expect the collective power to undertake certain actions in their behalf (we call this no right) [Bromley, 2006].

The fundamental challenge in development policy is to work out—to fix collective belief about—what seems best to do in the face of the “irritation of doubt” and surprise about the status

quo. This challenge persists in all collective action—whether we have in mind the British Parliament or the Central Committee in China. The problem of fixing belief concerns how individuals come to believe what they now believe they believe. This brings us to the concept of abduction. The epistemological program of volitional pragmatism is that of abduction. Aristotle called it diagnosis. The founder of pragmatism, Charles Sanders Peirce, called it the method of hypothesis, or abduction. It is also known as inference to the best explanation. Many scientists imagine that induction and deduction constitute (and exhaust) our ways of fixing belief. But abduction offers valuable insights and prospects to those who are interested in discovering the reasons for particular events. Interestingly, many scientists use abduction without realizing it. An abductive argument is of the form:

The surprising fact, **C**, is observed:
 But if **A** were true, **C** would be a matter of course,
 Hence, there is reason to suspect **A** is true.

Abduction starts when particular circumstances and events—the surprising fact **C**—are encountered for which we need an explanation. In the above syllogism, the assumptions embodied in [**A**] comprise the plausible explanation of the observed fact [**C**]. Human action is animated by doubt or surprise. Peirce talked of the “irritation of doubt.” Why am I feeling dizzy? Why is my car sputtering? Why is unemployment increasing? Why is the manufacturing sector experiencing sluggish productivity? In abduction we deploy specific known relations and particular assumptions—predicated on existing analytical models and known empirical relationships—to formulate propositions (testable hypotheses) with the intent of explaining those particular events. If your car will not start on a cold morning, abduction is the process your mechanic will deploy in quest of a reason. If you have a fever, abduction is the process your

doctor will deploy as she ponders the reason for your fever. If you are trying to explain falling productivity, abduction is your avenue to explanation. The essential purpose of abduction is the production of belief about specific events. To quote Peirce, "...the action of thought is excited by the irritation of doubt, and ceases when belief is attained; so that the production of belief is the sole function of thought [Peirce, 1957, p. 36]."

Peirce added that "The object of reasoning is to find out, from the consideration of what we already know, something else which we do not know [Peirce, 1877, p. 9]. Since a belief is that upon which we are prepared to act, we seek to fix belief about events and circumstances so that we will know how to respond to those events and circumstances now—and should they arise again in the future. There are, in general, two avenues open to those pondering what institutional structures will be most likely to generate more desired futures. The first, as suggested above, is to invoke deductive models that offer—as with the Washington Consensus—firm prescriptive truths that must be followed. The second avenue, abductive in nature, is to combine volitional pragmatism with the idea of created imaginings from G.L.S. Shackle [1961]. Shackle rejected the notion that the ends of action are both known and fixed, and thus the central challenge for individuals is to address alternative means to those predetermined ends. Shackle is not alone in his rejection of this standard prescriptive approach. Many writers suggest that it is precisely here that rational choice theory goes off the rails—for the simple reason that the concept of choice as it is used in economics becomes incoherent. Or, as Amartya Sen has observed, turns the idea of choice into a mere play on words [Sen, 1977]. Notice that if the ends of action are given, and therefore all that remains is for the individual to compute the most efficacious means to achieve those ends, this is not choice but mere calculation. Individuals who can only calculate are not choosing among alternative actions—they are calculating to find the "best" means. Notice that

this route leaves the individual, once the calculations have been made, with no choices to make.

As long as the individual could not “rationally” have done other than what the calculations revealed to be the rational choice, the agent did not exercise choice [Lawson, 1997]. It is here we find Shackle insisting that:

Conventional economics is not about choice, but about acting according to necessity....The escape from necessity...lies in the creation of ends, and this is possible because ends, so long as they remain available and liable to rejection or adoption, must inevitably be experienced by imagination or anticipation and not by external occurrence. Choice, inescapably, is choice amongst thoughts, and thoughts....are not given [Shackle, 1961, pp. 272-73].

In modeling institutional reform in China since 1978, this approach offers some promise. If individuals, in the process of arriving at choice, contend with both ends as well as means, it necessarily follows that groups of individuals engaged in collective action must do so as well. Indeed, Debra Satz and John Ferejohn suggest an ironic aspect of rational choice theory. Rational choice theory works best when there is little choice to make. Specifically, Satz and Ferejohn write:

we believe that rational-choice explanations are most plausible in settings in which individual action is severely constrained....we believe that rational choice is a weak theory, with limited predictive power.....We fully realize the irony of our contention: the theory of rational choice is most powerful in contexts where choice is limited [Satz and Ferejohn, 1994, p. 72].

Rational choice models fail to explain individual action because such models are, as Mark Granovetter puts it, undersocialized [1993]. The clear implication is that individual and group action is predicated on the reasons people find for action, and the fit of those reasons within the current institutional arrangements constituting the working rules of going concerns. As Joseph Raz would say, deliberation is not a process of discovering what we want, but a process of reflecting upon what there is the most reason to want [Raz, 1997]. If an individual

chooses to lie in a hammock rather than eliminate weeds from his garden, we must assume that the individual found better reasons for doing the former rather than the latter.

We now shift our focus away from the individual and consider the choice problem within parliaments, Central Committees, firms, villages, or households. Within nation-states there are individuals in a position to play an important role in the construction of new working rules (new institutions). These individuals are known as directors, owners, managers, bosses, supervisors, headmen, judges, legislators, and administrative rule-makers. We shall call such individuals authoritative agents. The choices that each of us make today are embedded in—and are products of—the actions of authoritative agents carried over from yesterday. The prevailing working rules provide the scaffolding for today's choices and thus the rules (the institutions) transmit yesterday's "economic values" to individuals who then make choices today.

To Veblen, this idea captures the essence of cumulative causation. Commons called this on-going process one of "artificial selection" because it explained the evolution of institutions without the contrived notion of "natural selection"—the magic mechanism of spontaneous order. The path of institutional evolution in human systems is "artificially" created by human volition. How many days of paid holiday are associated with this job? What will I be paid for this type of work? What proportion of income is subject to taxation? How is "taxable" income defined by the government? What structures may I build on this land that I own?

Individual choice is set in motion by doubt and surprise, and it is parameterized by the accretion of prior collective decisions by those to whom the society under study has granted the authority to determine these "economic values." John Dewey maintained that we are always arriving in the middle of life—as when one walks in during a movie rather than at its beginning. The answer to the above questions about paid holiday, wages, taxation, and allowable structures

on a parcel of land have evolved over time in response to new perceptions of what seems better, at the time, to do about paid holiday, wages, taxation, and allowable structures on particular parcels of land. We see this aspect of value from Commons:

A key element of Commons's theory is his reinterpretation of the etiology of economic values. No longer are those values perceived to emerge spontaneously from natural forces, as in the mechanical equilibrium theories of mainstream economics. Commons instead discerned that the general pattern of economic values observed to obtain in a given "going concern" (economy) are in a fundamental sense the cumulative volitional creation of those who have consecutively possessed the power or delegated authority to decide upon the content of the concern's working rules [Ramstad, 1990, p. 87].

The "content of the concern's working rules" is precisely the scaffolding within which individual action is first animated, and within which "reasonable" (workable and consensual) solutions to new problems are created by those who must act. The same holds for collective action since collective action is but the collation of individual action within designated entities such as boards of directors, the courts, the legislature or the Central Committee of the Chinese Communist Party. Since economic institutions are human constructs, and if we understand why institutions are thought to be in need of change, we can then understand how individuals and groups (including formal law-giving bodies) follow abductive inference in the fixing of a new belief, and then connect that new belief to the existing institutional setup. It is this connection that is necessary if the existing institutional arrangements are suddenly to be judged unsuitable for bringing about desired outcomes in the future.

How is it that in a short period of time many nations have prohibited smoking in public buildings? How is it that within a few years of establishing a plausible link between aerosol sprays and the ozone "hole" over Antarctica, aerosols have been practically eliminated in consumer goods? How is it that child labor—once thought to be normal—is now seen as unacceptable? How is it that the industrial workweek—once in the range of 60 hours—is now

approximately 40 hours throughout the industrial world, and on its way to being 34-35 hours? These institutional changes did not emerge because of new relative prices. Nor is it plausible to suggest that these institutional changes emerged to solve some abiding efficiency problems in particular economic systems. Rather, these institutional changes came about because individuals came to hold new beliefs. That is, individuals began to imagine that the world would be a better place under a new institutional setup. A theory of institutional change requires that we understand the reasons people advance for favoring new institutional arrangements. Different institutions constitute the reasons for differing actions and thus for differing outcomes. Institutions explain individual and group behavior.

And this brings us to purposeful action. In the course of choosing, individuals form images of action. However, it is psychologically impossible for individuals to determine ends outside of the context of action. That is, the prior specification of created imaginings—a necessary part of formulating a plan of action—is impossible until we are in a position (a context) to act. With respect to collective action, being in the context of action means being involved with others who hold divergent expressions, yet who are also resolutely on their way to formulating their own unique and divergent created imaginings. Joint action is contentious precisely because of the reality of contending expressions. Because joint action must ultimately result in but a single choice (coordinated and coincident action), contending expressions are inevitably confronted by contending created imaginings. Small wonder that collective action—public policy—is so difficult. The participants in that process bring differing expressions about the *status quo ante*, and different created imaginings about the prospects for the future.

And this brings us to the idea of settled belief. By settled belief we mean the arrival at a point in the consideration of possible action that individuals can finally and honestly declare, “this seems the better thing to do at this time.” When we can say to ourselves (or to our colleagues in the legislature, administrative agencies, the politburo, or the court chambers) that we have reached a decision, it means that our settled deliberations have given us a new belief. And, as above, a belief is that upon which we are prepared to act. In effect, we have now found sufficient reason(s) to alter specific institutional arrangements in the interest of—for the purpose of—modifying particular behaviors and thus particular economic outcomes in the future.

Our approach is consistent with the classical institutional economics of John R. Commons and Thorstein Veblen. In 1898, Veblen published in the Quarterly Journal of Economics an article entitled “Why is Economics Not an Evolutionary Science?” There he suggested that:

The economic life history of the individual is a cumulative process of adaptation of means to ends that cumulatively change as the process goes on, both the agent and his environment being at any point the outcome of the past process. His methods of life today are enforced upon him by his habits of life carried over from yesterday and by the circumstances left as the mechanical residue of the life of yesterday [1898 [1990], pp. 74-75].

In our approach to institutional change, we seek to move prescriptions about what is best to do away from the flawed doctrines of prescriptive consequentialism and to develop a model of institutional change that seems more consistent with how individuals actually choose. Pragmatism builds on Dewey’s notion that the acquisition of knowledge is a social activity—a group undertaking. Description is an activity concerned with getting our words and sentences to match the world out there. Prescription is an activity concerned with getting the world out there to match our words and sentences. Every prescription is also a prediction—do *X* and *Y* will then

happen. But the key issue here is precisely whose words and sentences shall provide the template against which the world is to be brought into conformance through prescriptions from economists and others?

Volitional pragmatism insists that we must model human choice and action as a continual process of discussion, tentative action, learning (Bayesian updating), experimentation, and adjustment. New developments in complexity theory suggest that we have no choice but to accept this model of human action [Brock and Colander, 2000]. Volitional pragmatism entails the working through of what we think we want by learning about what we seem able to have. Only then will we take responsibility for our decisions. When we have settled our deliberations, we will anoint those settled thoughts with the ultimate benediction—it seemed the best thing to do at this time. And we shall be happy with that decision...until the next surprise.

A credible theory of institutional change requires recognition that individuals undertake those actions for which they can, at the moment, marshal the most compelling reasons. This process conflates both the volitional and epistemic premises in a process of getting in touch with what we want by coming to grips with what we imagine we can get (have). Wanting is not some abstract and dreamlike lunging toward the infeasible. It is, instead, a process of reasoned construction of created imaginings that are informed and constituted by their very feasibility. From this constructed realm of plausible futures, we then reflect on—and argue about—the various reasons why these plausible futures make more or less sense to us. We reason about what we want predicated on reasoning about what we come to believe we can have.

The human enterprise concerns coping with doubt and surprise, with impressions, with expressions of those impressions, and with prevalent behaviors and outcomes that please us or that fail to do so. We are forced to confront the reality of what constitutes plausible

improvements. And the act of accepting the adjective “plausible” brings us, as individuals, or as members of decision-making bodies, in direct contact with the pragmatic evaluation of truth.

That is, what is better than what we now have? What would move us in an agreeable direction? What will it take to move us? Is it worth it? What will others seek? We are, pragmatist point out, searching for new belief—those things upon which, once we have them, we are quite prepared to act. Consider Figure 2.

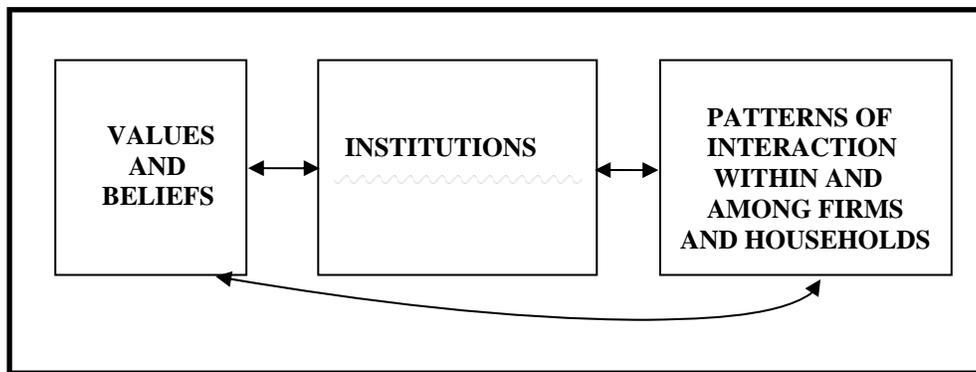


Figure 2.

The point here is that values and beliefs—some might even choose to call these the ruling “ideology”—inform and shape the norms, rules, and entitlements (property relations) in an economy. This should be obvious in the context of the Chinese economy. Between 1949 and the incipient reforms of 1978 there was a single and quite clear ideology that provided the reasons for all rules, and those rules determined patterns of interaction both within and among firms and households in China. However, as Deng Xiaoping gained political authority in the late 1970s, and as his interest in reform matured, his values and beliefs were undergoing transformation. He still adhered to some of the core principals of the Maoist regime, but he was open to new ideas about organizing production. The famous saying attributed to Deng captures

the essence of his essential pragmatism: “I don’t care what color the cat is, I care whether or not the cat catches mice.” We see that the core of pragmatism is concerned with purpose [Rorty, 1982]. The pragmatist will ask: “for what purpose would it be useful to hold particular beliefs?” For Deng, the clear purpose was to bring China into the globalizing economy, and to improve the life prospects of the average citizen. Deng was animated by a particular image of the future.

Others in leadership positions continued to adhere to standard Maoist values and beliefs, and therefore a large part of Deng’s challenge was to bring these individuals to his side. For this he mobilized economists and other advisors from a range of epistemic communities to offer analytical support in the form of models, derived policy prescriptions, and their implied predictions. Slowly, as the evidence mounted, and as Deng pursued ever-more creative strategies, the ideology of the ruling members of the Central Committee gradually shifted and the emergence of new institutional arrangements continued to permit new patterns of interaction among agents within and among firms and households.

It is essential to see the process of institutional reform as one of experimentation. Notice in Figure 2 the presence of a pathway for feedback from the observations of new patterns of interaction back into the realm of values and beliefs (ideology). As we will see below, early successes in agriculture emboldened the reformers to further modify their ideology and thus to undertake yet further institutional innovation in other sectors. We have, in other words, a process of individual leaders gradually revising their beliefs, experimenting on a few modest fronts, observing the results of those new institutions, learning from those pilot projects, revising the analytical and prescriptive models of their economic advisors, crafting yet another set of new institutional arrangements, and continuing to watch, learn, revise, observe, and then revise accordingly.

With this general conceptual introduction, we now turn to a more specific application to the Chinese reforms since 1978.

C. The Conductor versus the Planner

We start with the idea of a social planner facing an economy in which outputs of each sector are readily observable. Assume that the planner is operating in a politically constrained environment such that certain institutional changes—privatization of the nation's land and certain other assets—is not possible, but other institutional changes (altering the incentive structure within and among firms in various sectors) are pliable parameters subject to adjustment and refinement. The planner's problem is one of searching across all sectors to manipulate those pliable institutions in such a way as to accomplish particular objectives. We may express this in standard terms as picking institutional changes that will maximize the planner's welfare. If we wished to be conventional we could define the planner's welfare function in terms of modifying economic institutions in a way that maximizes the probability of achieving sustainable growth in GDP of at least 6% per annum. With population growth now on a steady-state trajectory, the planner figures this is a plausible and sustainable rate of improvement of per capita incomes that will not result in serious inflation or produce other unwelcome implications.

The planner's problem is further compounded by high information costs concerning the nature of real (as opposed to official) contracts among all factors of production in the economy. We employ the standard concept that a firm is a constellation of explicit or implicit contracts among owners of factor of production. Since the planner desires to obtain early indications of future output problems, he would ideally like to obtain early indications of incentive problems embedded within each sector. In a planned economy this is doubly difficult because agents

within each sector will have an array of incentives—often perverse—concerning the information they are willing to transmit to others. We have here a dual search problem for the planner. The first level is to monitor (actually have agents do the monitoring and report back) output signals to make sure that the economy as a going concern is “working” as it should. The second level is to monitor (again, with agents doing the monitoring) the production processes within sectors to make sure that incentives are appropriately aligned.

Assume at the beginning of period 1 the planner is informed that the economy is at risk of failing to deliver acceptable outcomes at the end of that period. The urgent problem for the planner is to decide which sectors warrant immediate attention. This demands detailed knowledge of the structure and function of the components of each sector. And it introduces a recursive element in institutional change since a particular refinement in sector k will have imperfectly known implications in all other sectors. Some of these changes may imply that the planner “overshoots” in his attention to a specific sector, and some may imply that he “undershoots.” But the problem is actually worse than that. Specifically, there is no one in this economy with empirical knowledge of alternative institutional arrangements within or among sectors. Simply put, there is no empirical basis for judging which type of institutional change is required within sectors to maximize the probability of inducing the imagined outcome being sought by the planner. This is not a realm of managing risk—it is a realm of complete Knightian uncertainty.

The planner recognizes the multiple layers of high information costs and comprehensive uncertainty. The setting necessarily defeats a priori optimization approaches of the standard prescriptive variety. Rather, the planner must undertake a quest for institutional change that builds on stylized goals and objectives, unclear causal relations, and little experience with the

“dose-response” problem familiar to medical researchers. Just because the planner knows that some institutional change is called for does not mean that the planner knows: (1) where (in which sector) to focus his efforts; (2) where within particular sectors is the best place to adjust institutional arrangements; (3) which institutional arrangements seem the most plausible and effective ones to adjust; and (4) what implications will flow from specific institutional refinements (the dose-response problem).

We can characterize the planner’s problem as one of discovering what he really wants as he goes about the task of figuring out what he seems able to accomplish. The planner reasons about what he thinks he can accomplish as he reasons about what he seems able to achieve through institutional adjustments. In our model there is no such thing as getting it “right” or getting it “wrong” because there is no right or wrong. There are simply new institutional adjustments that seem—once they have been introduced and monitored—to move the economy in a direction that is better (welfare enhancing for the planner) than the status quo ante. But the planner will not have an a priori concept of “better.” The planner will bestow that benediction when the results are in. And the planner will use the accumulated information as a competent but not omniscient Bayesian in an effort to learn and refine the process of institutional change into the future.

At the beginning of the second period the planner undertakes a similar activity. Indeed, the planner’s meta-objective is to map out a strategy of multi-period institutional adjustments that will maximize the probability of attaining the desired 6% growth target. The planner focuses on especially serious defects first, learns from that experience, accepts (likes) or rejects (dislikes) the results, recalibrates the operating assumptions, formulates a new strategy, and undertakes new institutional innovations. The process continues over multiple time periods.

Notice that the description of the planner's activity here is rather idealized. A more plausible approach is to invoke the concept of a conductor. For us, the idea of a conductor emphasizes the crucial distinction between the Central Committee as an economic planning agency, and the Central Committee as a locus of purposeful guidance concerning desired general directions for the Chinese economy. We use the metaphor of a conductor to suggest the way in which an orchestra conductor undertakes the process of producing coherent music out of a large number of independent and highly skilled entrepreneurs. The conductor of an orchestra cannot require that each member of the orchestra do exactly as he desires. The conductor does, of course, hold some considerable influence over what they shall do, and he is able to sanction in the future those who fail to meet his expectations. With this idea of a conductor in hand, we now turn to our formal model of institutional reform in China since 1978.

D. The Formal Model

Following Weitzman [1970], imagine an economy consisting of n commodities produced by m firms. The net output of commodity i produced by firm k is denoted y_{ik} . If the firm consumes rather than produces this good then y_{ik} is negative. Firms transform inputs into outputs according to a vector of coefficients suggested by the box labeled "real productivity of firms" in Figure 1. The level of the j^{th} activity undertaken by firm k is denoted v_{jk} ($j = 1, \dots, J_k$). Production possibilities for the k^{th} firm are limited by the availability of fixed and variable factors of production. That is, $f_{lk}(v_k, y_k) \leq 0$. The full production set of all net outputs by firm k is given by Y_k , and is noted formally as:

$$Y_k \equiv \{y_k \mid \exists v_k \text{ with } f_{lk}(v_k, y_k) \leq 0 \text{ for } l = 1, \dots, L_k\} \quad (1)$$

The usual convexity and limit assumptions apply.

Since there are final goods in this economy, final net output of commodity i is x_i . The final net output vector x , consisting of both consumption and investment goods, is feasible if it is in the closed set X . Assume that the relevant social welfare function is that of the conductor, and that it is continuous and defined over all $x \in X$. As above, assume full feasibility. The initial stock of commodity i available to the economy is given by ω_i . The problem for the conductor is to act such that he maximizes $U(x)$ subject to: (1) $x \in X$; (2) $y_k \in Y_k$ for $k = 1, \dots, m$; and (3)

$$x \leq \sum_{k=1}^m y_k + \omega .$$

The production program $[x, y_1, \dots, y_m]$ is feasible if it satisfies the three conditions immediately above. The production program $[x^*, y_1^*, \dots, y_m^*]$ is optimal if there is no other production program that results in $U(x^*) \geq U(x)$.

Weitzman reminds us of the information problems inherent in any undertaking of this magnitude. We assume here that the conductor has plausible and functional knowledge of the vector of factors of production (ω), and also has knowledge of the set of “acceptable” consumption vectors X . A serious information problem is encountered when we focus on the specific activities $\{v_k\}$ or the functions $\{f_k(v_k, y_k)\}$ specific to each of the firms in the economy. But these information problems are not crippling. The conductor knows quite well the recent record of outputs of various sectors, and knowing the vector of inputs (ω) allows some workable assumptions to be drawn. Following Weitzman, we employ Y_k^o to depict the conductor’s estimate of the production set Y_k . The elements of Y_k^o consist in all production possibilities that are considered realistic.

The challenge for the conductor is to formulate institutions (instrumental rules of the economy) that will send signals to the owners and managers of firms. Those signals will be

regarded as the necessary conditions for the expected realization of a new sector-wide production program whose realization constitutes the sufficient condition for issuing the new institution. These institutions (these signals) can take many forms. They might concern a modification in the minimum wage that must be paid in a particular sector. They might concern the elimination of a particular excise tax on the value of production from another sector. While a new institution could also pertain to all sectors in the economy (e.g. new tax rates on all earned income), we restrict our current attention to sector-specific institutional changes.

A second challenge for the conductor is to understand that the issuance of new institutions (new instrumental rules) is but the first step in a two-way learning game that Hurwicz refers to as the *environment* [Hurwicz, 1973]. That is, the environment consists in a set of circumstances that cannot be changed either by the designer of the mechanism—the new institution—or the agents to whom the new institution is directed; in this case, the owners and managers of firms in a particular sector thought to be in need of new working rules to bring forth different production outcomes. The practical implication of this is that when the conductor issues new institutions—new signals—these new rules are the only change in the production set of that sector. Of course the sector targeted by these new rules will then respond in some fashion to those new rules. That is precisely the reason for the new rules. But the complete nature and scope of those responses cannot be foreseen by the conductor. It is here that we encounter endogenous institutional change. That is, owners, managers, workers who receive the new signals—individuals who are the intended recipients of this institutional change—will respond by moving to undertake a new production program whose precise content cannot be known by the conductor. All the conductor will be able to observe, at some time in the future, is a change in the output vector of that sector. Note also that while quantitative changes in the production

vector of the sector will become mostly apparent in one or two production periods, it may take much longer for quality differences, if any emerge from the new institutional arrangement, to show up.

Hurwicz refers to this entire process of: (1) new rules (new institutions); (2) an induced response at the sector level(s); and (3) then forms of feedback to the conductor, as a process of tâtonnement [Hurwicz, 1973]. That is, this is a period of “dialogue” without action, followed by decisions in production and consumption routines. Notice that part of this dialogue might well take non-verbal forms—it may be mediated by the mere observation of data. Some of the participants in this dialogue could include staff assigned to the conductor, the central as well as regional banks, other credit agencies, and even worker’s associations. The totality of messages under a given mechanism constitutes the language of that mechanism [Hurwicz, 1973]. Under Walrasian tâtonnement the language consists of prices and quantities, and if there is a Walrasian auctioneer the calls of the auctioneer serve to facilitate market clearing. In the Chinese setting the language consists of signals pertaining to desires of the conductor, intentions, plans, constraints, counter-offers, threats, and perhaps grudging resistance. The full adjustment process is defined by the environments as a fixed platform, and then the language, the response rules, and the outcome rule. The class of environments across sectors, and the specific languages specific to each sector, comprise the family of adjustment possibilities and processes.

Before moving on, we must address the matter of incentive compatibility. In the limit, pure incentive compatibility is revealed if and only if the response in a specific sector is precisely coincident with the embodied intentions of the conductor who issued the institution under discussion. Deviations from those exact intentions are an indication of the extent to which the transmitted signal embedded in the institution (that is, the empirical content of the institution) is

at odds with the interests and tendencies of the agents whose behavior the new rules were intended to alter. That is, when the induced (endogenous) institutional change in response to a new imposed institution is precisely embodied in the new signal from the conductor, then we can say that the new rule was perfectly incentive compatible. A perfect Nash equilibrium is indicative of this property.

Returning to the earlier point about the adjustment process as a learning exercise, Weitzman reminds us that the conductor comes to learn about the production and adjustment process of various sectors as the process of new rules and induced responses plays out over a period of time. With enough observations, and with careful updating of technical and behavioral circumstances from each sector, the conductor can learn about the production function of each of the sectors. The more chances there are to issue new rules and observe responses, the better that knowledge of the production set becomes. For very critical sectors—agriculture, military procurement, heavy industry—the more important it becomes to have regular empirical checks on the production set.²

Imagine at the beginning of stage s the conductor knows the closed and bounded production set Y_k^s containing all possible production options for firm k . If we assume identical firms then k can be taken as a plausible representation of the industry—we will call this a sector. The conductor now seeks to extract an optimal production program from the sector of which k is the representative—if we can alter k 's production set we will alter all m firms in that sector. The

² We find a similar process at work in certain manufacturing sectors in the U.S. Large automobile manufacturers will buy parts (brakes, generators) from independent suppliers, but they will also manufacture those same items themselves. Oliver Williamson points out that the standard decision of whether to “make or buy” overstates the case. By manufacturing certain parts itself, manufacturer of cars learn about the production function for those products such as brakes and generators, and this information gives them an advantage in negotiating per-unit prices with external suppliers.

conductor seeks an optimal program defined as $[x^s, q^s_1, \dots, q^s_m]$ by solving the maximization problem

$$U(x) \tag{2}$$

Subject to $x \in X$ (3)

$$q_k \in Y^s_k \tag{4}$$

$$x \leq \sum_{k=1}^m q_k + \omega \tag{5}$$

Whereas the classic central planner would seek to impose a specific production quota on firm k , our conductor seeks to alter the institutions that define the production set for all firms in the sector (of which k is a perfect representative). Consider Figure 3.

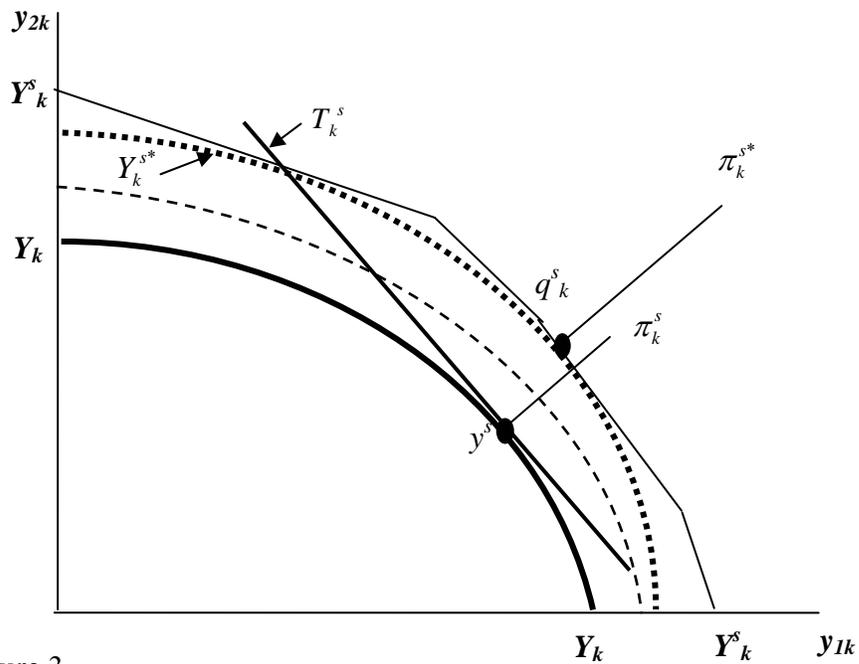


Figure 3.

Here we see a situation in which the existing output combination (y_1 and y_2) of firm k (and all other identical firms in this sector) is deemed suboptimal ($y_k^s < q_k^s$) by the conductor. For simplicity, assume that firms in this sector produce both steel and sheet metal—both of which are used elsewhere in the economy. The conductor desires an increase in both outputs. The standard approach would be to assign the vector q_k^s as a quota for firms in the sector. Notice that q_k^s is not in the current feasible production set Y_k . Traditionally, managers of such firms will seek to educate the planners as to the infeasibility of the quota and they will do this by countering with an alternative offer. Weitzman has the managers select a hyperplane T_k^s tangent to Y_k at the point y_k^s . The hyperplane is determined by the point of tangency at y_k^s and the normal to it at that point given by π_k^s . The hyperplane is defined in terms of profit for firm k from producing y_1 and y_2 :

$$x \leq \sum_{k=1}^m q_k + \omega T_k^s \equiv \{y \mid \pi_k^s y = \pi_k^s y_k^s\} \quad (6)$$

The hyperplane defines a new domain over which induced institutional change will be undertaken within the k identical firms. However, instead of the conductor mandating the production of a vector of outputs q_k^s , the conductor issues a new institution that he believes (imagines, predicts) will move firms to q_k^s . These new institutions induce an adjustment process inside of the firms that the conductor hopes will move production to q_k^s . Once the new institutions are understood by managers of firms, these managers initiate a process of their own institutional reform in line with the new rules handed down by the conductor. Firms work out their best response in light of the pertinent hyperplane, but in this case they are unable to reach point q_k^s on the imagined production frontier. They are bound by a new feasibility set defined by

the fine dashed line in Figure 3. At this point we may speculate that there are two possible reasons why firms were unable to attain the desired (and imagined) frontier Y_k^{s*} .

Perhaps the capital stock of the firms is so deficient that no amount of institutional reform will render the heavy dashed frontier (Y_k^{s*}) attainable. Or, perhaps the new institutions issued by the conductor were insufficient to induce the desired response inside of firms. For this account, we will assume that technology is not the binding constraint but that there needs to be yet another round of institutional innovation—some of it on the part of the conductor, and some of it on the part of managers. After several more rounds of experimentation, we assume that the desired production goals (q_k^s) are met. This new feasibility set (heavy dashed line) defines a new hyperplane (not shown), and a new normal that depicts, in this particular case, that the iterative process of institutional change turned out to be perfectly incentive compatible with the agents (both managers and employees) within the firm. That is, the conductor managed—after several attempts—to induce the firm to move to q_k^s while allowing the agents within the firm to innovate their own special induced response such that the resulting production set Y_k^{s*} and their deployment within it turns out to be Pareto-efficient.

If we now combine the earlier conceptual model of institutional change with the formal model of Figure 3, we can begin to see the general outlines of a theoretical account of institutional reform in China. Let us now turn to some empirical evidence of that process.

IV. Empirical Aspects

A. The Special Economic Zones

An illustration of the above model is found in the establishment of special economic zones in Guangdong and Fujian provinces in southeast China. In 1979 the government issued a set of new institutional arrangements permitting political leaders and local managers to begin the process of induced institutional change. In reference to Figure 3, we may consider this as an indication that Deng Xiaopeng had a vision for firms that would allow them to move to a higher production possibilities frontier if they were given greater freedom in restructuring their internal institutional arrangements. Notice that the conductor (Deng) did not (and could not) require greater production of particular goods. Rather, Deng's government issued permissive institutional arrangements that then offered local and district officials the scope and latitude to negotiate with firms under their jurisdiction to begin the process of *gaizhi*—transforming the system. We can think of this as the second stage of induced institutional change once a liberating directive came from the Central Committee. We can also see this as cities and districts within this special economic zone began acting as “firms” (as going concerns) competing to provide market opportunities for factories and other entities in pursuit of the best possible results. Here, the concept of “best results” entails new economic activity and job growth within specific districts.

B. Agricultural Reforms³

China's agricultural transformations since 1978 offer a somewhat different opportunity to assess imposed and induced institutional change. The unique aspect here is that many changes

³ Some of this material is adapted from a nested principal-agent model in Xue-Lascoux and Bromley, 1996.

authorized (imposed) by the conductor were in fact inspired by experimentation out on the ground. Specifically, there had always been a limited range of local institutional arrangements in agriculture—even during the period of imposed collectivization. These variations were common knowledge among local officials (and national leaders) who nonetheless allowed them to persist. If we think of these local authorities as “sub-conductors” then we can view this existing structure of institutional variation as instances of villages acting on the implied consent to undertake particular—though circumscribed—institutional innovations within collectivized villages.

The most famous incident in this regard is found in the tacit permission of Wan Li, the Provincial Governor of Anhui province. Beginning in 1978, Wan explicitly permitted, with the blessing of Deng (who stayed behind the scenes), production teams to divide and lease land to households. Here is an example of a sub-conductor offering explicit permission to farmers in pursuit of a more promising production possibilities frontier, and this institutional change then set in motion an endogenous response in terms of new patterns of interaction in agriculture throughout large parts of Anhui Province. However, it was not until 1981 that the conductor (the Central Committee of the Chinese Communist Party) offered official ratification of the emerging system. By this time patterns of interaction in agriculture had further evolved and had been transformed at the local level in an example of induced (endogenous) institutional change, enabled by the original tacit institutional changes started in 1978.

Looking back on the period between 1978 and 1983, the gross value of agricultural output grew by about 7 percent per year compared to an annual growth rate of 3 percent over the two decades prior to the reforms. Rural incomes per capita more than doubled over this same period. In 1978, per capita savings in rural areas had averaged Y18, while by 1983 rural savings per capita had increased to Y60 [Bruce and Harrell, 1989]. Since these results occurred

immediately following the move to the household responsibility system (HRS), so-called "decollectivization" is often given the credit for such gains. But the early reforms are properly regarded as a move to the production responsibility system (PRS).

The PRS was a new set of rules from the conductor that differed substantially from those under the collective era (1958-1978). The reforms under the PRS initially took several forms: (1) a reduction of the size of the basic working group; (2) a decentralization of decision making in the production process; and (3) a change of distribution scheme aimed at promoting work incentives [Kueh, 1984]. However, within four years (1979-1983), the various institutional arrangements on the ground tended to converge to one basic institutional structure that is now referred to as the household responsibility system (HRS).

The essence of the HRS was the replacement of the production unit by the individual household as the basic unit of: (1) production; (2) income distribution; and (3) accounting in agriculture. Under the HRS, cultivated land in a village was assigned to each household via contracts typically specifying the amount of land to be cultivated, the nature and amount of inputs to be supplied by the collective, the expected level of production, an agreed quota of staple crop production to be sold to the state, the amount to be handed over to the collective and, in some cases, the number of days of labor to be contributed to maintenance of public works [Bruce and Harrell, 1989]. The burden of agricultural taxation was also shifted to households. Draft animals and divisible farm equipment, previously under the possession of the production team, were also allocated to households for their use. Initially, the duration of contracts was three to six years.

Within this institutional structure, the distribution of arable land to households was guided by an egalitarian principle, with three popular rules of assignment. The first was distribution on a per-capita base. Land of different quality or character in a village—fertile and exhausted land, grain fields and cotton fields, seedling fields and main fields, cultivated fields close to the homestead and far away from it, etc.—was divided into equal parcels and each household was assigned a share in all types of land according to the number of people in the household. A household's contracted land thus often consisted of small parcels of different qualities and was geographically scattered. The second method of land distribution differed from the first only in that the assignment was done on a per-work-force basis. The amount of land a household could contract depended on the number of household members in the work force. The third method of land distribution was based on a combination of the previous two schemes. Land in a village was divided in two parts, the subsistence field and the responsibility field. The subsistence field was assigned on a per-capita basis, while the responsibility field was assigned on a per-worker basis.⁴ The former occupant of the land under the HRS would remain with the production team which would now be under the name of the village co-operative. However, households were granted conditional use rights on a certain amount of collective land and became residual claimants over their contracted land.

Until 1984 the prevalence of the HRS had caused little controversy. The system was typically perceived as being more productive than the previous institutional arrangements because it offered work incentives through the provision of a closer link between reward and

⁴ To maintain an egalitarian outcome, the contract period was often for 3-6 years, after which a reallocation of land would occur.

effort as measured by output [He, 1993; Huang, 1993; Lardy, 1986; Lin, 1987, 1988, 1992; Nolan and Paine, 1986]. After 1984 however, the alleged benefits of the HRS began to be challenged. It was soon noticed that there was a serious absence of incentives for peasants to invest in and to maintain agricultural land. That is, use rights alone did not seem sufficient to insure productivity over the longer term. The efficacy of the land-assignment scheme under the HRS was also questioned. The argument was advanced that the scheme encouraged small-scale farming, excessive scattering of plots, and inappropriate land/labor ratios [Kueh, 1985; Wen, 1989; Bruce and Harrell, 1989]. Crop output, especially grains, stagnated after 1985.

The late 1980s witnessed yet another wave of discussions concerning the proper institutional arrangements in agriculture. After the "illusion" of having successfully concluded the previous experiments on land policies—the 1950 land reform, the 1958 collectivization, and the 1978-1983 devolution to the HRS—the search for better institutions was once again on the research agenda. Unlike in the previous nation-wide programs, first when small-farmer agriculture was emphasized (1950), and then when collectivization was imposed (1958), this new search did not result in yet another universal solution. Research staff, and those responsible for policy, engaged in continuing disagreements and no single group was able to impose its own favored solution on others. Dating from 1984, when the central government was unable to resolve the disagreements, and during which time it was unwilling to incur the political risk of initiating yet another standard system, dirigisme underwent further devolution. The conductor granted local authorities greater latitude in the design of agricultural institutions, and local experiments were explicitly encouraged. Contrary to the initial period of the HRS, households were permitted to employ or sell labor for farm work. Sub-leasing was sanctioned so that the undesirable land/labor ratios resulting from the land-assignment scheme could be adjusted. The

land contract period was extended up to 15 years to promote long-term commitments to land improvement. In 1983, farmers were allowed to undertake private marketing and transportation of many products. Moreover, they could transfer their contracts, lease their land, and even move to a factory job elsewhere. At this time, non-state enterprises were granted a lower tax rate (35%) than were state enterprises (55%) based on the recognition that non-state firms had to compete for inputs whose costs may exceed those in the controlled state sector. In 1985 mandatory government purchases of grain, cotton, and edible oils were abandoned in favor of long-term sales contracts between farmers and government. This brought a much greater share of agricultural production on to the market. However, urban prices began to fluctuate in response to supply and demand circumstances and the associated price rises prompted a partial retreat. Since that time of general permissive institutional change, a number of other innovations have followed.

As a result, a wide variety of institutional arrangements for production and land use emerged in different regions of the country [Yao and Carter, 1994]. Some of the systems kept the basic features of the early HRS, while others did not. Both the HRS, and the variety of institutional arrangements that followed constitute a set of rules concerning two primary issues: (1) property relations over arable land; and (2) the organization of production activities. The two issues are clearly interrelated because the choice set of organizational forms for production is defined, to a large extent, by the rules that specify the right/duty relationships among people with respect to land use and the control of land. Of particular concern here is who has access to particular plots of land, what are the conditions of access to that land, and who has a presumptive right to the products from the land? The differences in institutional arrangements embedded in property relations and reflected in the organization of production encompass three aspects: (1)

the nature and size of the working group; (2) the organization of the production process itself; and (3) the distribution of income arising from the production activities.

One final (and recent note) on institutional reform in agriculture seems warranted. In the summer of 2005 the central government (the conductor) eliminated the agricultural tax—a serious burden for about 900,000,000 rural residents. This move was undertaken in the hope of improving the livelihoods of rural people and narrowing the large (and growing) gap between rural incomes and those in the thriving east-coast urban areas. However, the central government failed to incorporate the induced response from local units of government who had previously relied on transfers of funds from the center back to local entities to pay for a wide range of necessary services—roads, health clinics, schools, and various others local obligations. In response to the loss of revenues from the center, local governments have recently instituted a new regime of fees and taxes. Family planning councils at the local level—administrators of the policy on the number of children—have apparently become increasingly aggressive in levying fines for violations of the rules on the number of children in a family. The central government reported a pronounced increase in the number of local “incidents” in 2004 in apparent protest of economic hardship in rural areas. The elimination of the hated agricultural tax was thought to be a major impetus for such protests. Now, however, it seems that there are yet new reasons for rural unrest. We await the institutional response from the conductor to this new prospect.

C. State-Owned Enterprises

The early successes in agricultural reform served as the launching pad for an equally sweeping reform of the state-owned enterprises [Garnaut, et al. 2005]. In 1984, reassured that a

general loosening of controls would inspire induced innovation within firms, the Central Committee authorized a variety of institutional possibilities. A contracting system was introduced that required managers to meet various performance targets (not production targets) such as sales, profit, capital investments. These targets had to be met if managers were to be allowed to share in the profits of the enterprises. In this first round, good performance was rewarded, but failures were not penalized [Garnaut, et al. 2005]. Soon a leasing system emerged in which managers paid a fixed percentage of profits to the central government. By 1988 the State Council had issued new regulations on the leasing of SOEs. The Shenzhen Stock Exchange opened in 1990, followed a year later by the Shanghai Stock Exchange. The government continued to hold important shares of the stock in all privatized firms.

In 1995 the government took yet another step forward with the issuance of a decree to “keep the large ones and let the small ones go.” That is, somewhat less than 1,000 firms were to be retained in the state sector, while all of the others were given permission to seek their own way in an increasingly marketized economy. By the end of 1998 more than 80 percent of the state and collective firms at the level of county or below had gone through *gaizhi* (restructuring). Since 2000 the reforms have reached into both rural and urban areas, and they have affected firms of all sizes. Bankruptcy, liquidation, listing and de-listing, debt-for-equity swaps, sales to private parties, and auctions have emerged as instruments of reform. Since 1998 over 30 millions workers have lost their jobs due to restructuring, with an estimated 9 million of them finding new employment [Garnaut, et al. 2005]. By 2003 the non-state sector accounted for approximately 2/3 of GDP. One year later, it is estimated that 40 percent of the continuing SOEs were losing money, compared with under 20 percent of the non-state sector [Garnaut, et al. 2005].

V. SUMMARY

Economies are always in the process of becoming. Since 1978, the economy of China has undertaken a series of profound institutional changes—both imposed and induced—that have transformed the economy in historically unprecedented ways. The process can be modeled as one in which permissive institutional changes are issued by the conductor in the expectation that these new institutions will permit individual firms to move to a higher production possibilities frontier. The second phase of institutional change—induced by the new institutional envelope handed down by the conductor—takes place when individuals, managers and local officials search for new ways of doing old things, and for ways to undertake new activities heretofore prohibited. The combination of the conductor's intentions—and the induced responses of the recipients of new institutional arrangements—keep the economy moving forward. The economy is always in the process of becoming. Here is an account of how the Chinese economy is becoming.

REFERENCES

- Axelrod, Robert. 1984. The Evolution of Cooperation, New York: Basic Books.
- Brock, William A. and David Colander. 2000. "Complexity and Policy," in David Colander (ed.), The Complexity Vision and the Teaching of Economics, Cheltenham, UK: Elgar.
- Bromley, Daniel W. 1989. Economic Interests and Institutions: The Conceptual Foundations of Public Policy Oxford: Blackwell.
- Bromley, Daniel W. 2006. Sufficient Reason: Volitional Pragmatism and the Meaning of Economic Institutions, Princeton: Princeton University Press.
- Bruce, John and Harrell, P. 1989. Land Reform in the People's Republic of China 1977-1988, Research Paper No. 100, University of Wisconsin-Madison, Land Tenure Center.
- Coase, Ronald, "The Problem of Social Cost," Journal of Law and Economics 3:1-44, 1960.
- Commons, John R. 1995. Legal Foundations of Capitalism New Brunswick, NJ: Transaction Publishers (reproduction of 1924 edition by Macmillan).
- Ellickson, Robert C. 1991. Order Without Law: How Neighbors Settle Disputes Cambridge: Harvard University Press.
- Garnaut, Ross, Ligang Song, Stoyen Tenev, and Yang Yao. 2005. China's Ownership Transformation: Process, Outcomes, Prospects, Washington, D.C.: World Bank.
- Greif, Avner and David D. Laitin. 2004. "A Theory of Endogenous Institutional Change," American Political Science Review, 98(4):633-52.
- Granovetter, Mark. 1993. "The Nature of Economic Relationships," In Richard Swedberg, ed., Explorations in Economic Sociology, pp. 3-41. New York: Russell Sage Foundation.
- Hall, Peter A, and Rosemary C. R. Taylor. 1996. "Political Science and the Three New Institutionalisms," Political Studies, 44(5)936-57.
- He, D. 1993. "Reform in Land Policy at the Village Level," (in Chinese: "Cunji Nongdi Zhidu de Biange") in: State Council's Development Centre, Land Reform in China: Proceedings of the International Conference on the Chinese Land Reform, (in Chinese: Zhongguo Nongcun Tudi Zhidu de Biange: Zhongguo Nongcun Tudi Zhidu Guoji Yantao Hui Lunwen Ji), Beijing: Peking University Press.
- Huang, Q. 1993. "A Review of the Chinese Land Policy and the Current Problems (in Chinese: "Zhongguo Nongcun Tudi Zhengce de Huigu yu Mianling de Wenti") in: State Council's Development Centre, Land Reform in China: Proceedings of the International

- Conference on the Chinese Land Reform, (in Chinese: Zhongguo Nongcun Tudi Zhidu de Biange: Zhongguo Nongcun Tudi Zhidu Guoji Yantao Hui Lunwen Ji), Beijing: Peking University Press.
- Hurwicz, Leonid. 1973. "The Design of Mechanisms for Resource Allocation," American Economic Review, 63(2):1-30.
- Kronman, Anthony T. 1985. "Contract Law and the State of Nature," Journal of Law, Economics, and Organization 1:5-32.
- Kueh, Y. Y. 1984. "China's New Agricultural Policy Program: Major Economic Consequences, 1978-1983," Journal of Comparative Economics, 8:353-375.
- Kueh, Y. Y. 1985. "The Economics of the 'Second Land Reform' in China," China Quarterly, 101:122-131.
- Lardy, Nicholas R. 1986. "Agricultural Reforms in China," Journal of International Affairs, 39:90-104.
- Lawson, Tony. 1997. Economics and Reality, London: Routledge.
- Lin, Justin Yifu. 1987. "The Household Responsibility System Reform in China: A Peasant's Institutional Choice," American Journal of Agricultural Economics, 69:410-415.
- Lin, Justin Yifu. 1988. "The Household Responsibility System in China's Agricultural Reform: a Theoretical and Empirical Study," Economic Development and Cultural Change, 36:199-224.
- Lin, Justin Yifu. 1992. "Rural Reforms and Agricultural Growth in China," American Economic Review, 82:34-51.
- Macaulay, Stuart. 1963. "Non-Contractual Relations in Business: A Preliminary Study," American Sociological Review, 28(1):1-23.
- Nolan, Peter and S. Paine. 1986. "Towards an Appraisal of the Impact of Rural Reform in China, 1978-95," Cambridge Journal of Economics, 10:83-99.
- North, Douglass C. 1990. Institutions, Institutional Change and Economic Performance Cambridge: Cambridge University Press.
- Peirce, Charles Sanders. 1877 (1997). "The Fixation of Belief," in Louis Menand (ed.), Pragmatism, New York: Vintage Books.
- Peirce, Charles Sanders. 1878 (1997). "How to Make Our Ideas Clear," in Louis Menand (ed.), Pragmatism, New York: Vintage Books.

- Peirce, Charles Sanders. 1934. Collected Papers, Vol 5, Cambridge: Harvard University Press.
- Peirce, Charles Sanders. (ed. by Vincent Tomas). 1957. Essays in the Philosophy of Science, New York: The Liberal Arts Press.
- Ramstad, Yngve. 1990. "The Institutionalism of John R. Commons: Theoretical Foundations of a Volitional Economics," in: Research in the History of Economic Thought and Methodology, ed. by. Warren Samuels, Boston: JAI Press.
- Raz, Joseph. 1997. "Incommensurability and Agency," in Incommensurability, Incomparability, and Practical Reason, ed. by Ruth Chang, Cambridge: Harvard University Press.
- Rodrik, Dani. (ed.). 2003. In Search of Prosperity: Analytic Narratives on Economic Growth, Princeton: Princeton University Press.
- Rorty, Richard. 1982. Consequences of Pragmatism, Minneapolis: University of Minnesota Press.
- Russell, Bertrand. 1945. A History of Western Philosophy New York: Simon and Schuster.
- Samuelson, Larry. 2005. "Economic Theory and Experimental Economics," Journal of Economic Literature, 43:65-107.
- Sanchez, Nicolas, and Jeffrey B. Nugent. 2000. "Fence Laws vs. Herd Laws: A Nineteenth-Century Kansas Paradox," Land Economics 76(4):518-33.
- Satz, Debra and John Ferejohn. 1994. "Rational Choice and Social Theory," The Journal of Philosophy, 91(2):71-87.
- Sen, Amartya. 1977. "Rational Fools: A Critique of the Behavioral Foundations of Economic Theory," Philosophy and Public Affairs, 6:317-44.
- Shackle, G.L.S. 1961. Decision, Order, and Time in Human Affairs, Cambridge: Cambridge University Press.
- Veblen, Thorstein. 1898. "Why is Economics not an Evolutionary Science?" The Quarterly Journal of Economics, 12(4):373-97, July. Reprinted in: Thorstein Veblen, The Place of Science in Modern Civilization New Brunswick, NJ: Transaction Publishers, 1990.
- Weitzman, Martin. 1970. "Iterative Multilevel Planning with Production Targets," Econometrica, 38(1):50-65.
- Wen, G. J. 1989. The Current Land Tenure and its Impact on Long Term Performance of the Farming Sector: The Case of Modern China, Ph.D. Dissertation, University of Chicago.

Xue-Lascoux, Zhiqun and Daniel W. Bromley. 1996. "Necessity and Purpose in Chinese Agriculture: 1949-95," Oxford Development Studies, 24(3):261-80.

Yao, Yang and Michael R. Carter. 1994. An Economic Analysis of the Property Rights Evolution in Post-Reform Rural China, Department of Agricultural and Applied Economics, University of Wisconsin-Madison, (mimeographed).