

**The Game-Theoretic Revolution in
Comparative and Historical Institutional Analysis**

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1 May 2002

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&Chapter 1: Introduction

Institutions matter and conviction in this statement is well reflected in the recent surge of interest in institutional analysis in the social sciences.¹ But what exactly are institutions? How can we empirically study them? Why do societies fail to adopt the institutions of more economically successful ones and why do they evolve along distinct trajectories of institutional development? This book presents and integrates recent developments in addressing these questions that build on advances in game theory.

Until recently, the main perspective used by economists to study institutions bears the footprints of Hobbes, Adam Smith, and Coase. Hobbes's assertion that without a state, life would be "solitary, poor, nasty, brutish and short" corresponds to the dominant approach to study economic institutions as rules specified and enforced by the state. Politically determined rules together with their enforcement mechanisms influence economic efficiency by constituting the "rules of the economic game" (North 1990). Institutions determine the cost of transacting and hence, as argued by Adam Smith, the division of labor, the extent of the market, and the resulting efficiency gains from specializations and inventions. Within the markets created by formal rules, economic agents choose the contractual and organizational forms aimed at minimizing transaction costs (Coase 1937, Williamson 1985). But transaction costs place a wedge between the efficiency and distributional implications of given rules and hence, institutions matter.

To a large extent, institutional change thus reflects the whim of the political agents. Their ability to alter rules by fiat, however, is constrained by the enforcement mechanisms that are at their disposal and by "informal," culturally-determined rules such as social norms, traditions, and customs. Hence, inter-societal distinctions in the objectives of the political agents, enforcement mechanisms and informal rules cause societies to evolve along distinct institutional trajectories.

¹ For surveys of these developments, see, for example, Eggertsson (1990); Furubotn and Richter (1997); Hodgson (1998); Milgrom and Roberts (1995); Williamson (1996); Hart (1995); Bardhan (1991); Barzel (1989); Greif (1996b, 1997a, 1997c, 1997d, 1997e, 1998) in economics. Weingast (1996); Bates et al. (1998); and Thelen (1999) in political science. Coleman (1990); Gravnovatter (1985); Powell and DiMaggio (1991, introduction); Smesler and Swedberg (1994); Scott (1995); and Brinton and Nee (1998) in sociology.

While the contribution of this perspective is beyond doubt, it leaves much unanswered. Consider, for example, the analysis by North and Thomas (1973) of the spectacular commercial and economic expansion in Europe during the late medieval period. Early on feudal lords "fought amongst themselves; but gradually, ... the strife declined" (p. 11). Peace and the security of property rights enabled population growth and the realization of gains from "commerce between different parts of Europe" that "had always been potentially of mutual benefit" (p. 11). The "revival of trade led ... to a host of institutional arrangements [such as insurance contracts and the bill of lading] designed to reduce market imperfections" (p. 12).

This institutions-as-rules-cum-transaction-costs interpretation, however, ignores a host of relevant questions. First, it ignores the need to consider the institutional foundations of political outcomes. What, if any, were the institutions that curtailed fighting? Clearly, there was no "state" that could have prevented war between different political entities. But also within a political unit, no entity had a monopoly over coercive power. How was peace sustained? Second, this interpretation ignores the need to consider the institutional foundations of markets. During the late medieval period there were no states to provide the institutional support required for long-distance trade. What were the institutions that ensured property rights security for merchants while traveling or sending their goods abroad? What institutions provided the contract enforcement required to facilitate long-distance trade by, for example, the use of agents? Furthermore, was trade expansion only a function of peace and factor endowments, or did institutions influence the time, place, and extent of trade expansion?

Finally, the analysis fails to account for the observed institutional dynamics. Why did the emerging European institutional arrangements differ from those that emerged in other (technologically similar) economies in response to increased trade? Early in the above period, European contractual and organizational forms were the same as those in the Muslim and Byzantine worlds. By the fifteenth century, they were very different. Why?

In recent years an approach to institutional analysis that enables us to address such questions has been evolving. It follows in the footsteps of such scholars as Hayek, Weber, Parsons, and Durkheim and integrates such factors as knowledge, beliefs, norms, organizations, and social networks into institutional analysis. Furthermore, it enables us to consider the institutional ramifications of a range of economic, coercive, social, moral, and emotional

motivational factors. A main difficulty in integrating such factors and considerations into studying economic institutions has been the lack of an analytical framework consistent with economic methodology; that is, a framework that enables restricting arguments based on deductive, rather than ad hoc, assumptions and generates predictions that can be examined in light of the evidence.

Recent developments in micro-economic theory, particularly game theory, have provided such an analytical framework. The analytical framework provided by game theory, enriched by insights from various disciplines, enables us to consider how behavioral outcomes reflect interactions among individuals. Instead of assuming that individuals follow politically imposed or culturally sanctioned rules, we can study why they follow a particular behavior by considering how all behavior and expected behavior is generated through interactions among the relevant decision-makers. Rather than assuming that social order is imposed by the state or reflect exogenous culture, game theory enables us to study social order while considering it as an endogenous outcome of interactions among individuals. We can examine how interactions provide everyone, including those who suppose to enforce a particular rule the incentive to do so. We can examine, in the most general case, institutions as self-enforcing.

By studying institutions as generating behavior among interacting individuals, game theory provides an analytical framework to study the above issues that the view of institutions-as-rules determined and enforced by the politics, cannot address. In particular, it enables us to study institutions in cases in which the state either does not exist or cannot be taken as exogenous: institutions in stateless societies as well as the institutional foundations of states. Similarly, game theory enables us to study institutions that influence behavior when the state is not relevant. Indeed, many of the institutional foundations of exchange in the past and the present, in developed and developing economies, are not provided by the state. Asymmetric information, incomplete contracts, complexity, and the cost and speed of legal procedures imply that much exchange is organized via private-order institutions that do not rely on the authority of the state. (E.g., Ellickson 1991; Greif 1997e.)

The contributions of the game-theoretic analytical framework, however, also extend to situations in which the state exists and produces rules. By analyzing behavior in interactions, game theory enables us to study exactly how the motivation to follow rules is generated. After

all, rules are behavioral instructions that can be ignored. Indeed, there are many examples of laws and regulations which no one follows. The game-theoretic approach to institutional analysis thus supplements the rules-as-institutions approach enabling us to analytically examine the link between rules and behavior. Why are some state-mandated rules followed and others not? Addressing this question requires examining how behavior is generated in the chain of interactions between those who are supposed to follow the rules and those who are supposed to impose them, while all incentives have to be considered as endogenous to the interacting individuals. Game theory enables us to study exactly this. Furthermore, in examining such issues the analysis fosters our understanding of why institutional analysis is a historical process in which past institutions influence the rate and direction of institutional change.

This book presents, develops, and exemplifies the empirical usefulness of a particular interpretation of this evolving approach.² Because an essence of this approach is studying institutions through the lens of game-theoretic institutional analysis, it is sometimes referred to as the institutions-as-an-equilibria approach, while the institutions studied from this perspective are sometimes referred to as self-enforcing institutions. Although capturing the spirit of the analysis, these terms are misleading. Games are neither the basic unit of institutional analysis nor are institutions a game-theoretic equilibria. The perspective provided by game-theoretic equilibrium analysis, however, is very useful in facilitating a positive, empirically-oriented analysis of institutions and their dynamics in a manner that is inclusive of, and complementary to, various approaches to institutional analysis.

The book is organized as follows. The remainder of the first part begins by surveying the three main approaches advanced for a positive, empirically-oriented analysis of economic institutions in the US during the second half of the twentieth century. It continues by presenting a particular definition of institutions. Its usefulness in directing positive institutional analysis is demonstrated in various studies in this book. But the discussion motivates this definition by highlighting that it builds on the common elements of, and complementary relationships among, various approaches to institutional analysis. The second and third parts present the analytical

² For previous overviews on various aspects the approach presented here, see Greif 1989, 1992, 1994a, 1997a, 1998a, 1998b, 2000, Gibbons 2000, and Aoki 2001 (who concentrated, in particular, on comparative and organizations issues).

benefits of game theory for institutional analysis. The fourth part presents how game theory and empirical analysis can conjointly advance a positive analysis of institutions despite the complexity of the issue and the limitations of the game-theoretic framework. The fifth part presents the main approaches to studying institutional dynamics and the sixth part presents how the new perspective developed here contributes to the study of institutional dynamics as a historical process in which past institutions influence the rate and direction of institutional change.

The rest of this introduction further details the contents of the book and some of the main points it covers, and it ends by providing a brief review of some of the many works that contributed to the development of the game-theoretic approach for studying the institutions.

Defining an Institution

The main approaches to the study of economic institutions, some of which are surveyed in chapter 2, define them as either rules, beliefs, norms, organizations, or regularities of behavior. This book postulates that a key to further advancing institutional analysis is understanding the common aspects of various definitions of institutions, developing a unifying concept of the object of study, and exploring complementary relationships among various perspective.

Chapter 3 presents a definition of institutions that builds on the common and complementary aspects of their various definitions. It argues that various definitions of institutions share much more than catches the eye, and hence advancing a unifying concept of the object of study is feasible. Roughly speaking, regardless of their theoretical approach or disciplinary affiliation, students of institutions are ultimately interested in regularities of behavior, meaning patterns of behavior and expected behavior among individuals with particular social positions, such as borrowers and lenders, rather than behavior between a particular borrower and lender. Furthermore, institutional analysis is concerned with regularities of behavior generated by man-made, non-technological factors, which are exogenous to *each*

individual whose behavior they influence.³ I will refer to the factors - rules, beliefs, norms, organizations, etc. - that contribute to producing such regularities as **institutional elements**.

The various institutional elements central to the main approaches to studying economic institutions, such as rules, beliefs, norms, and organizations, have complementary roles in generating behavior. For example, socially distributed rules guide behavior by dispensing knowledge and coordinating behavior; beliefs that members of a society share regarding how people behave and norms that have been internalized by members of a society motivate behavior; while organizations fulfill such roles as articulating and propagating rules and change the rules of the game relevant to the individuals engaged in the original interaction under consideration.

In the most general case, studying regularities of behavior therefore often requires studying how institutional elements constitute complementary parts of a larger whole - an institution - that generates regularities of behavior. **An institution is composed of man-made, non-technological factors and the regularity of behavior they generate. These factors are exogenous to each individual whose behavior they influence.** In other words, an institution is composed of a system of complementary institutional elements and the regularity of behavior they generate by enabling, guiding, and motivating it.

By this definition, politically determined rules that assign property rights, an organization such as the police with the ability to enforce this rule, and the set of beliefs that such enforcement will be forthcoming in the case of infringement, is an institution. Rules specifying tax obligations, together with an organization for tax collection, and the belief that tax evasion will be deduced and severely punished, is an institution generating tax payment. Customary rules of behavior among members of a community, which are followed based on belief in social sanctions against a deviator, are also an institution. In each of these cases, the rules, the organizations, and the beliefs are exogenous to each individual whose behavior they influence and they complement each other in generating behavior. Concentrating on each, while appropriate for various analytical purposes, implies, however, an incomplete analysis of the issue

³ The term man-made designates here any or all members of the human race regardless of their sex. This is the principal sense of the word in Old English. See the American Heritage Dictionary of the English Language: Fourth Edition. 2000.

at hand. Recognizing the distinct and complementary role of each, however, highlights the need and the benefit of combining the insights and analytical framework of various approaches to institutional analysis.

This notion of an institution can be applied to analyses on the level of interactions (Commons 1995; Williamson 1985) among individuals as required to address the issues raised above. As defined here, such interactions can be economic (as those between lenders and borrowers), political (as between parties or a party and its members), or social (as the relationships between parents and children or neighbors). These interactions can be voluntary economic transactions like those between a buyer and a seller in the marketplace, but they can also be involuntary as between a slave and his owner or a dictator and his subjects. Applying this notion to study regularities of behavior in a given interaction amounts to asking which institutional elements - such as rules, beliefs, norms, or organizations - conjointly generate these regularities?

Considering institutions from this perspective highlights their nested quality. Studying institutions is similar to peeling an onion: examining the institution generating behavior in one interaction - such as tax payment - requires examining the institutions inducing behavior in yet other interactions - such as between members of the organization that collects taxes, the representatives of the state, and the citizens. Hence, examining the institutional elements governing several interactions is usually required for a comprehensive understanding of behavior in a particular interaction. Nevertheless, placing an interaction at the center of the analysis is useful because studying behavior at that level is necessary to examine the issues discussed above. Furthermore, it focuses attention on the distinction among institutional elements that directly generate behavior in a particular interaction and those that do so indirectly. This distinction is crucial, as we will see, for studying institutional dynamics.

Arguing that an institution is composed of complementary institutional elements implies abandoning the common practice in economics of viewing it as either rules, beliefs, norms, or behavior. Such views of institutions as monolithic entities are useful for various analytical purposes but are special cases compared to the view presented here. This view highlights the multiple roles that an institution serves in generating behavior. As we have already seen, identifying institutions with rules ignores their role in motivating behavior. Similarly,

identifying institutions as beliefs ignores their role in propagating the knowledge required for action in a socially constructed world. Furthermore, recognizing the multiple roles of institutions both facilitates their study by enabling us to draw on various lines of institutional analysis and to advance beyond each of them in studying institutional dynamics as a historical process.

The approach taken here is that institutional elements are exogenous to *each* interacting individual but endogenous to the interacting *individuals* or the larger society. While an individual takes an institution as given when deciding how to act, institutions are socially created. Social norms are an example of behavior induced by institutional elements endogenous to the interacting individuals, while following legal rules is an example of behavior induced by institutional elements created by the legal authorities (possibly with input from the interacting individuals).

This position conceptually bridges two common approaches to studying economic institutions. The first emphasizes that institutions are beyond the control of the interacting individuals. They are the “rules of the game” exogenous to the interacting individuals (e.g., North 1990, Weingast 1996) or conventional, uncoordinated behavior generated within given rules of the game (e.g., Lewis 1969, Sugden 1989, Young 1998). The second approach emphasizes that people manipulate incentives and coordinate behavior by, for example, creating organizations for sharing information, coordinating behavior, and enforcing rules (e.g., Williamson 1985; Milgrom and Roberts 1992). The same dichotomy exists in institutional analysis in sociology. Works in the tradition of Weber (e.g., 1949) maintain that institutions reflect the interactions among individuals, while works in the tradition of Durkheim (e.g., 1950: 2) consider institutions to be societal features that “impose themselves upon” individuals. In one view, individuals are constrained by existing institutions while in the other they shape their institutions to achieve their goals.

Similarly, the above definition does not presuppose, as is common in studying institutions, that they serve a particular function, such as providing incentives, reducing uncertainty, enhancing efficiency, or determining distribution. Neither does it assume that institutions emerge through intentional decision-making, evolutionary or learning processes, or reflect complexity and the limited cognition of humans. The definition does not depend on a

particular assumption regarding whether motivation is provided by economic, moral, social, or coercive means.

A definition that does not depend on such presuppositions and assumptions is useful for advancing institutional analysis because institutions fulfill various functions, emerge through various processes, influence behavior in situations that are cognitively well understood or not well understood, and rely on different motivational factors. Saying, for example, that institutions are an incentive structure in the society is analogous to saying that a car transports people rather than calling it a “vehicle moving on wheels” as it is defined in the dictionary. Transporting people is only one among the many things that a car can do, but it is not what a car is. Hence, defining an institution without resorting to various presuppositions and assumptions enables us to draw on and integrate insights obtained from various analyses of institutions that rely on particular presuppositions and assumptions.

Why is it so common to define an institution as fulfilling a particular function or having a particular origin? Such definitions facilitate institutional analysis by limiting its scope. If one asserts that institutions are politically determined rules serving the interest of the polity, the scope of the analysis is well defined. Such restrictions, however, come at the cost of taking as exogenous such potentially important issues as beliefs and social norms. In contrast, the approach presented here limits the scope of the analysis by concentrating on recurrent situations, regularities and expected regularities of behavior among individuals with particular social positions, and the requirement that institutional elements are exogenous to each of the individuals whose behavior they influence.

Game Theory and Motivation: Deductive Restrictions on Beliefs and Norms

Until recently, the lack of an appropriate analytical framework has limited our ability to study institutions from the above perspective. In particular, there was no analytical framework - consistent with economic methodology - to study institutional elements, such as beliefs and norms, that motivate individuals to take one action rather than another technologically feasible alternative. Yet, motivation is central to institutional analysis as has long been emphasized by sociologists. Durkheim (1938 [1985]) has noted that institutions include “all the beliefs and modes of conduct instituted by the collectivity” while Parsons (1951: 38-40) has taken the

position that full institutionalization of a behavioral standard requires its internalization, namely, its transformation into a norm. Indeed, the rule of driving on the right does not cause us to do so. It is the belief that not following this rule will lead to dire consequences that motivates one to follow the rule.

Because beliefs and norms are not directly observable, however, an analytical framework restricting the set of those that are admissible in a given environment is particularly important. If we arbitrarily define beliefs and norms, a variety of phenomena can be generated. Any behavior can be justified based on ad-hoc assertions regarding the beliefs and norms that motivate it. How can we restrict the set of beliefs that can prevail in a given environment? How can we deductively restrict arguments regarding normative behavior?

Indeed, the lack of an appropriate analytical framework has been a major stumbling block to advancing institutional analysis beyond the study of rules for a long time. As noted by Powell and DiMaggio (1991: 2), promising institutional research - from Veblen and Commons in economics to Parsons and Selznick in sociology - “fell into disfavor, not because they asked the wrong questions, but because they provided answers that were either largely descriptive and historically specific or so abstract as to lack explanatory punch.” In recent years game theory has emerged as a useful analytical framework for advancing institutional analysis beyond the study of rules.⁴

Part II presents the analytical benefits of game theory in studying rules, beliefs, and organizations as institutional elements that complement each other in constituting an institution. Game theory examines decision-making in strategic situations, namely, those in which the optimal behavior for a decision-maker depends on the behavior and expected behavior of others. Because it is a theory of decision-making in strategic situations, it enables examining how institutional elements - man-made, non-technological factors exogenous to each of the interacting individuals - influence behavior in a particular interaction.

⁴ Game theory has also been extensively used for organizational theory, contract theory, and decision-making within organizations. These issues are not covered here. For review of and contributions to these developments in economics, see Milgrom and Roberts 1995; Hart and Holmstrom 1986; Hart 1995; Aoki 2001 and Weingast 1996; Sened 1997; and Bates et al. 1998 in political science.

The game-theoretic framework is very flexible in accommodating situations in which the number of interacting individuals is large, such as one's decision about which side of the road to drive on, or small, such as a lender's decision whether to give a loan to a particular borrower. It can capture such realistic features of the environment as asymmetric information, hidden actions, uncertainty, and the importance of knowledge. At the same time, game theory enables us to study behavior while evaluating and accommodating various assumptions regarding human cognitive and computational abilities, and capturing that economic, social, moral, and coercive considerations can influence behavior.

Part II concentrates in, particular, on highlighting the analytical benefit of using game theory to restrict and evaluate arguments regarding admissible cultural beliefs and behavior in a given environment. Cultural beliefs are ideas and thoughts common to several individuals that govern interaction – between these people, and between them, their gods, and other groups – and which differ from knowledge, in that they are not empirically discovered or analytically proven. The cultural beliefs related to a particular interaction are man-made, taken as exogenous by each of the interacting individuals, and influence his choice of action. In other words, they are institutional elements that motivate individuals to choose a particular behavior.

A main contribution of game theory to positive, empirical institutional analysis has been its ability to analytically restrict the set of cultural beliefs regarding behavior that can prevail in a given situation.⁵ Game-theoretic equilibrium analysis deductively restricts the set of admissible cultural beliefs to those corresponding to self-enforcing behavior. Self-enforcing behavior is that which each individual will find it optimal to follow, expecting that everyone will follow it. Game theory enables deductively restricting behavior in this manner, even in situations that would not actually transpire, given the expected behavior. It restricts, for example, the beliefs that can prevail in a given environment regarding how people would respond to cheating although, given these beliefs, cheating would not actually occur. Intuitively, game theory

⁵ Game theory also enables us to explore how various other beliefs - internalized beliefs, such as those regarding an afterlife - influence behavior. But because game theory is unable to place strong restrictions on these beliefs, its contribution to their study is confined to examining their implications. See section 4.7.

restricts behavior to credible threats and promises - those that one would actually carry out if the need arose given the expected behavior of others.

Game-theoretic analysis restricts admissible cultural beliefs to those that can be self-enforcing in a given environment. In reality, however, various aspects of the environment within which individuals interact are socially constructed. Some of the rules-of-the game relevant to decision-makers in the “original” interaction under consideration reflect man-made, non-technological factors exogenous to each of them. Such factors can restrict the action sets of relevant individuals as is the case when the rule-of-law deters one from resorting to violence in disputes about contractual performance. But these factors can also expand the action sets, as is the case when intermediaries can be used in addition to bilateral exchange between the interacting individuals.

Game theory enables analytically examining how organizations - man-made, non-technological factors exogenous to each of the individuals engaged in the original interaction - influence the relevant rules of the game and hence the set of feasible cultural beliefs and behavior. Such organizations can be “top down” organizations, such as a court of law, or “bottom-up” organizations, such as business networks and associations, social groups, and credit bureaus. Recognizing this role of organizations departs from the long tradition in economic analysis that views them as decision-makers (Arrow 1970; Olsen 1982; North 1990) or as an alternative means to the market for the allocation of resources (Coase 1937; Williamson 1985, 2000). To capture how organizations influence the set of possible cultural beliefs in the original interaction under consideration, we model them as factors that alter the relevant rules of the game by introducing a new player (the organization itself), by changing the information available to the players, or by changing payoffs associated with certain actions.

While organizations are exogenous to each of the individuals engaged in the original interaction under consideration, they are nevertheless endogenous to behavior of these or other individuals. Indeed, the introduction of an organization into the game implies new interactions - such as those associated with gathering and distributing information by a credit bureau or inflicting sanctions by a court or a business association. Hence, a complete understanding of the behavior in the original interaction may very well require understanding the institutional factors that generate particular behavior in these new interactions.

Game theory enables us to restrict organizations and their implications in the same way that we can examine the behavior and beliefs in the original interaction under consideration.⁶ In other words, we can study how organizations change the set of self-enforcing behavior and beliefs in the original interaction under consideration, as well as how they reflect self-enforcing behavior and beliefs in other interactions. As noted, for example, by Greif, Milgrom, and Weingast (1994: 746), regarding the specific case of a contract enforcement institution: its analysis “must consider why the institution was needed, what sanctions were to be used to deter undesirable behavior, who was to apply the sanctions, how the sanctioners learned or decided what sanctions to apply, why they did not shirk from their duty, and why the offender did not flee to avoid the sanction.” Game theory provides an analytical framework to conduct such an analysis.

This particular contribution of game theory has been summarized in Greif (1994a: 943) as follows: “Given the technologically determined rules of the game,” we can study institutions using game theory by restricting whenever appropriate “to be an equilibrium” two institutional elements: “cultural beliefs (how individuals expect others to act in various contingencies) and organizations (the endogenous human constructs that alter the rules of the game)” relevant to each decision-maker in the original interaction under consideration.

In addition, the game-theoretic perspective enriches our understanding of rules and provides an analytical framework to study their different roles. The game-theoretic framework captures the role of rules stressed in the institution-as-rules approach. Rules provide behavioral instructions, how to act in various circumstance. Game theory enables formally presenting such rules which, in the game-theoretic jargon, are referred to as strategies. But game theory highlights and provides an analytical framework to explore other roles of rules that have been stressed by such students of institutions as Hayek (1960). Social rules embody, reflect, and distribute knowledge accumulated in a society regarding the relevant aspects of a situation, such

⁶ Because organizations fundamentally reflect rules, beliefs, norms, and behavior that prevail in the society under examination, they are exogenous to each of the interacting individual. One can establish of a credit bureau, but the influence of doing so depends on cultural beliefs beyond his control. If the reward of providing information to the bureau is getting information, and if everyone believes that no one will provide accurate information, then no one will have the incentive to give accurate information either.

as technological and physical possibilities, the magnitude of unobservable parameters relevant to decision-making, and they help individuals form beliefs regarding the behavior that others will follow.

Hence, game theory provides an analytical framework facilitating the study of rules, organizations, and cultural beliefs as complementary institutional elements. Rules guide behavior by conveying and distributing knowledge, defining the situation, and coordinating behavior in it. Organizations influence the set of possible cultural beliefs while the prevailing cultural beliefs motivate individuals to behave in a particular manner. This behavior, in turn, substantiates the relevance and thus regenerates the rules, organizations, and beliefs that led to it in the beginning.

Part III presents other analytical benefits of game theory for studying additional institutional element that motivate behavior. The game-theoretic framework is flexible enough to complement the assumption that individuals are selfish and materialistic with the assumption that humans have social propensities: a capacity to value social relationships, to internalize norms, to have emotions, and to care about others' welfare. While the potential importance of such factors in motivating behavior has been argued by many scholars, their analysis is elusive. Without an analytical framework to restrict assertions about the nature and manifestations of such propensities, any behavior can be justified ad-hoc as reflecting particular norms.

A main hindrance to integrating such social propensities in institutional analysis in economics has always been that their exact nature is difficult to discern based on empirical observations. If one forgoes an opportunity to cheat, for example, it may be difficult to differentiate whether this behavior reflects an altruistic inclination, an internalized norm of behavior, a fear of God, or the desire to enhance an economically valuable reputation. To overcome this difficulty, game theory has been used to devise experiments which enable differentiating between these alternative hypotheses. The tentative experimental results have enhanced our ability to identify and explicitly formulate various manifestations of humans' social propensities, such as altruism, inequality-aversion, and emotions.

Game theory provides an analytical framework for restricting statements regarding the behavioral implications of such manifestations of social propensities in a given environment. In other words, it lets us consider how such manifestations influence self-enforcing behavior and

cultural beliefs. Furthermore, game theory enables linking such manifestation to the study of norms and emotions and provides an analytical framework that restricts the set of norms and emotions that can prevail in a given environment. It examines norms and emotions that are generated through the influence of the aggregate behavior of all the interacting individuals based on the preferences of each. The general benefit of this particular use of game theory for empirical, positive analysis, however, is still to be demonstrated.

Identifying Institutions: Interactive, Context-specific Analysis

Part IV presents a way to harness the analytical power of game theory for empirically-oriented, positive institutional analysis. More specifically, it first highlights the limited ability to predict institutions based only on theory and knowledge of the relevant exogenous environment. It then presents an empirical methodology for identifying institutions of interest based on interactive, context-specific analysis (Greif 1997a). The issue of predicting institutions - what is the environment necessary for particular institutions to prevail and what and how to study processes leading to new institutions - is discussed in part VI.

To recognize the limitation of game theory for empirical institutional analysis, requires an appreciation of the essence of game theory and institutions. A good place to begin is to recall the relationships between theory and empirical analysis in neo-classical economics, the objective of which is to study allocation of goods and services. The general equilibrium model provides a theory of allocation: given the endowment of each economic agent, their preferences, and technology, the model predicts prices and an associated allocation.⁷ The role of the empirical study in the analysis, therefore, is to provide the details regarding the particularities of the agents' endowments, preferences, and technology at the time and place under study.

Parallel to the case of neo-classical economics, the role of an empirical analysis in a game theoretic institutional analysis is to provide details regarding the relevant context. Indeed, game theory indicates that the set of self-enforcing beliefs and behavior is very sensitive to it. But unlike the general equilibrium theory which can be used to predict outcomes (in the form of allocations and prices), game theory can not be used to predict outcomes (in terms of

⁷ As well recognized, this model has many deficiencies but these are not the issue here.

institutions). The general equilibrium model has revealed that under reasonable conditions a unique equilibrium (prices and an allocation) exists, game theory has revealed the opposite. Even in relatively simple but recurrent situations, multiple self-enforcing beliefs and behavior exist. Furthermore, game theory indicates that there is little prospect of developing further deductive restrictions that would generate a unique equilibrium.

This multiplicity is less of a problem when game theory is applied to predict behavior in non-recurring situations and situations in which the interacting individuals have limited discretion in terms of what they can do. But institutional analysis is about recurring situations in which the action sets are large. Consider, for example, institutions governing credit transactions. Such transactions were important for market expansion during the late medieval commercial revolution, since the quantity of money depended on a limited supply of precious metal. Credit transactions, in the past and the present, are characterized by separation between the *quid* and the *quo* and hence, unless a borrower can ex ante credibly commit to repay his debt ex post, a lender will not lend to begin with. Hence, credit relations cannot be established without appropriate institutions. Indeed, one outcome that could have prevailed would have been for credit relationships not to be established.

But given the late medieval period's technology of monitoring and punishing, there were many other technologically feasible and non-mutually exclusive institutions that could have enabled establishing credit relations. For example, affection among members of a nuclear or extended family could have provided the foundation for self-enforcing lending among family members. Expected social and economic sanctions by the members of one's business community following a transgression could have also enabled lending within the group. More impersonal lending could have taken place, based on the belief that a court of law would punish a cheater or on the value (or norm) of general morality, which reflects, for example, fear of God's punishment. Each of the above non-technologically determined ways to constrain behavior in credit relations builds on, and is composed of, some combination of beliefs and organizations, and arguably the range of situations (parameters) in which they could have prevailed is not mutually exclusive. Even knowing the situation ahead of time, therefore, would not have enabled game theory to predict that institution(s) would prevail.

Moreover, the inability to predict institution(s) based only on the details of the situation and game-theoretic analysis, reflects the importance of the human factor. Game theory reveals that outcomes in strategic situations are very sensitive to the how sophisticated the relevant individuals making the decisions are or what they know about the situation. But where do individuals get the knowledge required for making decisions in recurrent situations? Institutions provide them with this knowledge. Institutions, as Hayek (1960: 69) has noted, are “devices to cope with our constitutional ignorance” and rules are the institutional element that constitute this device. We know that everyone knows that everyone knows that one needs to drive on the right because we know that we were all exposed to the same set of rules-of-the-road.

Institutions embody and circulate the knowledge that has been accumulated in a society and propagate it among its members, while game-theoretic analysis assumes particular knowledge and its distribution. Hence, we cannot begin the analysis by specifying the rules of the game that capture our perception of the situation and the options that decision-makers have in it. To do so would impose our knowledge and cognition of the situation on the individuals whose institutions and behavior we want to explore.

It is thus generally impossible to apply game-theoretic analysis to deductively predict the institution that will prevail in a given environment, but it is possible to tame the analytical power of game theory for positive, empirical institutional analysis aimed at identifying institutions. This requires an **interactive analysis** combining **context-specific modeling** with “thick,” detailed knowledge of the episode under consideration. Empirical analysis is required to formulate a thesis regarding institutions relevant in a particular time and place, and context-specific models and evidence are required to evaluate and develop it. Theory and empirics are used as complements in developing and evaluating various hypotheses regarding a relevant institution.

Such positive, empirically-oriented analysis cannot take either a game, an institution, or behavior as the basic unit of analysis. This implies considering as exogenous much that has to be explained, and requires theoretically deducting what can only be empirically found. Accordingly, the analysis begins with an empirical identification of recurrent interactions or transactions of importance to the situation under study, or identifying those relevant to the pattern of behavior we seek to understand. It then proceeds to identify the relevant institutional

elements - such as rules, beliefs, norms, and organizations - using game-theoretic analysis to restrict arguments regarding the set of possible institutions and evaluate the relevance of one in particular.

In developing a conjecture regarding the institution that prevailed in the episode under consideration, the analysis does not begin by contemplating the set of theoretically feasible institutions and choosing among them based on a deductive theoretical argument or objective criteria such as efficiency or distribution. Rather, the analysis begins by using the evidence, general theoretical insights, and predictions from context-specific models capturing the essence of the situation to formulate a thesis regarding the institution that prevailed. This entails, in particular, making explicit what organizations constituted the relevant rules of the game for each of the interacting individuals, the beliefs and norms that prevailed within the resulting relevant rules of the game, and the role of rules in making these institutional elements common knowledge and coordinating behavior within it. A hypothesis regarding the relevance of a particular institution is formulated based on a micro-level, detailed examination of the evidence. It is expressed with the assistance of a context-specific model, the details of which are based on the evidence and whose robustness is evaluated, particularly regarding aspects that are not well reflected empirically.

Since game-theoretical formulation is the bench-mark of empirical analysis rather than mold, the hypothesis regarding the relevance of a particular institution and its game-theoretical formulation has to be empirically substantiated. Substantiation is particularly important because game theory provides a limited guide to equilibrium selection and it entails contrasting predictions implied by the theoretical analysis with the historical and comparative observations and data. Further substantiation and insights regarding the nature of the institution can then be gained by considering the origin of the institution and its various implications, such as transaction costs and distribution.

Institutional Dynamics

The study of the dynamics of economic institutions has gone through three phases. Traditionally, economic institutions have been considered as immutable cultural features of a society. In the 1970s, the New Institutional Economics challenged this view. Employing the

tools of micro-economic theory and considering institutions as either rules, organizations, contractual forms, or patterns of behavior, it argued that institutions change in response to environmental changes. Property rights, organizations, and behavior, for example, would adjust to changes in relative prices in an optimal manner or in a way that best serves those who can dictate rules or choose organizations and behavior. More recently attention has been given to factors causing institutions to exhibit path-dependence. Once a particular institution prevails, it tends to perpetuate in a changing environment because of such factors as sunk costs in specifying rules, interest groups that emerge in response to and have an interest in the maintenance of existing rules, and learning effects.

Part V articulates these perspectives on institutional dynamics. It also presents a particular contribution of the game-theoretic perspective to our understanding and analysis of institutional path-dependence. Analytically examining institutions as self-enforcing - using the perspective of game-theoretic equilibria - highlights how particular beliefs and behavior can regenerate each other. Beliefs motivate behavior and observed behavior confirms the relevance of beliefs. Taken together, self-enforcing beliefs and behavior are in a steady-state equilibrium: The observed behavior causes each individual to believe that others will behave in a particular manner, and given these beliefs, it is optimal for each person to behave in the expected way. At the same time, the game-theoretic perspective highlights how exogenous change can put an end to the processes through which an institution is regenerated. An exogenous change to the relevant rules of the game can cause the current behavior to no longer be self-enforcing.

But why is institutional dynamics a historical process in which past institutions influence the rate and direction of institutional change? Addressing this question is crucial for understanding why societies seem to evolve along distinct trajectories of institutional change. Part VI presents the contributions of the approach presented here to addressing this question. This contribution reflects, in particular, the conceptualization of institutions as being associated with a particular interaction or transaction and composed of institutional elements with various roles.

To illustrate this line of argument, consider an institution which is self-enforcing in the sense that all relevant behavior and beliefs are self-enforcing, and beliefs are regenerated by the observed behavior and its implications. Although in studying institutions empirically, studying a

completely self-enforcing institution is usually impractical, considering such institution here is useful because such institution is, by definition, a steady-state situation. All beliefs and behavior are self-enforcing and beliefs are confirmed by their observable implications. Hence, one would imagine that all changes must have an exogenous origin. This, however, is not the case.

Define an institution as **reinforcing** when its implications, beyond behavior in the interaction it governs, (weakly) **increase the range of situations (parameters) in which the behavior associated with the institution is self-enforcing.**⁸ Reinforcing processes can reflect, for example, individuals' intentional responses to the incentives the institution entails or the unintentional feedback from behavior to preference and habit formation, knowledge, information, demography, ideology, wealth distribution, political power, or social networks.

To illustrate the idea while remaining in the domain of economic analysis, consider the following example. Suppose that beliefs in collective punishment within a community lead to a particular regularity of behavior. To study this institution, we have to examine this community, the beliefs, and behavioral rules as a self-enforcing system of institutional elements generating that behavior. We have to examine why each member of the community is endogenously motivated to retain his membership in it, hold these beliefs, follow the behavioral rules, and participate in a collective punishment. But even if this is the case at a particular point in time, the institution can still undermine itself. For example, the economic success of the community implied by the collective punishment may lead it to grow over time. Growth can undermine the self-enforceability of beliefs in collective punishment because information transmission within a larger group may be too slow to deter deviation. Similarly, each member of the community can become, over time, sufficiently wealthy so that the threat of communal punishment will no longer be strong enough to make past patterns of behavior self-enforcing.

Self-reinforcing institutions influence their rates of change. Reinforcement implies that an institution is self-enforcing - and hence past behavior will prevail - in a larger parameter set. The institution is less likely to cease being self-enforcing for a given exogenous shock. Marginal environmental changes will not undermine past patterns of behavior. Indeed, behavior can prevail even in situations in which it would not have emerged to begin with. The opposite would

⁸ An institution that is self-enforcing and reinforcing is a **self-reinforcing institution**.

be the case, however, when negative self-reinforcement transpires. Then institutions are self-destructing: They foster processes that, over the long run, undermine the self-enforceability of the associated behavior. The institution is thus less likely to remain self-enforcing for a given, exogenous, parametric change and can even cease being self-enforcing without any exogenous change.

Similarly, the concept of institutions, at the center of which are interactions, institutional elements, and behavior, provides the basis for studying how past institutions influence the direction of institutional change. Even if a particular institution is no longer self-enforcing - its past institutional elements no longer generating a particular behavior - its constituting institutional elements still influence the direction of institutional change. Institutional elements inherited from the past, such as beliefs, communities, political and economic organizations, and norms, transcend the situations that led to their emergence. They reflect and embody shared, common beliefs and knowledge among members of the society, they constitute mechanisms to coordinate their actions and expectations, and they embody in their utility functions, cognitive understanding of their environment. Institutional elements that were crystalized in the past constitute part of the cultural heritage of a society. Past institutional elements provide the foundation for, and influence the processes leading to, new institutions

Hence, new institutions do not emerge reflecting only environmental conditions and the interests of relevant decision-makers. Institutions evolve over time and their transactions evolve in a spiral-like manner building on existing institutional elements. For example, communities and political organizations that were formed in the past constitute part of the (“endogenous”) rules of the game in new situations. Cultural beliefs that were crystalized in the past and embodied within existing institutions are part of the initial conditions in selecting among alternative self-enforcing behavior and beliefs in new situations.

Institutional analysis is thus inherently historical. In empirically studying institutional dynamics we should and can benefit from going beyond imposing theoretical restrictions on the set of admissible institutions by using, for example, game theory. We should also impose restrictions based on our knowledge of past institutional elements; these elements are part of the initial conditions in the process of institutional change. Studying institutional dynamics, therefore, necessitates conducting an interactive, context-specific analysis that generates and

evaluates these by combining theoretical restrictions with those based on our knowledge of past institutions. In particular, we can use the knowledge of past institutional elements as input when constructing a game-theoretic model that facilitates examining the process of institutional change.

But past institutional elements only direct and do not determine new institutions. If they do not become part of a new self-enforcing institution, they will decay over time and vanish. Institutions are outcomes emerging from within and interacting with the legacy of past institutional elements. But for past institutional elements to persist, they have to become a part of the new institutions. This is the case because environmental factors and functional considerations, such as simplicity, efficiency, and distribution, also direct institutional change. The extent of their influence, in turn, is not exogenous to existing institutions. Existing institutions determine the transaction costs involved in changing institutions to accommodate such concerns.

That institutions evolve in a spiral-like manner implies that in a society they will form **institutional complexes**. An institutional complex is a set of institutions governing various transactions that share common institutional elements and are complementary to each other. The exact attributes of such complexes, in turn, also influence both the rate and direction of institutional change. They determine, for example, the speed and scope of institutional change when they occur, whether the change will be continuous and encompass many institutions or not, and whether new institutions will be more or less likely to include past institutional elements. This implies the need to study a society's institutions from a holistic, systemic perspective.

This view of institutional dynamics considers endogenous institutional change and the dynamic implications of individuals' aspirations to advance their objectives within the context of the heritage of past institutions. As such, this view takes a middle position between alternative positions. In economics, transaction cost economics assumes that institutions are instrumental transaction costs optimizing responses to environmental conditions (e.g., Williamson 1985), but in evolutionary economics it is common to identify institutions with history-dependent, and not necessarily functional, behavior (e.g., Hodgson 1998). Similarly, in political science rational choice analysis examines institutions as instrumental outcomes using equilibrium analysis, while historical institutionalism emphasizes that they reflect a historical process (Thelen 1999).

Substantive Issues: Institutions, Markets, and Political Systems

The proof of any approach to institutional analysis is in its applicability: its ability to facilitate empirical, positive institutional analysis. Accordingly, about half of this book is devoted to presenting a detailed analysis of various institutions. All these studies relate to the institutional foundations of the Late Medieval Commercial Revolution — the developmental epoch stretching from the eleventh to the fourteenth centuries, which witnessed the re-emergence of Mediterranean and European long-distance trade after an extended period of decline. (E.g., Lopez 1976.) This place and period lends itself to examining the nature of institutions and their dynamics. This re-emergence of trade was not a response to changes in endowments or technology. Rather, new institutions - those that provided the foundations for markets and political units - played an important role in initiating trade and a complementary process of institutional evolution and trade expansion.

These studies highlight the range of applications of the approach presented here. It enables us to study the institutional foundations of markets and political units and examine their evolution over time. It touches upon such substantive issues as institutions for contract enforcement, the relationships between institutions and social norms, institutions that secured property rights, and those that enabled the mobilization of resources for the provision of public goods. Various general conclusions come from these specific studies and they are presented throughout the book and in Part VII.

Common to all the empirical studies presented in the book is their concern with the commitment problem. How can one commit to take future action that in the future might not be in his or her best interest to take? Resolving commitment problems is crucial to exchange in which one is willing to give with the expectations of receiving in the future. Commitment problems, however, are also central to the study of political systems. Without a commitment to not use power to shift ex-post distribution, for example, rulers may not be able to ex-ante motivate their subjects or citizens to produce. If clans cannot commit to each other not to invest in military ability, they would end up investing in socially wasteful military power.⁹

⁹ Regarding the importance of this commitment problem, see, for example, Williamson 1993; North 1993, and Greif 2000.

Understanding economic, political, and social outcomes thus requires examining the institutions that mitigate commitment problems. What are the rules, beliefs, norms, and organizations that create a link between past conduct and future benefit in a way that fosters commitment? Game theory, by enabling us to explicitly model the relationships between the environment, beliefs about future behavior, and behavior itself, is particularly suitable for studying such institutions, as has been noted by many scholars.

While the applications presented here concentrate on commitment problems, the approach is nevertheless more generally applicable. It can be applied to institutions that, for example, mobilize individuals for collective action, govern matching processes, or motivate altruistic behavior.

Comparative and Historical Institutional Analysis

The approach presented in this work is motivated by, and attempts to gain insights through, comparative studies over time and space. It is historical in recognizing that past institutions influence the rate and direction of institutional change and hence institutional analysis is inherently historical. And it is analytical in its explicit reliance on theoretical insights and explicit modeling, drawing, in particular, on non-cooperative game theory. Hence, it seems appropriate to refer to this approach as Comparative and Historical Institutional Analysis (CHIA).

Although some institutional features have to be taken as exogenous in any empirical study, CHIA is constructed to help us take more aspects of institutions as endogenous than is usually the case. Economic organizations, social networks, beliefs, and norms, are a part of the analysis enabling to explore such issues as social norms, customary behavior, and trust. At the same time, its analysis restricts the set of admissible historical accounts so this approach is more permissive (in considering how past institutions cause and direct institutional change) than standard game theory. Nevertheless, in considering the historical development of institutions and their implications, the proposed methodology is far less permissive (in allowable interpretations) than the standard historical analysis.

Clearly, CHIA is still evolving and many of its aspects will benefit from further elaboration and evaluation, but it is sufficiently mature to merit exposition. The approach is

“scientific” in the sense that its constituting elements are explicit and it is based on refutable hypotheses and objective information and measures even though in such scientific inquiries in general one cannot avoid a degree of subjectivity in historical research. The researcher must, for example, select the issue, identify the significant historical actors, and evaluate the extent to which predictions are confirmed. CHIA is thus not an ultimate path to truth, but a methodology that incorporates a much broader range of phenomena than an ordinary economic analysis. It thereby fosters the study of historical issues that require an examination of this broader class of phenomena.

Related Literature (Preliminary discussion to be completed later)

Game theory has been extensively used for organizational theory, contract theory, and decision-making within organizations particularly in economics and political science. Game theory has been used to consider both the rules of the game that would lead to a particular outcome in the presence of asymmetric information, knowledge and objectives as well as the decisions and behavior that would be made within a given structure. These issues are not covered here. For review of these developments and various contributions, see Milgrom and Roberts 1995; Hart and Holmstrom 1986; Hart 1995; Aoki 2001 in economics and Weingast 1996, Sened 1997 in political science. The use of game theory to study institutions, rather than intra-organizational issues has been pioneered by Lewis (1969) who initiated the use of game theory for the study of conventions and Schotter (1981) who combined game theory and a learning model to study self-enforcing behavior.

There are two lines of analysis within CHIA. The first utilizes evolutionary game theory and learning models to study the process through which decision makers with particular traits, such as specific organizational features, preferences, or habits, emerge. Such analysis starts by taking the rules of the game as given and explore how interactions within them among individuals with limited knowledge and rationality lead to the development of particular traits. It further examines the complementarities among traits in various spheres of economic activities, and between them and government regulations and rules. The focus of the theoretical works in this line of analysis has been such issues as the emergence of conventions, customary behavior and property rights allocations, habits, preference traits, and the implications of learning and

mutations. E.g., Frank, 1987; Sugden, 1989; Young, 1993, 1998; Hodgson 1998; Kandori, et. al. 1993. The focus of the related empirical studies has been mainly on situations in which traits are relatively easy to observe, such as the emergence of firms with particular capabilities and their institutional complementarity with financial systems, employment relations, and government regulations (Aoki, 1994, 1995b; Okazaki and Okuno-Fujiwara 1996).

The second line of analysis, which has been most conducive to empirical analysis, employs mainly (classical) game theory, particularly the theory of repeated games. It concentrates on studying the influence of beliefs and organizational features on self-enforcing behavior among the decision-makers. While recognizing that interactions within given rules of the game shape individuals' traits, it focuses on exploring how the relevant rules of the game are self-enforcing outcome of forces, such as strategic interactions, evolutionary processes, and limits on cognition. Hence, it focuses on the factors determining the relevant rules of the game, such as organizations and limited cognition - and the factors influencing behavior within these rules such as beliefs and norms while accommodating humans' ability to shape the structure of their interactions as well as their limited ability to do so.

The focus of theoretical works in this line of analysis has been on social norms (e.g., Kandori 1992; Ellison 1994; Greif 1989; Tadelis 2000); the role of various organizations in facilitating cooperation (e.g., Milgrom, North, and Weingast, 1990); the relationships between game theoretic equilibria and institutions (e.g., Greif 1994a; Calvert 1995); the role of communities and social networks in overcoming collective action problems (e.g., Ostrom 1990); the role of communities in providing the institutional foundations of markets and facilitating exchange (e.g., Greif 1989, 1993, Kranton 1996, Ray and Gosh 1996); the theory of credit cooperatives (e.g., Banerjee, et. al. 1994); the political foundations of the state (Weingast 1997); and the inter-relationships among culture and institutional change (e.g., Greif 1994a).

The empirical studies in this line of analysis have focused on many topics, such as the formal and informal institutional foundations of the market and informal systems for contract enforcement (Greif, 1989, 1993, 1997a; Ellickson 1991; Bernstein 1992; Clay, 1997; Fafchamps, 1996; McMillan and Woodruff 1999; Ostrom et. al. 1994); the role of culture in the emergence and perpetuation of distinct institutional and organizational trajectories (Greif, 1994b); the institutional foundation of the state and the political foundations of market economies (North and

Weingast, 1989; Greif 1994b, 1998; Weingast, 1998 Gibbons and Rutten 1997, Bates, et al. 2000; Yung 2002); the inter-relations between social structures, culture, and economic and political institutions (Greif, 1994b, 1995, 1998c); the emergence, perpetuation, and change of alternative formal and informal financial systems and distinct institutions governing labor relations (Aoki and Dinç, 1997; Guinnane 1994; Moriguchi, 1997).

& Chapter 2 Three Generations of Institutional Analysis in Economics

- 2.1 Neo-Classical Economics: The Market as an Institution and an Organism
- 2.2 Old Institutionalism: Organizations and Behavioral Patterns
- 2.3 The New Institutional Economics
 - 2.3.1 Transactions and Transaction Costs
 - 2.3.2 Transaction Costs Economics: Institutions as Governance Structures
 - 2.3.3 Institutions as Rules: Property Rights and Constraints
- 2.4 Looking Ahead

&Chapter 3 Institutions as Complementary Institutional Elements

- 3.1 The Confusing Diversity of Institutions
- 3.2 The Common Aspects of Various Definitions of Institutions
 - 3.2.1 Man-made, non-technological factors that influence behavior
 - 3.2.2 Factors exogenous to each of the individuals whose behavior they influence
 - 3.2.3 Regularities of behavior - recurring behavior and social positions
- 3.3 On the Complementary Roles of Various Institutional Elements
- 3.4 Definition: An Institution as a System of Complementary Institutional Elements
- 3.5 An Integrative Approach
- 3.6 Looking Ahead

&Chapter 3 Institutions as Complementary Institutional Elements

At first sight, it seems that there are a number of incompatible lines of institutional analysis. Indeed, each of these lines of institutional analysis has been treated in the literature as mutually exclusive. This chapter presents a definition of institutions that transcends each of the common particular definitions and thereby enables advancing institutional analysis beyond the confines of each. This definition highlights the complementary relationships among institutions as defined in various lines of analysis and enables integrating their specific analytical frameworks. Clearly, the ultimate yardstick for measuring the merits of any definition of institutions lies in its contributions to advancing a positive, empirically-oriented analysis of relevant outcomes. Indeed, much of this book presents how this definition, together with the analytical framework afforded by game theory and insights from various disciplines, fosters our understanding and empirical analysis of institutions.

This chapter begins in section 3.1 by listing the common definitions of economic institutions. Section 3.2 highlights that although these definitions are seemingly distinct being a substitute to each other, they have much in common. First, each is concerned with a man-made, non-technological factor - such as rules, beliefs, norms, and organizations - that influences behavior. In addition, they are exogenous to each of the individuals whose behavior it influences. Second, the main lines of institutional analysis are interested in these factors impact on regularities of behavior, that is, behavior and expected behavior among individuals holding particular social positions in recurrent interactions (or situations). Section 3.3 argues that each of the main lines of institutional analysis concentrates on a particular man-made, non-technological factor such as rules, beliefs, norms, or organizations. The section advances the argument, however, that each of these factors has a distinct role in influencing behavior. Hence, in general, understanding how such factors generate regularities of behavior requires examining them as a system of complementary factors.

Section 3.4 advances a definition of institutions that captures these common aspects and the complementary roles of the factors emphasized in distinct lines of institutional analysis. Specifically, an institution is defined here as a system of complementary man-made, non-technological factors that generates a regularity of behavior by enabling, guiding, and motivating behavior while remaining exogenous to each of the individuals whose behavior it influences.

Section 3.5 then emphasizes the integrative qualities of the above definition - specifically, its ability to define the object of study without relying on presuppositions - about the function of institutions, their nature, or human cognition and rationality, that differentiate different lines of institutional analysis but lack generality. Instead, the above definition delimits the object of study based on the aspects common to various lines of institutional analysis thereby, in addition, highlights the complementary relationships among various definitions of institutions and enables drawing on their associated analytical frameworks.

Before proceeding, it is important to emphasize that the focus of the discussion in this chapter is on institutions as an object of study. Little will be said about their origins, their dynamics, or analytics. Indeed, one merit of the proposed definition is that it highlights the distinction between what institutions are and these other, related issues.

3.1 The Confusing Diversity of Institutions

Among the obstacles to advancing a comparative and historical institutional analysis is the elusive nature of the concept of institutions. There are many, seemingly alternative, definitions of the term institution. Institutions are defined as:

- “The rules of the game” in a society (North 1990: 4) and “the sets of working rules” that “contain prescriptions that forbid, permit, or require some action or outcome,” and that are “actually used, monitored, and enforced” (Ostrom 1990: 6).¹⁰
- Organizations such as parliaments, tribes, families, communities, and universities. (E.g., Weingast 1996; Granovetter 1985; North and Weingast 1989; Nelson 1994.)
- Beliefs. Cultural or shared beliefs about others’ behavior or about the world around us and the relationships between actions and outcomes in it. (E.g., Weber 1958 [1904]; Denzau and North 1994; Greif 1994a; Calvert 1995; Lal 1998; Aoki 2001.)

¹⁰ See also, for example, Knight 1992, Weingast, 1996, Haber 1997.

- Norms of behavior that were internalized by members of the society and hence influenced their behavior . (E.g., Ullmann-Margalit 1977; Elster 1989; Platteau 1994).
- Regularities of behavior or “social practices that are regularly and continuously repeated” and which include contractual regularities that can express themselves in organizations such as firms. (Abercrombie et al. 1984: 216). (See also Berger 1977; Schotter 1981; The Penguin Dictionary of Sociology: 216; Williamson 1985; Young 1998: preface.)

The main approaches to institutional analysis in the social sciences differ in more ways than how they define their object of study. They also differ in their basic presuppositions regarding the nature, dynamics, and origins of institutions and how they relate to rationality and the complexity of the world within which individuals interact.

Some approaches have adopted an agency perspective on institutions while others have advanced a structural perspective. Those that adopted the agency perspective place the individual decision-maker at the center of their analysis and study institutions as reflecting the inter-relationships among individuals’ objectives, possibilities, and the environment within which they interact. Institutions are therefore considered to reflect human actions and social processes and are postulated not to endure beyond the conditions that led to their emergence. Politicians, for example, aspire to create the rules that serve their political and economic objectives best. If these objectives or the political process of rule formation changes, so will the resulting rules. Similarly, conventional rules of behavior emerge spontaneously through the interactions of individuals in a given environment and will therefore change following an environmental change. The point of departure for such institutional analysis is therefore at the micro-level of the individuals whose interactions in a particular environment give rise to an institution.

Approaches that have adopted the structural perspective emphasize that institutions do not reflect agents’ needs and possibilities but shape these needs and determine these possibilities instead. Institutions structure human interactions, mold individuals, and constitute the social and cultural worlds within which they interact. They therefore transcend the situation that led to

their emergence and are part of a society's historical heritage. Beliefs, norms, organizations, and social structures that were crystalized in the past, for example, are part of the structure within which individuals interact. The point of departure for such institutional analysis is therefore at the macro-level of the historically-determined structure within which individuals interact.

These two perspectives - the agency and the structural perspectives - separate the main approaches to institutional analysis in the social sciences. Within sociology, works in the tradition of Weber (e.g., 1949) maintain that institutions reflect the interactions among individuals, while works in the tradition of Durkheim (e.g., 1950:2) consider them to be societal features that "impose themselves upon" individuals. Within economics, transaction cost economics assumes that institutions are instrumental transaction costs optimizing responses to environmental conditions (e.g., Williamson 1985), but in economic history and evolutionary economics it is common to identify institutions with history-dependent behavior (e.g., North 1990; Hodgson 1998). Rational choice analysis in political science examines institutions as instrumental outcomes, while historical institutionalism emphasizes that they reflect a historical process (Thelen 1999).

Various approaches to the study of institutions also invoke particular, and often contradictory, assumptions regarding their origins and functions. For Hayek (1960) and many others (e.g., Hodgson 1998; Young 1998; Knight 1992) institutions emerge spontaneously and unintentionally. They reflect human actions but not human intentions because individuals have limited knowledge and rationality. For many others, however, intentional attempts by individuals to improve their lot underpin the processes through which institutions emerge. (E.g., Williamson 1985; North and Thomas 1973.)

Similarly, various approaches to institutional analysis rest on distinct assumptions regarding the function that institutions fulfill. For North (1990: 6) and many others, "the major role of institutions in a society is to reduce uncertainty." For Williamson (1998a: 37) and many others, institutions foster efficiency. They are the "means by which order is accomplished in a relation in which potential conflict threatens to undo or upset opportunities to realize mutual gains." For Knight (1992), the main function of institutions is to affect the distribution of gains. Finally, various definitions of institutions invoke contradictory assumptions regarding human nature. Parson (1951), for example, assumes that individuals are capable of internalizing rules,

and that institutions are behavioral standards that have been internalized. Williamson's (1985) institutional analysis, however, rests on the opposite assumption: Individuals are assumed to always act opportunistically unless constrained by external forces. For Aoki (2001) and Young (1998), institutions reflect the limited knowledge individuals have regarding the environment within which they interact while others, such as Calvert (1995) and Williamson (1985), initiate the analysis while assuming that individuals have a comprehensive knowledge of this environment.

Given these differences in how institutions were defined and the basic presuppositions underpinning their analysis, it is not surprising that the various approaches to institutional analysis have been treated in the literature as mutually exclusive. This, however, curtails the ability to advance institutional analysis and benefit from integrating the insights of the various approaches. One can thus postulate that a key to further advancing institutional analysis is understanding the common aspects of the various definitions of institutions, developing a unifying concept of the object of study, and exploring the complementary relationships between various definitions and perspectives. Each definition and presupposition is appropriate for addressing particular issues, but fails to provide a comprehensive understanding of the social underpinnings of regularities of behavior and their dynamics.

The need for, and the potential benefit of, integrating various lines of institutional analysis have been noted by many students of institutions, such as Douglass North (1990), James Coleman (1990), and Eleanor Ostrom (1990). Nevertheless, despite the recent surge in interdisciplinary institutional analysis, little interaction and cross-fertilization exists among scholars embracing distinct definitions of, and perspectives on, economic institutions. This situation is well reflected in the fact that recent important works on economic institutions either refrain from defining them or advance a particular definition at the expense of alternative ones. (E.g., North 1990; Eggertsson 1990; Furubotn and Richter 1997; Weingast 1996; Young 1998; Aoki 2001; Ostrom 1990.)

3.2 The Common Aspects of Various Definitions of Institutions

Although the above definitions are considered in the literature as alternatives, they nevertheless have much in common. Despite their apparent distinctions, all the above definitions

of institutions and the lines of analysis they represent have the following three aspects in common.

3.2.1 Man-made, non-technological factors that influence behavior

First, institutional analysis is concerned with *man-made, non-technological factors* (such as rules, beliefs, norms, organizations, etc.) that influence behavior. Behavior, in general, can be influenced by many factors, some of which are beyond human control. Among these are genetic human attributes which are invariant across societies and often reflect themselves in instincts and the constraints imposed on human behavior by the physical environment and laws of nature. Yet, other factors influencing human behavior reflect man-made, technological and physical factors or artifacts. Computers, walls and doors, for example, are such factors.

Institutional analysis, however, is concerned with man-made, non-technological factors that influence behavior. These factors are “man-made” in the sense that they reflect human actions although they can intentionally be created or unintentionally emerge. As we have seen, the common definitions of institutions identify them with rules, beliefs, norms, and organizations, all of which are man-made, non-technological factors that influence behavior.¹¹ Such man-made factors either do not depend on technology at all (as is the case, for example, with religious beliefs) or they are a subset of the many possible factors, given the available technology. Clearly, the technology and knowledge available in a particular society can influence the set of man-made, non-technological factors that can prevail. Technology can determine the ability to monitor workers from a distance, using, for example, a video camera. This ability, in turn, can support particular beliefs about the consequences of shirking that otherwise would not be possible.

The interest in the influence of non-technological factors on behavior implies that institutional analysis is concerned with situations in which *more than one behavior is technologically possible*. Consider, for example, the situation associated with driving. This is a

¹¹ The norms and emotions that influence behavior in a particular society, although arguably reflecting the genetic human capacity to internalize norms and to have emotions, are man-made, non-technological factors that influence behavior. This is the case because their particular manifestations reflect human actions. See further chapter 10.

situation in which more than one behavior is technologically feasible - driving on the right or the left side of the road. Various man-made, non-technological factors can influence behavior in this situation: The belief that everyone will drive on the right side of the road is one such factor because if one holds this belief then it will influence his or her behavior. The best response to such a belief is to drive on the right if one wishes to avoid an accident. The belief that driving on the left will entail a legal fine is another man-made, non-technological factor that can influence behavior in this situation. Yet another is the norm that driving on the right is the correct thing to do.

In sum: The first feature common to the main lines of institutional analysis in economics is their concern with studying the *man-made, non-technological factors* that influence behavior in situations in which more than one behavior is technologically possible.

3.2.2 Factors exogenous to each of the individuals whose behavior they influence

Second, irrespective of the particular man-made, non-technological factor a certain approach to institutional analysis emphasizes, common to all of them (with the exception of those that consider institutions as regularities of behavior) is the postulate that these factors are *exogenous to each* of the individuals whose behavior they influence. They are exogenous in the sense that each individual whose behavior they influence considers them to be independent of his own actions and beyond his control. But nevertheless these factors are man-made and hence endogenous to the society. They reflect interactions among all (or many) of the individuals whose behavior they influence or interactions among other individuals.

Consider again the example of driving on the right side of the road. A person's expectations that others will drive on the right influence his decision about whether or not to do likewise. The origin of such expectations or beliefs can be that he was taught particular rules of the road or observed others driving on the right side of the road. In either case, these beliefs are a man-made factor, reflecting the actions and expected actions of others, that is exogenous to him and influences his choice of actions. Similarly, if one takes the expected behavior of the police as given, as exogenous to his behavior, then it is a man-made, non-technological factor exogenous to him that influences his behavior. More generally, legal rules are an example of man-made, non-technological factors exogenous to an individual but endogenous to the society.

They reflect the legal and political processes of rule-making in which the individuals whose behavior they govern, or other individuals, take part.¹² Similarly, the norms that a society's members have internalized due to socialization are exogenous to each of them, but reflect endogenous social processes.

The common focus on man-made factors exogenous to each individual reflects a common concern of the main approaches to institutional analysis. All approaches consider institutions as man-made, non-technological factors that generate regularities of behavior by enabling, guiding, and motivating individuals to take particular actions.¹³ Hence, institutions have to be factors exogenous to each individual whose behavior they influence, because whatever is under the direct control of an individual (whatever one's choice variable is) is not a factor that enables, guides, and motivates his behavior. One's choice is made within the contours spanned by the relevant institutions and it is part of the regularities of behavior that these institutions imply. For example, the man-made, non-technological factors that influence the selection and enable the use of various contractual forms by a firm constitute the relevant institution, while the contract a firm actually offers its employees is the behavior this institution implies.

3.2.3 Regularities of behavior - recurring behavior and social positions

The third common aspect of the main lines of institutional analysis in economics is that they are concerned with *regularities of behavior*, that is, behavior that recurs and is expected to recur among individuals with particular *social positions* rather than among particular

¹² Legal codes enforced by the state are not exogenous to *all* members of the society, but they influence the behavior of those who fall under their jurisdiction and are exogenous to each of them. If there is one individual (e.g., a dictator) who can change legal rules at will, then legal rules are not an institution that will influence his behavior. See the discussion of institutional hierarchy below.

¹³ The term "guiding" denotes providing the knowledge required to take actions and coordinating on a particular action. The term "motivating" denotes inducing behavior based on either rewards or punishments.

individuals.¹⁴ Example of such social positions are buyers and sellers, parents and children, lenders and borrowers, or employers and employees.

More generally, the man-made, non-technological factors that influence the behavior of specific individuals - such as a specific lender and borrower - are not the focus of institutional analysis. Similarly, behavior that is temporary, unexpected, or associated with particular individuals does not constitute a regularity of behavior. The regularity of behavior of interest to institutional analysis can be rather general in nature, such as entering into legal contracts, but it can be also specific, such as entering into particular contractual forms. In any case, institutional analysis is concerned with regularities of behavior that are robust in the sense that they are carried out in a situation broadly defined. A relevant regularity of behavior is that associated with the lending of an amount within a particular range but not the lending of a particular amount.

The concern of institutional analysis with regularities of behavior implies that it is concerned with *recurrent* and common *situations* or interactions because only in such interactions can regularities of behavior prevail. The interactions can be between the same individuals over time, as is potentially the case between a lender and a borrower, and it can be among different individuals, as is the case among drivers on the highway. This implies that, combined with the concern of institutional analysis in the influence of man-made, non-technological factors, the relevant recurrent situations are those in which more than one behavior is technologically feasible.

3.3 On the Complementary Roles of Various Institutional Elements

Hence, although seemingly distinct, various approaches to institutional analysis share a basic concern: they are all directly or indirectly concerned with *man-made, non-technological factors. These factors generate a regularity of behavior by enabling, guiding, and motivating behavior. In addition, they are exogenous to each of the individuals whose behavior they*

¹⁴ Social position is the social identity an individual has and it may be very general in nature (such as those associated with gender differences) or it may be much more specific (as in the case of occupational positions). When people occupy social positions their behavior is influenced by what is expected of that position - by the bundles of socially determined attributes and expectations associated with social positions - rather than by their own individual characteristics. E.g., Giddens 1997: 585; Penguin: 360; and see the discussion in section 7.3.

influence. I will refer, for reasons to be made clear below, to such factors as **institutional elements**.

Different approaches to institutional analysis concentrate on distinct institutional elements. Indeed, it seems appropriate to concentrate, at times, on distinct elements. In contrast, the perspective advanced here emphasizes that understanding the social underpinnings of behavior requires, in general, going beyond the analysis of a particular institutional element. Understanding the social underpinnings of behavior often requires examining the inter-relationships and complementary relationships among various institutional elements.

To illustrate this point, consider the dominant view of institutions in economics as rules. In this institutions-as-rules approach, institutions are considered “perfectly analogous to the rules of the game in competitive sport” (North 1990: 4). It is common to distinguish among formal and informal rules. Formal rules, such as “constitutions, laws, [and] property rights,” are intentionally specified, particularly in politics. Informal rules, such as “taboos, customs, traditions, and codes of conduct” evolve spontaneously. Some of these rules, such as constitutions, laws, and taboos are prescriptive while others, such as customs, traditions, and codes of conduct, are descriptive.

But considering institutions as rules implies placing how people are motivated to follow prescriptive rules or act in a way generating descriptive rules outside the confines of institutional analysis. In other words, enforcement of prescriptive rules is considered exogenous, and the motivation to follow a particular regularity of behavior is ignored as well.

The limitation of this view is rather clear. If the motivation to follow or ignore rules is not part of the analysis, then unless one is willing to assume that humans are rule-followers, there is no one-to-one relationship between rules and behavior. Prescriptive rules may or may not be just dead words that do not correspond to behavior. In considering institutions only as rules, we leave aside the issue of why some rules are followed and others are not. Indeed, this limiting aspect of considering institutions as rules has been recognized by many who follow this line of study. In discussing institutional dynamics, for example, North (1990: 101) has noted the limitation of considering only rules when accounting for regularities of behavior. “What happens when a common set of rules is imposed on two different societies? ... Although the rules are the same, the enforcement mechanism, the way enforcement occurs, the norms of behavior,

and the subjective models of the actors are not. Hence, both the real incentive structures and the perceived consequences of policies will differ as well.”

But if we want to understand the impact of non-technological factors on behavior, why then concentrate only on rules? Understanding the man-made, non-technological factors that generate regularities of behavior requires going beyond considering only rules: We need to study the beliefs and norms that motivate people to follow these rules.

More generally, the main approaches to institutional analysis have highlighted the many and distinct roles that various institutional elements perform in generating regularities of behavior. The following chapters elaborate on the nature and analysis of various institutional elements but a short discussion is in order at this point, concentrating on the institutional elements central to various approaches to the study of economic institutions - rules, beliefs, norms, and organizations.

In the general case in which enforcement is endogenous (namely, when we cannot assume that people will follow rules) the role of rules is to guide and coordinate behavior in the interaction under consideration. Such rules can and do take many forms: they can be formal or informal, implicit or explicit, tacit or well articulated, and reflect normative values or the dictates of the powerful. Rules can emerge spontaneously or deliberately and they can be formulated quickly or reflect a long period of experimentation and learning. But in all cases they are behavioral instructions that are common knowledge among members of the society. Not every rule, however, is an institutional element that is a man-made, non-technological factor that actually influences behavior. Unless people follow a rule, it remains hollow with no influence on behavior.

Among the institutional elements that motivate individuals to either follow or ignore rules are beliefs and norms. For a system of beliefs to be an institutional element it has to be shared by (sufficiently many) members of the society. Such shared, cultural beliefs can be of two kinds - behavioral beliefs and internalized beliefs. The first are beliefs that individuals hold regarding the behavior that others will assume in various contingencies that may or may not actually transpire. The second are internalized beliefs regarding the structure of our (and potentially other) world(s) and the implied relationship between actions and outcomes. Such beliefs reflect, for example, the human tendency to try to understand the world around them.

Similarly, internalized constraints such as norms are the socially constructed behavioral standards that have been incorporated into one's superego and hence influence one's behavior by becoming a part of his or her preferences. Behavioral beliefs, internalized beliefs, and norms provide motivation; they influence one's decisions on how to act. At the aggregate level, therefore, they influence which rules of behavior will indeed be followed.

Organizations - either formal ones such as Parliaments and firms, or informal ones such as communities and business networks - have three inter-related roles. First, organizations produce and harbor rules of behavior; second, they contribute to the perpetuation of internalized beliefs and norms; and third, they influence the set of beliefs that can prevail with respect to a particular interaction. This latter role of organizations has received little attention: organizations influence the set of beliefs that can prevail in a given situation. For example, a court is a necessary condition for people to believe that legal punishment will deter cheating. A community or business network must exist for the interacting individuals to believe that cheating an individual will lead to punishment by other members of these organizations. Using the jargon of game theory, organizations alter the rules of the game relevant to the decision-makers in the original interaction under consideration by, for example, introducing a new player (the organization itself), by changing the information available to players, or by changing the payoffs associated with certain actions.

What has distinguished the various lines of institutional analysis is that each of them concentrated on either regularities of behavior or on a particular institutional element. The institutional elements that various approaches focused on, however, have distinct roles and are complementary rather than substitute. In general, therefore, even describing the institutional elements that generate behavior in recurrent situations in which many ways of behaving are technologically feasible, requires specifying various such elements. It requires, in particular, specifying the organization that produces rules and propagates them, the rules themselves, the associated beliefs and norms, and organizations that make beliefs and norms possible in the interaction under consideration.

Examples abound and the following table provides some.

Organizations	Rules	Beliefs and Norms	Regularities of behavior
DMV and the police	Rules of the Road	The beliefs that other drivers and policemen will behave in a particular way	Driving according to the rules
Credit Card companies and the legal authorities	Rules regulating the use of a credit card and legal persecution of defaulters	Belief in the company's ability to screen card-holders, impose legal punishment and taint one's credit history	Impersonal exchange without cash among sellers and holders of a credit card
Community of the Jewish traders in New York	Rules regarding membership and behavior toward members and non-members	Belief in the community members' ability and motivation to punish cheaters, thereby making cheating unprofitable	Trust among members of the community
White communities, state and federal legislators, legal authorities in the southern US .	Rules legalizing and governing slavery.	Norms justifying slavery. Beliefs in particular behavior by other whites, African Americans, and legal authorities. Belief in the profitability of slavery.	Slavery and its various behavioral manifestations

It is therefore misleading, in general, to examine an institution by considering each institutional element in isolation from the others. For a system of institutional elements to constitute an institution they have to render each other effective in generating particular regularities of behavior. E.g., rules should guide behavior to coordinate on beliefs that actually influence behavior, behavior should confirm the relevance of these rules and beliefs, while organizations should facilitate the specification and diffusion of these rules and enable these beliefs.

Note, however, that the role fulfilled by a particular institutional element can usually be accomplished in more than one way. Rules, beliefs, norms, and organizations can take many forms and reflect various origins, and a particular institutional element in a particular situation can thus usually manifest itself in various forms. A lender may repay a loan, for example, motivated by the belief that otherwise he would be fined by the court, undergo a beating from the

Mafia, or be ostracized from the community. These various manifestations of the same institutional element can potentially replace each other in influencing behavior in a given situation. Hence, the set of institutional elements that influences behavior in a given situation can differ over time and societies. For simplicity of presentation, however, I do not differentiate between potential and actual institutional elements - those that can influence behavior and those that actually do so. Recognizing the multiplicity of potential institutions, however, is central in empirical studies of institutions.

In highlighting the distinct role and complementary relationships among various institutional elements, the perspective advanced here differs from those of approaches that identified institutions with a particular institutional element, such as rules, beliefs, or organizations. Those perspectives ignored, by and large, the challenge and potential importance of examining the inter-relationships among various institutional elements. Some consider all institutional elements to be a part of a larger “institutional matrix” (North 1990) whose analysis is beyond the scope of institutional analysis per se. Others assert that the distinction between various institutional elements is superficial. Rules and organizations, for example, are often considered particular types of beliefs (e.g., Calvert 1995; Aoki 2001). Each of these positions is appropriate for various analytical purposes and in specific empirical studies, but this work argues that such positions either run the risk of defining institutions in a way that is too abstract or vague to guide a positive, empirical analysis, or they overlook insights that can be derived by recognizing the distinctions and inter-relationships among various institutional elements.

3.4 Definition: An Institution as a System of Complementary Institutional Elements

The discussion so far has argued that although distinct lines of institutional analysis have defined institutions differently, they share much in common. First, they are all concerned with institutional elements: man-made, non-technological factors that influence behavior. In particular, they concentrate on rules, beliefs, norms, and organizations. Second, they have all examined factors exogenous to each of the individuals whose behavior they influence. Third, the behavior on which institutional analysis has focused is regularities of behavior - behavior that (by and large) recurs, and is expected to recur, among individuals with particular social

positions. This implies that the domain of institutional analysis is a common, recurrent situation, or interactions in which ways to behave are technologically feasible.

What has distinguished various lines of institutional analysis, however, is that each of them concentrated on either regularities of behavior or on a particular institutional element. As argued above, however, a comprehensive understanding of the social underpinning of behavior requires examining how various institutional elements complement each other.

Accordingly, we can advance a definition of institutions that captures the common and the complementary aspects of their various definitions. **An institution is composed of complementary man-made, non-technological factors exogenous to each individual whose behavior they influence and the regularity of behavior these factors generate.**¹⁵ An institution generates regularities of behavior by enabling, guiding, and motivating individuals to take particular actions. In other words, an institution is composed of complementary institutional elements and the regularity of behavior and expected behavior these factors generate.

In the most general case, such an institution should be studied as self-enforcing. All institutional elements governing the relevant interactions have to render each other effective in generating particular regularities of behavior. For example, rules should coordinate on beliefs that actually influence behavior, behavior should lead to the emergence of these rules and confirm the underlying beliefs, while organizations should facilitate the specification of these rules, enable these beliefs, and, whenever appropriate, be the endogenous result of beliefs and behavior.

More generally, an institution is self-enforcing when the actual and expected behavior of each of the interacting individuals (and individuals operating on behalf of an organization) generates the institutional elements that enable, coordinate, and motivate other individuals to follow the associated regularity of behavior. In a circular fashion, the behavior of each individual leads others to act, and to be expected to act, in a way that motivated each person to behave in this way to begin with. In other words, the institutional elements that influence the

¹⁵ Note that the definition includes institutional elements and behavior. The reason is that the same institutional elements, in different situations, can generate different behavior, while the same behavior can be generated by different institutional elements.

behavior of each individual lead to behavior that maintains these institutional elements. The structure that each individual faces induces him to take the actions that, on the aggregate level, create this structure.

The view of institutions as self-enforcing emphasizes that a comprehensive understanding of social outcomes requires considering all behavior and its underpinning institutional elements as endogenous and exploring their roles and inter-relationships. Clearly, however, for some if not most positive institutional analyses, there is no need to examine fully endogenous institutions. It may be appropriate in a particular study to assume, for example, that the enforcement provided by a non-strategic third party, such as the state, is exogenous, or that the formal rules governing voting in a parliament are binding, or that one's religious beliefs or communal affiliation can be taken as given.

In using this definition to guide institutional analysis the scope of the analysis can be varied according to the issues of interest. The question motivating the analysis influences the institutional elements that one wants to consider as exogenous or endogenous. In the rules-of-the-road example, we can consider only how a driver's experience leads to particular beliefs regarding others' behavior and patterns of behavior. Alternatively, one may also consider studying the impact of rules of the road distributed by the DMV on these drivers' beliefs and behavior, or the expected behavior of law enforcement officers. A more extensive analysis can also consider the institutional elements that generate the behavior and expected behavior by the DMV and the law enforcement officers.

Taking these or other particular institutional elements as exogenous in the analysis constitute a special case rather than the more general one of studying endogenous institutions. In most practical applications, some institutional elements have to be taken as exogenous, but the above definition does not impose such restriction on the analysis.

3.5 An Integrative Approach

Most lines of institutional analysis advance a unitary view, considering institutions as either rules, beliefs, norms, organizations, or behavior. In contrast, the above definition abandoned the monolithic view of institutions. An institution is conceptualized as a system of inter-related institutional elements, each of which has a distinct and complementary role in

generating a regularity of behavior. This definition therefore highlights the need for, and the ability to, integrate various lines of institutional analysis.

In studying the relationships among organizations and rules, for example, we can take advantage of the analytics and insights developed in the study of the political economy of rule formation. In studying the relationships between organizations and norms, for example, the analysis can benefit from the analytics and insights developed in the study of this issue in sociology and political science. As for the relationships between rules, organizations, and behavior, the analysis can benefit from the analytics and insights offered by transaction cost economics in exploring how decision-makers attempt to behave in a way that lowers these costs.

At the same time, the view of an institution as a system of institutional elements points out the limitations of particular lines of institutional analysis and the need to integrate them. For example, studying institutions as rules, particularly politically determined rules, ignores the importance of enforcement achieved by, for example, beliefs and norms in transforming rules from merely behavioral instructions to ones that are being followed. Studying enforcement, in turn, may require considering the role of organizations in the socialization process and how it enables and leads to the prevalence of particular beliefs.

At the same time, the above definition presents a concept of an institution which explicitly recognizes the limitations of studying institutions while imposing presuppositions on the analysis regarding human nature or the functions of institutions and their origins. The above definition, for example, does not rely on assuming that individuals are motivated either solely by norms or external incentives. This is appropriate because whether individuals act “morally” or opportunistically depends on a society’s institutions - whether or not, for example, existing institutional elements led to the internalization of particular norms. Assuming that individuals do or do not act morally ignores the need to examine the institutional foundations of such behavior.

Similarly, the view of an institution as composed of institutional elements and a regularity of behavior does not assume that it fulfills a particular function. This view distinguishes between what institutions are, what they do, and what they imply. Institutions are regularities of behavior and institutional elements, and what they do is generate regularities of behavior by, for example, creating common knowledge and providing coordination and motivation. Hence, this definition does not presuppose that institutions serve a particular

function or have certain implications, such as reduction in uncertainty, efficiency and distributional implications. What a particular institution does or does not do in a particular situation is not to be assumed a-priori and embedded in the definition.

Neither does the above definition presuppose that institutions emerge through a particular process. It embodies what institutions are and what they do rather than how they came about. Hence, it neither pre-commits the analysis to the notion that institutions are established intentionally nor that they evolve unintentionally. The benefit of this, as discussed in Part VI, is that it enables examining either process, and accommodates the common sense observation that the same institution can and does emerge through different processes.

The practice of defining institutions while making particular assumptions regarding human nature or the functions and origins of institutions, is often made to restrict the object of study and render it manageable. Alternatively, such a restriction is achieved by committing the analysis to a particular analytical framework, as we have seen in the case of transaction cost economics or the study of politically determined rules.¹⁶ Either of these ways of restricting the object of study, while beneficial for examining particular issues, is limiting. Arguably, institutions fulfill many functions, are relevant in well understood as well as in very poorly understood situations, and emerge through various processes. Similarly, confining institutional analysis to using a particular analytical framework comes at the cost of giving up on the analytical benefits and insights that can be obtained from other frameworks.

The above definition of institutions makes explicit what is the object for institutional analysis is and what it is not without imposing restricting assumptions regarding human nature and the function or origin of institutions. Nor does it commit institutional analysis to using a particular analytical framework. At the same time, it treats as special cases those in which a particular restrictive assumption is made or a particular analytical framework is used.

The definition advanced above defines the object of study by specifying what issues fall within the confines of institutional analysis. Specifically, the definition implies that institutional analysis is concerned with regularities of behavior - behavior that prevails and is expected to

¹⁶ See also, for example, the definition provided by Sugden (1989): When associating institutions with convention, he argues, they are an evolutionary stable strategy (ESS) in a game with multiple ESS. See section 4.5.

prevail among individuals with particular social positions. Hence, behavior among particular individuals is outside the scope of institutional analysis. (Unless it is examined in the broader context of how a regularity of behavior emerged.) Furthermore, the definition implies that institutional analysis is concerned with the man-made, non-technological factors exogenous to each of the interacting individuals that conjointly generate this behavior by guiding, enabling, and motivating them to follow it. Hence outside the scope of institutional analysis are technological, man-made factors that influence behavior; non-technological, man-made factors that influence behavior but are chosen by the decision-makers; and non-technological, man-made factors that do not influence behavior.

To highlight the limits on the scope of the analysis that these restrictions imply, consider for example, man-made, technological (and hence, non-institutionalized) and man-made, non-technological (and hence institutionalized) solutions to temptation. The behavior of the Greek hero, Odysseus, illustrates the use of man-made, technological ways to confront temptation. After being advised by the sorceress, Circe, Odysseus, saved himself and his crew from being tempted by the singing of the sirens and lured to their deaths in the sea. He filled the ears of his crew with wax so that they were deaf to the Sirens; yet he wanted to hear the music so he had himself tied to the mast so that he could not steer the ship off course. Odysseus thus avoided temptation using non-institutionalized means: he used technology - wax and ropes - to directly prevent his crew and himself from taking particular actions. In contrast, the Torah and Ten Commandments reflect an attempt to motivate people to resist various temptations using man-made, non-technological factors: specifically, belief in God and his response to various actions.

The above definition also restricts the scope of the analysis by demanding that an institutional element is exogenous to each of the interacting individuals whose behavior it influences. In other words, institutional analysis is not concerned with man-made, non-technological factors that are chosen by each of the interacting individuals. In studying contracts, for example, institutional analysis is concerned with the man-made, non-technological factors exogenous to each of the interacting individuals that determine the set of possible contracts that they can enter into. Among the issues of interest are questions regarding how contracts are enforced, the rules governing entering contracts in a manner that make them enforceable, the forces shaping the invention of new contractual forms, and how they become

known in the society and made enforceable. The choice of contracts by the interacting individuals within the set determined by the relevant institutional elements, is in the domain of contract theory - the study of contracts that individuals will find optimal to use, given the institutionally determined set.¹⁷

Similarly, studying the rules, beliefs, norms, and organizations that make exchange possible - that provide the foundations for markets in a particular time and place - is the subject of institutional analysis. The study of behavior within markets, however, lies in the domain of micro-economic theory. The same holds true for the study of collective decision-making. Institutional analysis is concerned with the institutional elements that conjointly generate regularities of behavior through which collective decisions are made. Studying how particular rules, norms, beliefs, and organizational features (such as parliaments, congresses, or tribal councils) generate such regularities of behavior is in the domain of institutional analysis. The analysis of the factors leading to a particular decision to be made in a particular instance, however, is not.

At the same time, the focus on institutional elements that are exogenous to each of the individuals whose behavior they influence enables the above definition, unlike most definitions of institutions, to capture the hierarchical aspect of a society's institutions. One's choice variable can be part of an institution that influences another. For a dictator who is above the law, enforceable legal rules are not institutions because he can change them at will. For his subjects, however, these rules are part of the institutions that influence their behavior.

3.6 Looking Ahead

The above definition and discussion have argued that distinct institutional elements have different, and hence complementary, roles in generating behavior. At the same time, it did not advance any particular argument regarding the causal relationships among various institutional elements. Some of the examples provided above, however, implicitly asserted that organizations and rules enable and generate beliefs and norms that generate behavior. Clearly, other causal

¹⁷ For a nice integration of institutional analysis and contract theory using mechanism design, see De Lara (2000).

relationships are possible and arguably relevant in many cases as well. Observed behavior can further substantiate the relevance of the rules and beliefs that generated it to begin with and generate processes leading to new organizations.

How can we analytically study institutional elements, their inter-relationships, and the associated behavior? As we have seen, by the mid 1980s, the main lines of institutional analysis in economics concentrated on examining politically determined rules and the regularities of behavior of economic decision-makers, particularly firms, given the politically determined rules and economic environment. The study of institutional elements that provide motivation, beliefs and norms, has been secondary, and enforcement was usually considered exogenous to the analysis. Of the many roles that organizations can play in an institution, attention has been particularly given to the role of organizations as players acting in the political arena to advance rules favorable to their interests.

By the mid 1980s, however, advances in micro-economic theory, particularly non-cooperative game theory, information economics, and evolutionary economics provided an analytical framework particularly suitable to studying institutional elements that provide motivation such as beliefs and norms. By enabling us to study motivating factors - the linchpin of institutions - this new analytical framework advanced the analysis of the essence of various institutional elements and how they constitute inter-related parts of a larger whole - an institution - with which a particular regularity of behavior is associated. To an extent, this analytical framework enabled returning with new tools to issues central to the sociological analyses of institutions and Old Institutionalism.

The rest of this work presents the essence and elaborates on various contributions of this new, game-theoretic, analytical framework for studying institutions and their dynamics.