

**Historical (and Comparative) Institutional Analysis:
Self-enforcing and Self-reinforcing Economic Institutions**

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Preface

To be provided

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Chapter 1: Motivation and Issues

In economics, political science, and sociology it became widely accepted that institutions matter.¹ There is less agreement, however, about what economic institutions are and how to study them. Economic institutions are defined, for example, as either rules, beliefs, norms of behavior, regularities of behavior, or organizations (such as firms, courts, parliaments, social networks, and communities). Furthermore, the main approaches to institutional analysis also differ in their basic methodological postulates regarding institutions' origins, dynamics, and implications. While some advance a deductive, agency perspective others advance an inductive, historical, structural perspective. Because distinct definitions of institutions have been treated in the literature as mutually exclusive and because of the above methodological divide, we still have a limited ability to address three inter-related questions that are at the heart of social science and history: What are institutions? Why do societies evolve along distinct institutional trajectories? Why do societies often fail to adopt the institutional structures of those that are more successful?

The Challenge of Institutional Analysis

Among the obstacles for advancing comparative analysis of institutions over time is the elusive nature of the concept of institutions. There are many, seemingly alternative definitions of the term institutions and approaches to study them within various disciplines, such as economics, political science and sociology. The following are some of definitions commonly used in economics, political science and sociology. Institutions are:

12. "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).

¹ The conviction in the importance of institutional analysis is well reflected in its recently gained momentum the social sciences. 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); and Barzel (1989); Greif (1996b, 1997a, 1997c, 1997d, 1997e, 1998) in economics. Weingast (1996); Bates et al. (1998), and Thelen (1999) in political science and, Coleman (1990); Gravnovatter (1985); Powell and DiMaggio (1991, introduction); Smesler and Swedberg (1994); Scott (1995); and Brinton and Nee (1998) in sociology. See also the papers in the May 1998 volume of *The American Economic Review* regarding the new institutional economics.

13. Organizations such as firms, parliaments, tribes, families, communities, and universities. (E.g., Williamson 1985; Granovetter 1985; North and Weingast 1989; Nelson.)
14. 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 forthcoming.)
15. Norms of behavior that had been internalized by members of the society and hence influence their behavior. (E.g., Ullmann-Margalit 1977; Elster 1989; Platteau 1994).
16. Regularities of behavior or "social practices that are regularly and continuously repeated" (Berger 1977; Schotter 1981; The Penguin Dictionary of Sociology: 216; Young 1998: preface.)

The main approaches to institutional analysis in the social science differ by more than how they define their object of study. They also differ in their basic methodological postulates regarding institutions' origins, dynamics, and implications. Some advance a deductive, agency perspective while others advance an inductive, historical, structural perspective.

Approaches that adopted the deductive, agency perspective place the individual decision-maker at the center of their analysis and study institutions deductively as equilibrium outcomes reflecting the inter-relationships between individuals' objectives, possibilities, and the environment within which they interact. Institutions are therefore considered as reflecting human actions and social process 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 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 adopted the inductive, historical, structural perspective emphasize that institutions are structures that do not reflect agents' needs and possibilities but shape these needs and determine these possibilities. Institutions structure human interactions and mold individuals and their social and cultural worlds. They therefore transcend the situation that led to their emergence and constitute part of a society's historical heritage. Beliefs, norms, and social structures that were crystalized in the past, for example, are part of the structure within which individuals interact. One has to study institutions inductively, utilizing dynamic, historically-contingent models in which past institutions can have a lasting influence. 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 deductive, agency perspective and the inductive, structural, historical perspective - 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) consider institutions to be societal features that "impose themselves upon" individuals (p. 2). 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, and not necessarily functional, behavior (e.g., North 1990; Hodgson 1998). Rational choice analysis in political science examines institutions as instrumental outcomes using equilibrium analysis, while historical institutionalism emphasizes that they reflect a historical process (Thelen 1999).

These definitions of institutions and approaches for their analysis have been treated in the literature as mutually exclusive thereby curtailing the ability to advance institutional analysis and benefit from integrating the insights of various approaches. This book is based on the postulate that the 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 the complementary relationships among the above two perspectives.²

This postulate is inspired by various studies of historical institutions and their dynamics which indicate the deficiency of each of the above definitions of, and perspectives on, institutions. Each is appropriate for addressing particular issues, but fails to provide a comprehensive understanding of the social underpinnings of regularities of behavior and their dynamics. At the same time, works on historical institutions has revealed that the various definitions share much more than catches the eye and hence advancing an encompassing framework is feasible. Furthermore, various approaches complement each other. Hence, furthering institutional analysis beyond the confines of each and exploring, for example, institutional statics and dynamics within the same framework requires revealing the commonality, distinctions, and inter-relationships among various approaches for institutional analysis.

The need for and the potential benefit of integrating various lines of institutional analysis has been noted by many students of institutions, such as Douglass North (1990) and James Coleman (1990). Nevertheless, despite recent surge in inter-disciplinary institutional analysis, little interactions and cross-fertilization exist 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 which either refrain from defining institutions 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 forthcoming.)

Common Aspects in Different Approaches for Institutional Analysis

Despite transparent differences, approaches adopting various definitions of institutions have a lot in common. First, all of them are concerned with the behavioral implications of factors (such as rules, beliefs, norms, or organizations) that are social in the sense that they are neither determined by technology nor by our genetics. Furthermore, institutional analysis is not concerned with social factors which are temporary in nature or relate to particular individuals.

² For tentative expositions of the various elements of the proposed approach, see Greif (1994, 1997a, 1997b, 1998a, 1998b, 1998c, 2000a, 2000b).

Institutional analysis is concerned with social factors that have a widespread and lasting influence and that govern the relations among individuals who occupy particular social positions (such as parents and children, lenders and borrowers, or employers and employees). In other words, institutional analysis is concerned with social factors that generate regularities of behavior among individuals who occupy particular social positions.

Second, irrespective of the particular social factor a certain approach to institutional analysis emphasizes, common to all of them is the postulate that this social factor is *exogenous* to *each* of the individuals whose behavior it influences although this factor is *endogenous* to the *society*. These social factors are exogenous to each of the individuals whose behavior they influence in the sense that they are beyond the control of each of them. But these social factors are nevertheless endogenous to the society and reflect the interactions among the individuals whose behavior they influence or other individuals. For example, legal rules are exogenous to each of the individuals whose behavior they influence but they are nevertheless endogenous to the society as a whole. They reflect a legal and political processes of rule making in which the individuals whose behavior they govern, or other individuals, take part. Similarly, the norms that a society's members had been socialized into are exogenous to each of them, but reflect endogenous social processes.

The common focus on social factors exogenous to each individual but endogenous to the society reflects a third aspect common to all the approaches to institutional analysis (with the exception of those that consider institutions as regularities of behavior). All of them consider institutions as social factors that generate regularities of behavior by guiding, enabling, and constraining individuals' actions. Hence, institutions have to be social 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 social factor that constrain, direct, and enable 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 social factors which 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..

Furthermore, the institution one's face depend on the situation. The institution one faces as a borrower is distinct from the institution one faces as a father. Hence, the fourth element common to various approaches to institutional analysis is considering transactions or interactions as the basic units of analysis. (As has been stressed by Commons, Coase, Williamson, and North and in contrast to the use of goods as the basic unit of analysis in neo-classical economics.) The institutions that various approaches explore are either defined or can be defined with respect to transactions or interactions.

Defining Institutions: One Definition and Multiple Content

Hence, although seemingly distinct, various approaches to institutional analysis share a basic concern: they are all directly or indirectly concerned with *social factors that generate a regularity of behavior (in a particular transaction) by coordinating, enabling, and constraining behavior while being exogenous to each of the individuals whose behavior they influence but endogenous to the society*. Different approaches for institutional analysis concentrate on distinct social factors. Each gives different content to the same definition. Indeed, it seems appropriate to give distinct content to this definition. Distinct social factors can prevail in various historical episodes with respect to particular transaction and generate the same or different regularities of behavior. For example, legal rules, norms, and belief in God's punishment following a particular action can direct behavior in economic exchange.

The possible multiplicity of social factors influencing behavior implies the need to differentiate between social factors that **can** and **do** influence behavior. Accordingly, this work refers to the social factors that **actually** contribute to generating regularities of behavior in a particular historical episode as (relevant) **institutional elements**. An institutional element is a social factor that contribute to generating regularities of behavior among individuals with particular social position and in a particular transaction while being exogenous to each of the individuals whose behavior it influence but endogenous to the society. (For simplicity of exposition I will, henceforth, omit these qualification.)

But while each of the various approaches for institutional analysis focuses on a particular institutional element, the approach advanced here emphasizes that understanding the social

underpinnings of behavior - namely, achieving the objective of all approaches to institutional analysis - requires going beyond the analysis of a particular institutional element. As various recent theoretical considerations and analyses of historical and contemporary institutions indicate, understanding the social underpinnings of behavior requires examining the inter-relationships among various institutional elements.

For example, formal or informal rules of behavior would not generate regularities of behavior unless they are enforced. Hence, the analysis of rules and the process through which they are generated has to be complemented by an analysis of how they are enforced. Considering enforcement, however, often requires examining such social factors as beliefs, norms, and organizational features (such as a community or a court). Similarly, identifying organizations as institutions often provides an incomplete understanding of the social underpinnings of behavioral regularities because, as game theory forcefully illustrates organizations provide a framework within which distinct behavior can be generated and prevail as an equilibrium outcome. For example, members of a community can punish a member who cheated other members. But other patterns of intra-community behavior can theoretically prevail as an equilibrium outcome and were indeed found to prevail.

Accordingly, this work examines various institutional elements as inter-related parts of a larger whole - **an institution** - with which a particular regularity of behavior is associated. The discussion is first aimed at advancing the study of institutional statics. Namely, highlighting how institutions generate and reflect endogenous behavioral regularities in a society, thereby creating what sociologists often refer to as a (perceived or actual) “social order” that members of the “society take for granted” (e.g., Jepperson 1991: 145). But the discussion is also aimed at advancing the study of institutional dynamics. Namely, highlighting why institutional dynamics is a historical process in which the rate and direction of institutional change reflect past institutions.

In advancing this position this work differs from approaches which identified institutions with a particular institutional element, such as rules, beliefs, or organizations. Such approaches 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 as particular type of beliefs (e.g., Clavert 1995). Each of these positions is appropriate for various analytical purposes and in specific empirical studies. This work nevertheless argues that such positions either run the risk of defining institutions in a way which is too abstract or vague to guide a positive, empirical analysis or lose insights that can be derived by recognizing the distinctions and inter-relationships among various institutional elements.

An Integrated Approach for the Study of Institutional Statics

An objective of this work is, therefore, to present a conceptual and analytical framework enabling us to capture important aspects of the inter-relationships among various institutional elements. This framework is aimed at highlighting, and fostering the analysis of how various institutional elements constitute inter-related parts of a larger whole - an institution - with which a particular regularity of behavior is associated. While the this work presents this framework and elaborates on its usefulness in studying institutions and their dynamics.

The book particularly concentrates on the interplay between the institutional elements that various approaches to institutional analysis define as institutions (namely, rules, beliefs, norms, and organizations). It does so while ignoring the special case of exogenous enforcement of behavior and concentrating on the more general case of endogenous enforcement. Namely, institutions in which regularities of behavior do not reflect their enforcement by a non-strategic third party. The ability to examine this case reflects the recent development of various analytical framework, particularly, game theory, information economics, and evolutionary economics. These frameworks enable us to analyze interactions among individuals with little knowledge and information in situations in which all behavior has to be endogenously motivated.

This book begins by providing a brief introduction to the study of institutions in economics and its relationships to institutional analysis in political science and sociology. It then explores the inter-relationships among various institutional elements and how they can constitute inter-related parts of a larger whole - an institution - with which a particular regularity of behavior is associated.³ When enforcement is endogenous, namely, when we can not assume that people

will follow rules, the role of rules is to guide and coordinate behavior. Such rules can and do take many forms: they can be formal or informal, implicit or explicit, tacit or well articulated, reflect normative values or the dictate of the powerful. Rules can emerge spontaneously or deliberately and they can be formulated fast 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, namely, a social factor that actually influence behavior. Unless people follow a rule, it remains a dead word with no influence on behavior.

The institutional element that motivates individuals to either follow or ignore rules are beliefs - mental models - and internalized constraints such as norms. For a system of beliefs to be an institutional element it has to be shared by 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) worlds and the implied relationships between actions and outcomes. Such beliefs reflect, for example, humans' tendency to try to understand the world around them. Similarly, internalized constraints such as norms are the socially constructed behavioral standards that had been incorporated into one's superego hence influence one's behavior by becoming a part of his or her preference. Together, behavioral beliefs, internalized beliefs, and internalized constraints constrain one's behavior. At the aggregate level, therefore, they determine which rules of behavior will indeed be followed.

The role of organization - either formal ones such as Parliaments and firms or informal ones such as communities and business networks - is to produce and harbor rules that coordinate behavior, contribute to the perpetuation of internalized constraints, and influence the set of beliefs that can prevail with respect to a particular transaction. Organizations influence the set of beliefs that can prevail in a society mainly by linking distinct transactions. For example, a necessary condition for beliefs in court's punishment to prevent cheating, is for a court to exist. Hence, organizations alter (or reflect the alternation) of the rules of the game relevant to the decision

³ These ideas build on the works of many scholars to which I refer below.

makers in the original transaction under consideration by, for example, introducing a new player (the organization itself), by changing the information available to players, or by changing payoffs associated with certain actions.

Roughly speaking then, this book explores and develops a simple idea: When enforcement is endogenous, the role of rules is to coordinate on particular beliefs and mode of behavior norms while they also reflect them. Organizations provides the arena within which rules are generated and which contribute to the emergence and perpetuation of particular beliefs and norms. The role of beliefs and internalized constraints (henceforth, norms) is to motivate individuals to follow rules. Cultural, shared beliefs are therefore central to the current conceptualization of institutions (as stressed also in Greif 1994a, Clavert 1995, Weingast 19??, Aoki forthcoming). Alongside norms they are the factor directly motivating individuals to take particular actions.

Self-enforcing and Self-reinforcing Institutions

It is misleading, however, to examine an institution 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. Rules should coordinate on beliefs that actually influence behavior, behavior should lead to the emergence of these rules and reinforce its 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. To capture the inter-relationships among various institutional elements that render them effective in generating regularities of behavior, the approach advanced here requires that for a system of rules, beliefs, norms, and organizations to constitute an institution generating regularities of behavior it has to be self-enforcing and (weakly) self-reinforcing. For an institution to **prevail**, it has to be self-enforcing; for it to **perpetuate** over time, it has to be (weakly) self-reinforcing.

An institution is **self-enforcing** when the behavior and expected behavior of each of the interacting individuals generate the institutional elements that guide, motivate, and enable other individuals to follow the associated regularity of behavior. The actual and expected behavior of each individual leads others to take, or to be expected to take, the behavior that motivated that

individual to take this behavior to begin with. In other words, the institutional elements that influence one's behavior lead him to behave, and be expected to behave, in a way that motivates others to behave in ways that gave rise to these institutional elements. The structure that each individual faces induces him to take the actions that, on the aggregate level, create this structure. Clearly, as many game-theoretic analyses of institutions argue, for a particular regularity to prevail in the absence of a third-party enforcer, it must be self-enforcing.

An institution is **self-reinforcing**, roughly speaking, when it exhibits positive feedback. That is, when the behavior and processes this institution entails increase the range of situations in which the behavior associated with it is self-enforcing. An institution is self-reinforcing when, for example, it alters wealth distribution, demography, knowledge, capabilities, norms, and organizations, thereby increasing the range of situations in which the associated behavior is self-enforcing. Self-reinforcing processes can reflect, for example, individuals' responses to the incentives institutions entail, and the feedback from behavior to preference formation, knowledge, information, and wealth distribution. Similarly, the range of parameters within which a regularity of behavior is self-enforcing can be extended by the introduction or the emergence of a new institutional element. In such case we can say that the existing institution is being **reinforced**. (For ease of exposition I will henceforth use the term (self-)reinforced to denote either self-reinforcement or reinforcement.)

For example, if norms evolve, as many scholars have claimed (e.g., Sugden 1989) through people's tendency to attribute normative value to behavior that had been followed in the past, this process self-reinforces existing institutions. Driving on the right side of the road may be a (conventional) regularity of behavior that people follow because it is (almost always) optimal for each individual to drive on the right given the expectations that others will do so. A law making driving on the right a legal requirement supported by a credible threat of punishment, reinforces this behavior. People will drive on the right in more situations than before. For a self-enforcing institution to perpetuate over time, it has to be (weakly self-)reinforced. If the set of parameters in which it is self-enforcing is diminishing over time, at some point the behavior associated with this institution will cease to be self-enforcing and cease to prevail.

Analytical Framework for the Study of Self-enforcing and (Self-)reinforcing Institutions

Advancing the study of institutions as an integrated, self-enforcing and self-reinforcing system requires an explicit analytical framework. Such a framework has to contain a deductive theory restricting the set of admissible arguments based on a priori, general principals. The importance of such a restriction is well-reflected in the observation that 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” (Powell and DiMaggio 1991: 2).

The analytical approach advanced here makes use of game theory to limit admissible self-enforcing institutions. The benefit of game theoretic analysis for institutional analysis are many. For example, classical game theory enables us to deductively restrict beliefs, even beliefs regarding situations that will never transpire, and consider their behavioral implications in strategic situation. It enable us to consider the strategic process of rule formation and the implications of incomplete and asymmetric information. Evolutionary game theory enables us, for example, to consider the spontaneous process through which rules and behavior evolves and the implications of interactions among individuals with limited understanding of their surrounding and ability to deduct and learn.⁴

Classical and evolutionary game theory can also be used to explore various aspects of (self-)reinforcement (e.g., Greif 2000a). But the game theoretic approach (which has been extensively used by approaches that adopted the agency perspective) is inadequate for studying various aspects of reinforcement. Game theory, for example, has a limited ability to explore how institutions mold individuals, their norms, capacities, knowledge, and their cultural and social

⁴ The use of game theory for institutional analysis follows such studies as Schotter 1981; Greif 1989, 1994; Young 1993; Calvert 1995; and Aoki forthcoming. Game theory is still being refined and enhanced and the approach presented here is not committed to game theory in its current form and, indeed, specifies its various limitations. More generally, throughout the discussion I attempt to separate between the conceptual and analytical frameworks. The former is the issue that we attempt to study while the latter is the analytics of doing so. Hence, the approach as a whole can accommodate advances in the analytical framework. I concentrate on a single analytical framework to simplify the presentation and have chosen game theory for reasons elaborated upon in the following chapters.

worlds. Game theory has nothing to say, for example, regarding the appropriate specification of norms or preferences in a particular historical episode or the process through which they are shaped and formed.

But these various specifications and processes can be integrated with a game-theoretic framework. To achieve such integration, we have to complement game theory with other theories and insights developed elsewhere in the social sciences and used mainly in approaches adopting the structural, inductive perspective. This work thus explicitly states the need for, and explores the ability to use, game theory as a springboard for a broader, multi-disciplinary framework relying on theories and insights developed in various social science disciplines, such as sociology, social psychology, political science, and cognitive science.⁵ (In pursuing this integration I will follow and expand on such works as Geanakoplos, Pearce, and Stacchetti 1989; Sugden 1989; Rabin 1993; Greif 1994a; and Kuran 1995.)

Bridging the Methodological Divide: Deduction and Induction in Institutional Analysis

Studying an institution as self-enforcing and (self-)reinforcing system of institutional elements that generate regularities of behavior does not presuppose that either the agency, deductive perspective, or the structural, inductive perspective is appropriate. The above conceptualization of institutions does not imply any particular process through which institutions emerge: they can be intentional outcomes or an unintended consequence; they can be designed by individuals fully informed and knowledgeable about the situation or emerge unintentionally among individuals with limited knowledge and information. Studying institutional elements accommodates the case in which an institution is endogenous to the interacting individuals (expressing themselves, for example, in a convention) as well as the case in which institutions governing the behavior of some are the choice variable of others (expressing themselves, for example, in legal rules). Similarly, such study does not assert that institutions fulfill particular functions, such as efficiency or distribution.

⁵ Needless to say, I am ill equipped to pursue such integration in much depth. But the framework developed below makes exact issues that require such integration and hence, I hope, will contribute to a dialog.

More importantly, the reliance on game theory and the view of institutions as composed of inter-related institutional elements contributes to bridging the gap between the deductive and the inductive perspectives in institutional analysis. Although game theory enables to deductively restrict the set of admissible, self-enforcing institutions, it indicates the importance of inductive analysis. On the one hand, game theory reveals that the details of a situation profoundly influence the set of possible self-enforcing institutions while multiple self-enforcing behavior and beliefs can emerge in a given situation. On the other hand, game theory reveals the difficulty of deductively selecting among alternative outcomes and provides a limited guide to selection among them.

Hence, the above approach supports the view that institutional analysis is inherently historical. One has to study institutions inductively within the context of the broader historical - economic, political, social, and cultural - processes of which they are an integral part. Historical analysis is required to identify the relevant transactions, expose institutional elements that can be considered exogenous to the issue at hand, expose the details required for an appropriate context-specific model, form a hypothesis regarding the relevance of a particular institution, and reveal the historical process of institutional selection. Positive, empirically-oriented, institutional analysis necessitates a continual dialogue between history and theory. It requires an “interactive process of theoretical and historical examination” (Greif 1997a: 87) that combines the social scientists’ emphasis on deduction and the historians’ on induction.⁶

Combining theory and history in institutional analysis is also motivated by recognizing that there is more to institutions than selection from the set of all those technologically and physically possible. Institutions reflect and embody a society’s collective knowledge so it is misleading to initiate an institutional analysis by considering all the technologically possible institutions in a given situation. As game theory indicates, even in relatively simple situations such an analysis is very complicated and therefore likely to be a misleading representation of the set of institutions relevant to the process of institutional selection. It risks imposing our conscious understanding of the situation on the historical actors. Instead of learning how the knowledge prevailing in a particular historical society is reflected and embodied in its institutions, we could superimpose our cognition on the analysis and examine historically irrelevant alternatives. Combining induction

⁶ The exact meaning of the terms “deductive” and “inductive” in this work is provided in chapter 6.

and deduction is thus essential for institutional analysis: history is necessary to identify the relevant institutions and theory is required to deductively restrict hypotheses, reveal lines of causation, and generate predictions that can be compared with the evidence.

To put it another way, the physical and social worlds within which individuals interact are very complex but individuals are endowed with limited rationality, knowledge, cognitive ability, and information. (E.g., Denzau and North 1994.) We do not have a theory of how these individuals build mental constructs that enable them to make sense of their world and direct their behavior. Accordingly, this work explores how to combine induction and deduction to reveal various aspects of these constructs. In particular, it uses game theory to better formalize and understand the rationale beyond particular patterns of behavior. Game theory enables us to evaluate the implications of the particularities of individuals' understanding of the world around them and exposes the internal logic of this understanding.⁷

Bridging the Methodological Divide: Agency, Structure, and Institutional Dynamics as a Historical Process

The approach advanced here transcends the dichotomy between the agency perspective and the structural perspective by recognizing the distinctions and inter-dependence between individuals, behavior, and institutional elements. Concurring with the former perspective, this work emphasizes that for institutions to prevail they have to be endogenous, self-enforcing and self-reinforcing product of human actions and social processes. Concurring with the latter perspective, however, it emphasizes that institutional elements are exogenous to each individual and are enduring social features that can transcend the situation that led to their emergence. Individuals create institutions and institutions mold individuals and shape their interactions over time and situations.

In a sense, this work advances an analysis that begins in the spirit of the methodological approach advanced by Weber (e.g., 1949), which places individuals at the center of the analysis. It then proceeds to study institutions in the spirit of the methodological approach advanced by

⁷ Inductive game theory explores strategic situations whose structure is not known to the players. See Kaneko and Matsui 1999; Aoki forthcoming, chapter 9.

Durkheim (e.g., 1893, 1895), which views institutions as molding individuals and their social and cultural world, thereby constituting an independent force in directing actions. The benefits of bridging this methodological divide are many. It enables, in particular, to study how past institutions influence the direction and rate of institutional change. Studying endogenous institutional change within a rational choice framework has the promise of bringing various lines of institutional analysis closer. This is particularly the case with respect to the deductive and the historical approaches for institutional in economics and rational choice institutional analysis and historical institutionalism in political science.⁸

Differentiating between institutional elements, institutions, and the associated behavior enables examining how past institutions influence the **direction** of institutional change. Past institutional elements, such as beliefs, communities, political organizations, and norms, are enduring cultural, political, and social features that transcend the situation that led to their emergence. Other implications of past institutions such as knowledge, wealth distribution, and sunk cost are also enduring features that transcend the situation in which they emerge. Because of their enduring and transcending nature, past institutional elements and institutions' implications influence the direction of institutional change (as the structural, inductive perspective for institutional analysis holds).

Hence, when a new situation arises in a society because of exogenous or endogenous change, institutions do not emerge anew reflecting only environmental conditions. They evolve in a spiral-like manner in which past institutional elements provide the foundation for, and direct the emergence of, new institutions. For example, communities and political organizations that were formed in the past constitute part of the rules of the game in new situations while individuals carry with them to new situations beliefs that were crystalized in the past. 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 (as the agency, deductive perspective for institutional analysis holds). Institutions are outcomes emerging from within and interacting with the legacy of past institutions.

⁸ On the need for, and benefit from such integration, see, for example, Thelen, 1999.

Furthermore, considering institutions as self-enforcing and self-reinforcing systems of institutional elements generating regularities of behavior enables us to study **endogenous** institutional change. The challenge of combining the study of endogenous institutional change with the study of self-enforcing institutions is that such institutions are an equilibrium. If an institution is an equilibrium, all changes must have an exogenous origin. Hence, approaches to institutional analysis that adopted the agency perspective and game theoretic analysis have focused on institutional statics rather than dynamics.

The approach advanced here enables extending the analysis further by considering the distinction between institutions, institutional elements, and behavior and the distinction between self-enforcing and self-reinforcing institutions. For institutions to perpetuate over time, it is not enough for them to be self-enforcing at a given point in time. They also have to be (weakly) reinforced or self-reinforced because otherwise their effectiveness in generating a particular pattern of behavior will gradually diminish. Yet, self-reinforcing processes may not transpire: institutions can lead to processes that undermine the self-enforceability of the behavior associated with them.

Consider the following example. Suppose that beliefs in collective punishment within a community leads to a particular regularity of behavior. To study this institution, we have to examine this community, beliefs, and behavioral rules as a self-enforcing system of institutional elements generating that behavior. We have to study why each member of the community is endogenously motivated to retain his membership in the community, hold these beliefs, follow the behavioral rules, and participate in a collective punishment. But even if such self-enforceability prevails at a particular point in time, this does not imply that this institution will perpetuate over time. For this to be the case, the institution has to be (weakly) self-reinforced or reinforced. But this may not be the case. For example, the economic success of the community's members implied by the collective punishment may lead the community 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 sufficient to make past pattern of behavior self-enforcing.

More generally, examining institutional statics and dynamics within the same framework requires considering the relationships between self-reinforcing processes and **quasi-parameters**. A quasi-parameter relevant to a particular institution is a social feature which is parametric (from an individual's point of view) to the transaction under consideration and which has the property that its marginal change would not necessarily cause the behavior associated with that institution to change. Roughly speaking then, a quasi-parameter relevant to a particular institutions is a social feature with the property that only its cumulative change implies that the behavior associated with this institution would change. Hence, quasi-parameters can be taken as exogenous in studying the short-run, self-enforceability of institutions but have to be considered endogenous when studying institutional perpetuation in the long-run. Demography and wealth distribution were quasi-parameters in the above example of communal punishment but technological and other knowledge, preferences, various beliefs, political power, and social networks are examples of social features that can also be quasi-parameters.⁹

Quasi-parameters commonly exist for three inter-related reasons. First, as game theory nicely illustrates, the behavior associated with a particular institution is usually self-enforcing for a wide range of parameters. The collective punishment within the community can be self-enforcing for communities of various sizes and for members having various level of wealth. Second, institution governing a particular transaction usually has ramifications which go beyond behavior in that transaction and which can be unintended, difficult to observe, or only slowly occurring. Overtime, however, these ramifications alter aspects of the situation that are parametric to the particular transaction under study (as were demographic and wealth distribution in the above example of the communal punishment).

Third, when parameters mildly change in a way implying that past behavior is still self-enforcing, individuals are likely to continue to follow this behavior. This is the case because rules of behavior that are part of existing institutions guide and direct behavior while reflecting existing knowledge. In other words, when a parameter changes and past behavior is still self-enforcing, individuals do not share the expectations that some new self-enforcing behavior will be followed.

⁹ Attributes of institutional elements - community size, distribution of beliefs, etc. - can be quasi-parameters.

Hence, they will follow past behavior. A parameter is thus transformed into a quasi-parameter: its marginal change would not lead to behavioral change. As long as the behavior associated with the existing institution is self-enforcing, it is likely to prevail. Sunk cost associated with coordinating change, free rider problems, distributional issues, uncertainties, limited understanding of alternatives, and asymmetric information contribute to such institutional inertia.

Hence, a regularity of behavior can prevail with respect to a particular transaction although the underlying quasi-parameters gradually shift in a way that, over the long-run undermines this behavior. Institutions endogenously change when self-reinforcing processes fail to transpire. In such cases, institutions are **self-destructing**: they foster processes that change quasi-parameters in a manner that, over the long-run, undermine the self-enforceability of the associated behavior. Self-enforcing institutions can and do lead to their own demise. Greif (2000a), for example, documents how self-enforcing institutions that supported impersonal exchange in pre-modern Europe gradually eroded their economic efficiency and political viability.

Hence, as elaborated in part II of the book, in studying institutional statics and dynamics, the approach developed here highlights and emphasizes the need to integrate deduction and induction in the study of institutional dynamics. It enables to study institutions as self-enforcing system that can respond to changes in its environment. At the same time, by considering institutions as a system of inter-related elements, it enables to examine how past institutional element may transcend the situation in which they emerged and influence the trajectory of institutional change. Furthermore, by explicitly examining the inter-relationships between various institutional elements and their underlying parameters, the framework enables to study endogenous institutional change. It enables examining institutional dynamics as a historical process in which past institutions influence the rate and direction of institutional change.

Hence, the above framework will increase our ability to address the questions motivating this research. Societies evolve along distinct institutional trajectories because past institutions influence the evolution of quasi-parameters, and past institutional elements provide the initial conditions in the process of institutional adjustment following an endogenous or an exogenous change. The process through which institutions evolve over time and situations is one in which new institutional elements emerge to complement existing ones.

Hence, societies often fail to adopt the institutional structure of more successful ones because such an adoption is feasible only with respect to particular institutional elements such as rules and organizations but it is not possible with respect to other institutional elements, such as beliefs and norms. This implies that the transferred institutional elements will fail to generate the same behavior. The policy implications are that adopting some institutional elements may be ineffective. To alter behavior, one has to first understand the institutions that prevail in the adopting society and use this knowledge to devise complementary institutional elements that will generate the desired behavior.

Empirics

A positive approach must lend itself to empirical evaluation. The approach presented here can be put to the test since it makes its concept of institutions explicit and utilizes deductive theory to restrict admissible arguments, expose lines of causation, and generate predictions that can be evaluated empirically. Hence, although the study of institutions often does not lend itself to quantitative analysis, the interactive, empirical methodology developed here facilitates evaluating hypotheses in a way that is compatible with, but does not depend on, using such an analysis.

Such an empirical analysis does not begin by deductively examining the set of all possible institutions in a given situation. It first combines historical and theoretical analyses to form and evaluate a hypothesis regarding the relevant institutions based on evaluating and synthesizing micro-level, historical and comparative evidence with predictions and insights from context-specific models.¹⁰ Furthermore, it explicitly recognizes that some institutional features have to be taken as exogenous. Once we have identified the relevant exogenous and endogenous institution and understood the forces leading to its perpetuation, we can then examine how such factors as strategic interactions, evolutionary forces, and awareness of alternatives made the other possible

¹⁰ Surprisingly little attention has been devoted to delineating the use of game theory for non-statistical empirical analysis. Among the notable exceptions are Sutton (1991), Greif (1996; 1997a; 1997c), and Bates et al. (1998).

institutions irrelevant and how past institutions influence the rate and direction of institutional change.

Historical Institutional Analysis

The approach developed in this work can be referred to as Historical Institutional Analysis (HIA). It is motivated by, and attempts to gain insights through, comparative studies over time and space. It recognizes the importance of combining history and theory in a positive, empirically-oriented, multi-disciplinary analysis of institutions as outcomes and societal features. Although some institutional features have to be taken as exogenous in any empirical study, HIA is constructed to enable us to take as endogenous more aspects of institutions than is usually the case. At the same time, its explicit lines of causation restrict 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, HIA 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 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. HIA 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.

Chapter 7: Self-reinforcing Institutions: Institutional Perpetuation, Inertia, and Endogenous Change

7.1 Self-reinforcing and Self-destructing Institutions: A Tale of Two Cities

7.2 How an Institution Influences its Rate of Change: Self-reinforcement and Quasi-Parameters

7.3 Self-Reinforcement and Institutional Inertia

Self-reinforcement Sociology

Self-reinforcement Politics

Self-reinforcement Economics

7.4 Self-Destructing Institutions and Endogenous Institutional Change

7.4.1 The Demise of the Community Responsibility System

7.4.2 Knowledge and the Rate of Institutional Change

7.5 Concluding Comments

Why and how do past institutions influence the rate of institutional change? Why, once a particular institution prevails, does it have the tendency to perpetuate in changing situations? How do institutions lead to their own demise? Considering institutions as self-enforcing systems of institutional elements - beliefs, internalized constraints, organizations, and rules - does not seem to be a promising starting point for addressing these questions. A self-enforcing institution reflects, by definition, an equilibrium, a stationary state. The seemingly unescapable conclusion is that changes in self-enforcing institutions have to have an exogenous origin.

Indeed, analyses of institutions based on the notion that an institution reflects an equilibrium, assume that institutional change reflects *exogenous* factors. Institutions change following a change in the environment - in the parameters of the situation or in the interests of those whose actions sustain them - exogenous to existing institutions.¹ If one utilizes game theory to study the rule that emerges as an equilibrium from interactions within a legislative body, this theory implies that once such a self-enforcing rule is selected, it will not endogenously change. It is, after all, an equilibrium. Similarly, if particular equilibrium beliefs regarding, for example, collective punishment within a particular community had emerged, theory implies that these beliefs would change only following an exogenous event.

Nevertheless, can the above conceptual and analytical framework, at the center of which are self-enforcing institutions, be extended to consider endogenous institutional change in which past institutions influence their rates of change? Can it be extended to capture the general case in which institutions can change both for exogenous and endogenous reasons? This chapter provides such an extension by exploring the dynamic inter-relationships between institutions, institutional elements, and the associated behavior. It argues that for an institution to **prevail**, it has to be **self-enforcing**; but for it to **perpetuate** over time, it has to be (weakly) **self-reinforcing**.

An institution is **self-reinforcing**, roughly speaking, when it exhibits positive feedback. That is, when the behavior and processes this institution entails increase the range of parameters in which the behavior associated with it - the behavior in the transaction under consideration - is

¹ E.g., North and Thomas 1973; Young 1998; Aoki 19(??)presidential address, forthcoming).

self-enforcing. An institution is self-reinforcing when the behavior and processes it entails, for example, alters wealth distribution, demography, knowledge, capabilities, norms, and existing organizations, thereby increasing the range of situations in which the associated behavior is self-enforcing. Self-reinforcement can reflect processes that the agency perspective to institutional analysis emphasizes, such as individuals' responses to the incentives institutions entail. But it can also reflect processes that the structural perspective emphasizes, processes through which past institutions mold individuals and their cultural and social worlds.

This chapter argues that institutions generally entail self-reinforcing processes. Hence, past institutions influence the rate of institutional change by leading to **institutional inertia**. Past institutions cause past patterns of behavior to prevail - to be self-enforcing - in a wider range of situations than before. Exogenous or endogenous changes in the underlying situation that otherwise would have led past behavior to no longer be self-enforcing would therefore fail to have this effect.

To illustrate a self-reinforcing institution, consider again the one that governed agency relationships among the Maghribi traders. This self-enforcing institution motivated each merchant to establish agency relationships only with other Maghribi traders. If this seclusion of economic interactions fostered personal trust and the internalization of norms of honesty among the interacting individuals, the institution was reinforced by its own implications. It was reinforced in the sense that the associated behavior - honesty in agency relationships - became self-enforcing for a larger range of parameters than before. Even if an agent's opportunity outside the Maghribi group would have increased to a level that, prior to the institution's reinforcement, would have implied that his best response was cheating (because better outside opportunity reduces the cost of cheating), this would now not be the case.

But such reinforcing processes may fail to occur. The behavioral implications and processes an institution entails can undermine the extent to which the associated behavior is self-enforcing. Past institutions can influence, for example, the creation of new knowledge, wealth distribution, and demography in a way that, over time, reduce the range of situations in which the behavior in the transaction under consideration is self-enforcing. Institutions can be **self-destructing** and can cultivate the seeds of their own demise. Yet, for reasons elaborated below, a

particular regularity of behavior can perpetuate for a long time even as its own implications render it self-enforcing in a smaller range of situations. We can thus say that past regularities of behavior and the institutional elements that supported it are **inconsistent** when this behavior is no longer self-enforcing. Institutional change will then endogenously occur.

As this chapter discusses, it is the distinction among institutions, institutional elements, and behavior that enables extending the above framework to examine institutional statics, inertia, and endogenous change. Moreover, explicitly introducing institutional self-reinforcement into the analysis further contributes to our ability to deductively restrict admissible institutions. For an institution to perpetuate over time it has to be (weakly) self-reinforcing. This argument has already been introduced in chapter 5 where we discussed how to deductively restrict admissible arguments regarding internalized constraints by considering their influence on processes leading to their self-reinforcement, and this chapter further develops it. The discussion in this chapter thus probes deeper into the nature of institutions, enriches the analytical framework that can be used to deductively restrict the set of admissible arguments regarding them, and explores how past institutions influence the rate of institutional change.

The structure of this chapter is as follows. Section 7.1 provides a historical example of the approach taken here regarding institutional reinforcement and endogenous change. Section 7.2 provides a general discussion. It defines what it means for an institution to influence its rate of change, and it introduces the concept of **quasi-parameters** which are the social factors whose analysis enables us to link the study of institutional statics and dynamics. It presents why quasi-parameters are likely to exist, how they underpin institutions but, nevertheless, can be changed by them, and why their change will not lead, in the short term, to institutional change. Section 7.3 elaborates why self-reinforcing processes are likely to transpire and hence lead to institutional inertia. Section 7.4 elaborates on the process through which institutions lead to their self-destruction. Section 7.4.1 elaborates on the analytics of endogenous institutional change by presenting a particular historical example of self-destructing institutions, and 7.4.2 discusses the study of the inter-relationships between institutions and knowledge, a particularly important quasi-parameter.

Before proceeding, however, it should be emphasized that the focus of the discussion is on the way that an institution influences **its own rate** of change. Clearly, an institution does not exist in a vacuum: it inter-relates with other institutions and they can and do influence each other. I will ignore such interrelationships for most of the discussion for the sake of clarity and will return to it in chapter 9.

7.1 Self-reinforcing and Self-destructing Institutions: A Tale of Two Cities²

It has been argued that "[w]estern wealth began with the growth of European trade and commerce which started in the twelfth century in Italy..." (Rosenberg and Birdzell 1986: 35). Many factors made this beginning possible, not the least of which was the decline of the Byzantine and Muslim naval powers that controlled the Mediterranean prior to the twelfth century (Lewis 1951). Yet, to make this beginning possible, residents of Italy had to cooperate in organizing the naval, military, and commercial infrastructure required for economic expansion.

In particular, the extent of an Italian city-state's sea-bound trade was determined by its "possessions" around the Mediterranean. These overseas possessions were both tangible and intangible and included ports, houses, custom's agreements, legal rights, and so on. Possessions facilitated the expansion of trade by substantially reducing the risk and cost of commerce. The acquisition of possessions by a city-state, in turn, depended on its potential naval and military forces. Hence in order to expand its trade, a city-state had to solve problems associated with mounting naval and military operations. Paramount among these were a collective action problem, inducing individuals to supply private resources to form the necessary forces, and a problem of cooperation, motivating individuals to cooperate) or credibly commit to cooperate) in the forces' operations. Throughout history "states" have provided the institutional infrastructure needed to deal with such problems. In the early stages of the Commercial Revolution, however, there was no state to provide the residents of the north Italian coast with such an infrastructure.³

² For first-rate presentations of political and economic aspects of Venice and Genoa during this time, see, for example, Lane (1973) and Epstein (1996).

³ Nominally, Northern Italy was part of the kingdom of Italy, that was itself part of the Holy Roman Empire. During the late 11th and early 12th centuries it was embroiled in a civil war and was in a state of

In other words, the governance of a particular transaction became crucial for the Italian cities' economic and political well being: the relinquishing of decision-making power and resources in return for political order and the economic benefits of collective action. Indeed, the history of the Italian city-states of the late medieval period is that of endogenous emergence of political systems explicitly aimed at advancing the economic interests of those who established them.

Two such political systems of particular interest are those of Venice and Genoa which became the two most commercially successful Italian maritime city-states.⁴ This section briefly discusses the institutions that governed the above transactions in Venice and Genoa and their evolution. It argues that during the 12th century in each city self-enforcing institutions emerged to enable cooperative behavior, namely, to motivate individuals to relinquish decision-making power and resources in return for political order and the economic benefits of collective action. These institutions supported economic prosperity and political order. At the same time, the nature of Venice's institutions was such that they were self-reinforcing and hence they perpetuated over time while Genoa's institutions were self-destructing and hence they gradually led cooperation to cease. (The following discussion is based on Greif 1994b, 1995, 1998a) and the interested reader can consult these works for further substantiation and elaboration of the arguments made below.)

The residents of the Venetian lagoon established Venice as a political unit in 697 and some Genoese organized themselves into a Commune around 1096. The political organizations of these city-states were neither identical nor constant over time and hence general statements regarding them are, at best, oversimplifications.⁵ Yet, it should be noted that, superficially, the political

disintegration. Venice was de jura part of the Byzantine Empire and de facto independent in the period under consideration.

⁴ By evaluating the relationships between political institutions and economic outcomes, this line of analysis departs from a long tradition in the study of this historical episode. Lopez, in his seminal work on the commercial development during this period, did not examine the relationship between political organization and commercial success, maintaining that "the Italian communes were essentially governments of the merchants, by the merchants, for the merchants - an ideal platform for" commercial expansion (Lopez 1976: 71). This discussion thus follows the tradition of works established by scholars such as North (1981), Olson (1982), and Weingast (1993), who examined the political foundations of economic growth.

organizations of Genoa and Venice exhibited profound similarities. Both cities were governed by an oligarchy which, by and large, elected its political leader or leaders, and these leaders were subject to the law. At the top of Venice's political system was a Doge and the Ducal Council; Genoa was governed initially by consuls and, after 1194, one or more executive and a council of rectors.

Despite these similarities, the political and economic histories of Genoa and Venice differ substantially. Politically, Venice survived as an independent political unit until 1797. Its economy was based, until the fifteenth century, on an extremely profitable commercial empire in the Eastern Mediterranean and prosperous domestic industries. Various external factors, such as the advance of the Ottomans and the circumvention of Africa by the Portuguese, contributed to the economic decline of Venice after the fifteenth century. During the economic boom and bust following the eleventh century, however, the city was characterized by internal tranquility with hardly any violent internal political conflicts.

Genoa was also able to maintain its independence for a long time; it did not cease to exist as a political unit until 1798. Similar to Venice, it was able to establish a commercial empire during the twelfth and thirteenth centuries stretching from the Black sea to Spain and beyond. In contrast to Venice, its political history was characterized by frequent violent internal political conflicts. At times, particularly during the fifteenth century, these conflicts were of such magnitude that, for this and other reasons, the Genoese gave up their political independence and submitted their city to the authority of foreign rulers. Internal conflicts in Genoa contributed greatly to its economic decline and they often occurred after a period of economic growth or when external common threats were not severe.

These histories suggest that the institutions that prevailed in Venice and Genoa during the twelfth and the thirteenth centuries were able to support political and economic cooperation that fostered commercial expansion and political order. This, however, was not the case in later centuries. While Venice was able to maintain political order in a changing economic environment, Genoa was not, and the deteriorating political order contributed to its economic decline. How

⁵ For simplicity of exposition I will relate to Venice and Genoa as “city-states” when the details of their legal and political status are irrelevant to the argument.

can these different histories be accounted for despite the similarity in the basic political structures of the two cities? To understand these histories, it is necessary to examine more closely the institutions of these cities and understand their long-term implications.

Such examinations, as elaborated in chapter 6, require examining how the historical context determined the nature and details of the transaction under consideration. In the historical context of late medieval Italy, examining the institutions that governed cooperation requires studying their inter-dependence with a particular social structure, the clan. The clan was a prominent organization in both cities. Clans emerged as important social and political entities in Northern Italy following the decline of central authority during the eleventh century.⁶ Given this decline, "the corporate or consortial family was better able than the nuclear household to defend its wealth and status," increasing "family solidarity, at least among the aristocratic classes" (Herlihy 1969: 178).⁷ Indeed, Genoa and Venice were established by an agreement among the most economically and militarily strong clans in each city to cooperate politically for the advancement of their economic interests. In establishing new political units, the relationships among their citizens were mediated by clans.

An agreement for inter-clan cooperation, however, does not imply that clans were necessarily unwilling to use force against each other to advance their particular interests. At the same time, the tight internal organization and military and economic resources of clans were such that gaining control over the city was not out of reach. Furthermore, the historical records are rich with evidence indicating that moral considerations - internalized constraints - were not sufficient to deter one Genoese clan from using force against another.⁸

Hence, the extent to which Genoa and Venice could have succeeded as political and economic entities depended on the extent to which clans were motivated to cooperate with each

⁶ See Hughes (1978) for an excellent discussion of the importance of clans.

⁷ See also Herlihy's discussion on pp. 174-5 in which he contrasts his analysis with the traditional one (namely, that the history of the family is a history of progressive nuclearization). Even the traditional approach does not dispute the importance of the clan in the late medieval period, but traces its origin to an earlier period.

⁸ See the discussion regarding Genoa in Greif (1998b). For a general discussion see Tabacco (1989).

other to their mutual benefit instead of investing their resources in attempting to gain political control over the city or preventing others from doing so. What were the institutions that governed inter-clan cooperation?

Consider first the case of Genoa. Initially (from 1096 to 1194), Genoa had elected consuls who functioned as the city's political, administrative, and military leaders.⁹ These consuls were representatives of the main Genoese clans (Hughes 1978: 112-3). Holding a consular post was a position through which a clan gained economically from the city's resources. The behavior of these consuls and the clans they represented was guided by particular cultural beliefs: clans were expected to challenge each other militarily if the opportunity arose to gain political dominance over the city. Hence each of Genoa's main clans was motivated to mobilize its resources for inter-clan cooperation aimed at advancing the economy of Genoa but only to the extent in which it did not undermine its ability to deter the other clans from militarily challenging it.

Initially, the relatively high gains from the joint mobilization of resources implied that inter-clan cooperation was not hindered by inter-clan rivalry. But because inter-clan cooperation advanced Genoa's economic prosperity, it intensified the competition over political and economic dominance in the city.¹⁰ The self-enforcing institution that governed the clans' relationships was based on mutual deterrence: each clan expected other clans to use their military ability to gain political and economic dominance over the city but each clan was deterred from doing so because of the other's military strength.

Genoa's self-enforcing political institutions thus implied political order but little inter-clan joint mobilization of resources to advance Genoa's economy. At the same time, it motivated the clans to invest resources in fostering their ability to deter the other clans from militarily challenging them. The historical records indicate that clans were buying land to acquire

⁹ CDG, vol. I, no. 285. For the development of Genoa's political system consulate, see Vitale (1955) and De Negri (1986). Along with these consuls, other consuls responsible for the judicial system were also operating.

¹⁰ As noted by a twelfth-century Genoese chronicler, "civil discords and hateful conspiracies and divisions had risen in the city on account of the mutual envy of the many men who greatly wished to hold office as consuls of the commune." (Annali 1190, vol. II: 219-20).

dominance in particular quarters which they then fortified, establishing a patronage network, and indoctrinating their members to internalize the norms of revenge and a clan's honor.

For a period following 1154 an external threat - the attempts by the Emperor Frederick Barbarossa to regain de facto control over northern Italy - weakened the link between political order and resource mobilization. This joint external threat lessened each clan's incentive to challenge the others militarily. The result was that the Genoese mobilized their resources, acquired possessions, and expanded commercially. Genoa's economic structure had been transformed to one based on possessions-based commerce.

Yet this commercial expansion and structural transformation undermined Genoa's own political foundations by making the institutional constraints that restrained inter-clan military confrontation less robust. They became self-enforcing for a smaller range of parameters. A higher level of economic prosperity, and hence gains to a clan from gaining control over the city, implied a smaller set of parameters for which mutual deterrence could have been self-enforcing in the absence of an external threat. Indeed, several times during this period changes in exogenous conditions implied that a faction was still strong enough to aspire to hold its influence in the consulate, yet too weak to deter another faction from challenging it for this control.

Twice during the twelfth century such conflicts became full-scale civil wars. The second civil war, from 1189 to 1194, endangered the existence of the city since the war was inconclusive and one faction seceded from the Commune. The final outcome, achieved with the intervention of the Emperor of the Holy Roman Empire, was to alter Genoa's political institutions by introducing a self-enforcing organization which would foster inter-clan cooperation¹¹

At the center of Genoa's new institution was a non-Genoese *podestà* (that is, 'power'), who was hired for a year to be Genoa's military leader, judge, and administrator, and who was supported by the soldiers and judges he brought with him. The *podestà* and his military contingent fostered the factions' ability to cooperate by creating a military balance between them. The "threat" of assisting the other factions deterred each faction from attempting to take control over the city. Moreover, because the *podestà* was to receive a high wage at the end of his term,

¹¹ See discussion in Greif (1994??: 1998b).

this threat was credible. If one faction took control over the city, there was no reason for it to reward the *podestà*. Furthermore, this reward scheme made it in the *podestà*'s interest not to fundamentally alter the balance of power between the factions. Hence he could credibly be impartial and retaliate against people who broke the law, rather than against a faction as a whole. The selection of an incoming *podestà* was made by a committee of representatives from the city's various neighborhoods. It was large enough not to be dominated by any particular faction and its operation was supervised by the outgoing *podestà*. Various regulations were aimed at retaining the *podestà*'s neutrality in inter-faction rivalry, while legislation and major policy decisions were made by councils which were structured in a manner directed toward reducing the influence of any particular clan. All Genoese now had equal access to economic rent from commercial expansion.

The *podesteria* fostered inter-factional cooperation for a while, and thus political stability and economic growth. It was a self-enforcing institution: the self-enforcing beliefs that any attempt by a clan to gain political dominance using force was futile and deterred clans from doing so, and the belief that a clan could gain from cooperation without the risk of losing it through military confrontation, motivated clans to cooperate. Yet, like the consular system, the *podesteria* was not self-reinforcing. Specifically, it contained inter-clan rivalry but did not eliminate it. Each clan was still motivated to militarily strengthen itself vis-a-vis the others. The institution was based on an inter-clan balance of military power, and because the economic rent from cooperation was no longer distributed according to a clan's relative strength, stronger clans now had relatively more to gain and less to lose from achieving dominance.

Hence, Genoa's institutions motivated clans to further invest resources in acquiring military ability aimed at attacking other clans, fortifying their residences, establishing patronage networks, and indoctrinating their members to internalize the norm of revenge. Genoa's institution promoted one's affiliation with his clan rather than with the city as a whole. In the short run, these changes did not render Genoa's institution ineffective; it was still self-enforcing. But over time these changes caused Genoa's institution to become self-enforcing for a smaller range of situations, leading to its eventual demise.

This self-destructing process reveals itself in an interesting social phenomena, the creation of the *alberghi* which were the manifestation of the clans' aims to achieve dominance. *Alberghi* were clan-like social structures whose purpose was to strengthen consorterial ties among members of various families through a formal contract and by assuming a common surname, usually that of the *albergo's* most powerful clan (Hughes 1978: 129-30). By the fifteenth century the city's politics and economics were dominated by about 30 *alberghi*, each containing from 5 to 15 lineages. The resulting political instability was further worsened by the rise of the *popolo*, the non-nobles, as a political faction. In the long run, a *podestà* could not retain the balance of power among Genoa' rival factions and the system collapsed.

After 1311 the city attempted to restore political stability by having a strong military ruler, either an external one such as the King of Germany, Henry VII, to whom the city submitted itself in 1311, or internal one, a Doge. Yet, more often than not, it was torn by intense factional strife or had one Genoese faction (with or without the support of Genoa's external foes) waging war against Genoa from abroad. In the process Genoa declined economically since it was unable to provide naval and military support to its commercial outposts abroad, or to prevent the devastation of its own agricultural hinterland. Only in 1528, when Andrea Doria established an aristocratic republic similar to that of Venice, was Genoa able to gain lasting political stability. At that late date, however, the political and economic situation around the Mediterranean prevented Genoa from restoring its past glory. Ironically, it may have been this inability that made a Genoese republic feasible again.

The history of Venice during its early days parallels that of Genoa. After an initial period of inter-clan cooperation, Venice's history was characterized by inter-clan rivalries aimed at overthrowing the office of the Doge.¹² Originally the Doge was a Byzantine official, but shortly after Venice was established in 679, the post became that of an elected monarch. For the next few hundred years, clans and factions fought in Venice for control over the Doge's post. Similar to Genoa, economic cooperation and political order were hindered by the lack of an institution able to contain inter-clan rivalry.

¹² See Lane (1973) and Norwich (1977) for classic works on Venice .

For various reasons (whose details are beyond the scope of this note), inter-clan rivalry was checked during the eleventh century - a new, self-enforcing institution had been established. At its center was a system of self-enforcing beliefs that each and every clan would join together to fight against a renegade clan that attempted to gain political dominance over the city and its economic resources. These beliefs were coordinated by a set of rules whose prescribed behavior was made self-enforcing by the associated beliefs. The rules limited the Doge's power to distributing economic and political rents; curtailing the factions' ability to influence the outcome of the election of a Doge (or any other officer); establishing tight administrative control over gains from inter-clan political cooperation; and specifically allocating these rents among all the important Venetian clans fairly so all had a share in them regardless of factional affiliation. Since these changes began to occur when Byzantine and Muslim naval powers were on the decline and cooperation was most beneficial, Venice was able to make the best of this opportunity.

Starting in 1032, the Doge's authority began to be limited through the establishment of various advisory councils until it was *de facto* altered from an elected monarchy to a republican magistracy. In 1172 it was established that a Doge should never act contrary to the advice of his councilors. The selection of the new Doge was entrusted to an official nominating committee, thus inhibiting the ability to use a faction's political machine and popular support to influence the election. The nominating committee itself was selected and formed through an elaborate process that used both lots and delegations. The (partially random) process began in the Great Council, whose members were any noble of age 25, so that all Venice's main clans had representatives.¹³ From this Council a committee of 30 was chosen by lots and the selection proceeded through an additional nine steps of delegation and selection by lot until the proposed candidate for Dogeship was brought before the Venetian assembly for approval. The process itself was designed to reach a decision as fast as possible; only one family member could be on any committee, and a person could not vote when a relative was being considered.

Similar, although less elaborate, systems were used for the selection of other officials. Their numbers were relatively large and their time in office relatively short, so that members of

¹³ When the pressure from the *popolo* mounted, some non-nobles were admitted as well. The system had the flexibility required for its perpetuation.

many clans could hold an office in a short period of time. Nomination committees for many posts were selected by ballot in the Great Council in a way that gave every person present an equal chance of being on a nomination committee. The conduct of all officials (including the Doge) was subject to severe scrutiny by various committees to prevent unlawful gains. Furthermore, the provision of public goods, control over Venetian outposts abroad and the overseas lucrative trade, were designed to ensure the distribution of gains from them to all Venetians.

If the above rules were to be followed, and the associated organizations (such the Doge and various councils and committees) to function as they were supposed to, this would have reduced the clans' incentives to challenge the system. This would have been so because these rules distributed the gains from inter-clan political cooperation among all the important Venetian clans equally regardless of factional affiliation. But because each clan had a stake in the implementation of these rules, it implied the self-enforceability of the belief that each clan would join others to confront any clan that attempted to use military power to gain control over the city. Hence, these rules and inter-clan cooperation were self-enforcing. But they were also self-reinforcing: they provided clans with few incentives to invest their resources in establishing patronage networks, fortifying their residences, or instilling in their members norms of loyalty to the clan rather than the city. Hence, by weakening the clans, this institution over time increased the range of situations in which it was self-enforcing.

During the 11th and 12th centuries, the institutions that emerged in Venice and Genoa were successful in fostering inter-clan cooperation. The rules, beliefs, and auxiliary organizations that governed inter-clan interactions were self-enforcing and made cooperation self-enforcing. Yet, they had distinct implications regarding their long-term perpetuation.¹⁴ In Genoa these institutions contained inter-clan rivalry, but did not eliminate it. Each clan was motivated to militarily strengthen itself vis-a-vis the others. Furthermore (although it is more difficult to substantiate empirically), individuals identified themselves more as clan members than as Genoese. Over the long run this self-destructing process undermined the self-enforceability of Genoa's

¹⁴ The above discussion does not indicate the sources of these distinct institutions. Did the Genoese implement political organizations that in the long run were found to be devastating due to shortsightedness or some different initial conditions? Better theoretical understanding of organizational innovations and a more detailed historical analysis may sometime provide the answer.

institutions. In other words, Genoa's institutions were self-destructing. They eroded over time the range of situations in which Genoa's institutions were self-enforcing, leading to their eventual collapse.

In sharp contrast, Venice's institutions had the influence to eliminate the political importance of clan structure. They discouraged the formation of factions within the city, and assured each clan that it would benefit from the political order and economic prosperity of Venice even if it did not belong to a faction. Arguably, Venice's institutions also reinforced one's identity as a Venetian rather than as a clan member. In other words, Venice's institutions were self-reinforcing and increased, over time, the range of situations in which they were self-enforcing, making cooperation more robust.

7.2 Endogenous Institutional Change or How an Institution Influences its Rate of Change: Self-reinforcement and Quasi-Parameters

The history of Genoa and Venice illustrates the relevance of two types of institutional change: a change in the regularities of behavior in the transaction under consideration and a change in the institutional elements supporting this behavior.¹⁵ The first type of institutional change occurred in Venice and Genoa when past regularities of behavior - inter-clan cooperation - were no longer adhered to. Institutional change of the second type occurred when the *podestà* was introduced and the Dogeship reformed. These two types of institutional change are often inter-related.¹⁶ Changes in institutional elements, for example, can lead to behavioral changes. Indeed, in Genoa cooperation ceased to prevail due to endogenous changes in institutional elements such as the strengthening of patronage networks and the rise of the *alberghi*. But institutional elements can change without leading to behavioral changes. As a matter of fact, they are often changed to restore a previous pattern of behavior. The introduction of the *podestà*, for

¹⁵ These two types are not mutually exclusive. They overlap in the case of a change in behavior and in institutional elements. Behavior can change even though institutional elements do not when the parameters of the situation have changed in a way that causes this behavior to no longer be self-enforcing.

¹⁶ I ignore here the influence of past institutions on the emergence of new institutions. This issue is discussed in chapter 8, both for the ease of exposition and because, strictly speaking, it relates to the influence of past institution on the direction of institutional change.

example, restored inter-clan cooperation but this cooperation was supported by distinct institutional elements.

The distinction between institutional elements and the behavior associated with an institution enables differentiating between these two types of institutional change while capturing them within the same framework. The ability to distinguish, yet accommodate, these two types of institutional change narrows the gap between the sociological and political lines of institutional analysis. This is the case because institutional change of the first type has been the focus of institutional analyses influenced by sociology (e.g., Schotter 1981). The second type of institutional change, however, has been the focus of institutional analyses influenced by political science (e.g., North 1990). More importantly, the distinction between institutional elements and regularities of behavior enables precisely delineating what we mean by saying that an institution influences the rate of its change when change can be of either type.

Institutional change of either of the above types can reflect causes exogenous to the institution under consideration, endogenous to it, or some combination of exogenous and endogenous causes. An institution can influence its rate of change in two, non-mutually exclusive ways: directly and indirectly. An institution directly influences its rate of change when, over time, it causes new behavior and/or institutional elements to emerge, and this emergence does not depend on an exogenous, environmental change. An institution indirectly influences its rate of change when it becomes more or less sensitive to exogenous, environmental change, that is, when it influences the magnitude and nature of the exogenous shocks that will cause it to change. (In the terminology of chapter 5, it becomes more or less robust.) Hence, a conceptualization of the way that an institution influences its own rate of change should capture the direct and indirect influences of past institutions.

To capture these two influences, it is useful to first introduce the term “self-reinforcement.” An institution is **self-reinforcing** when, over time, the behavior and processes it entails alter its institutional elements or other relevant social and technological factors in a way that implies that the associated behavior will prevail in a larger set of situations than it otherwise would. An institution is **self-destructing** or self-undermining when it implies a negative self-enforcement.

That is, when the behavior and processes it entails imply that the associated behavior will prevail in a smaller set of situations.

Endogenous institutional changes in Venice and Genoa - whether in behavior or institutional elements - indeed reflected the extent to which these institutions were or were not self-reinforcing. The institutions that prevailed early in the histories of Venice and Genoa were not self-reinforcing and thus directly led, over time, to the collapse of inter-clan cooperation. Indeed, the benefit of past cooperation undermined their self-enforceability. In both cities reinforcing institutional elements were introduced to foster self-enforcing cooperation. In Genoa this reinforcement took the form of establishing the *podesteria* and in Venice it took the form of reforming the rules governing the division of political posts and economic rents.

While restoring self-enforceability in the short run, the resulting institutions had distinct long-term implications indirectly influencing their rates of change. Venice's institutions were self-reinforcing - they implied processes that made them self-enforcing in a wider range of situations and hence they prevailed in a changing environment for about six hundred years. In contrast, Genoa's institutions were not self-reinforcing but self-destructing. The implied processes undermined the extent to which Genoa's institutions were self-enforcing; they caused inter-clan cooperation to be more sensitive to exogenous shocks. Temporary changes in the environment within which the Genoese interacted, or in the inter-clan power balance, led to the break-down of cooperation and, at times, to civil wars. In the long run, this self-undermining processes caused the *podestaria* to no longer be self-enforcing and hence led to its demise.

We can thus say that **an institution influences its rate of change** when it reinforces or undermines itself: when the behavior and processes it entails - by influencing institutional elements and other factors - either increase or decrease the range of situations in which the associated behavior will prevail.¹⁷ This captures the possibility that an institution influences its rate of change either by influencing institutional elements, behavior, or both, and this also captures the possibility that an institution influences its rate of change either directly or indirectly. A past institution, by

¹⁷ Analytically, we can identify the idea of **prevalence** in a larger (or smaller) set of situations with deductively restricting this behavior to be **self-enforcing** in a larger (or smaller) set of parameters. See discussion below.

reinforcing or undermining itself, can have an indirect influence on its rate of change by determining how large an external shock must be to render the behavior associated with it obsolete.

But an institution can also influence its rate of change directly, implying that institutions can change without any exogenous change. In particular, unless an institution is (weakly) self-reinforced, it will eventually reach a situation in which the behavior associated with it no longer prevails.¹⁸ When this happens, past regularities of behavior and the institutional elements that supported it are **inconsistent**: the existing institutional elements can no longer support the past regularities of behavior. More generally, a necessary condition for perpetuation of an institution is that the range of situations in which the associated behavior can prevail does not decrease over time: its behavioral implications have to (weakly) reinforce it. Conversely, a sufficient condition for endogenous institutional change is that the institution's implications constantly undermine the associated behavior.

The exact mechanism that brings about institutional change once inconsistency prevails depends on how this inconsistency came about. When inconsistency occurs in an observable and/or understood manner - when decision-makers actually realize that past behavior is no longer self-enforcing - intentional changes in behavior or institutional elements will follow.¹⁹ The immediate and observable factor that led to civil war in Genoa in 1164 was the resumption of civil wars in Germany, implying that the Emperor was not likely to intervene in Genoa's political affairs. But inconsistency can also occur in an unobservable, uncertain, and unrecognizable way when the exact mechanism that brings it about is likely to occur in an evolutionary manner following mistaken behavior or experimentation

Thus, examining the factors whose changes reinforce or undermine existing institutions is crucial to understanding how institutions influence their rates of change. The discussion so far has

¹⁸ For an institution to perpetuate it does not necessarily have to be self-reinforcing for all parameters, just in the relevant range of these parameters.

¹⁹ Game theory indicates the importance of uncertainty in these processes. If inconsistency is known and anticipated to prevail at a particular point in time, the situation has to be modeled as a finite game. The set of behavior that is self-enforcing in these games is much smaller than the behavior that can prevail in an infinitely repeated game.

defined institutions, institutional elements, behavior, and parameters exogenous to the transaction under consideration. Neither definition had anything to do with the question concerning us here: What do the factors that are at the center of self-reinforcing processes have in common? (Henceforth I will mainly use the term self-reinforcing to denote either as self-destructing (namely, negative self-reinforcement) or positive (self-reinforcement).)

What the factors whose changes reinforce or undermine existing institutions have in common is that they are social or technological factors with two properties. First, they can be gradually altered by the behavior and processes the prevailing institution implies. Second, their marginal change will not necessarily cause the behavior associated with that institution to instantaneously change. These two properties imply that we can consider such social and technological factors as parametric - exogenous and fixed - in studying the prevalence of an institution at a given point in time, but we have to consider them as endogenous and variable when studying an institution's perpetuation over time. Hence, it seems appropriate to call such factors as **quasi-parameters**.

Institutional elements and their attributes can be quasi-parameters. Internalized beliefs, norms, communities, other organizations, and their attributes (such as organizational size, intensity of beliefs), for example, are social factors that can be both quasi-parameters and institutional elements.²⁰ Each of the notions - an institutional element and a quasi-parameter - highlight a distinct characteristic of the same social factor. An institutional element is part of a system that directs and constrains behavior and a main characteristic of a quasi-parameter is that it can change over time and only its accumulative change will influence behavior. There is no contradiction between these two characteristics.

But quasi-parameters do not have to be institutional elements (or their attributes) and self-reinforcement does not have to relate to changes in institutional elements. The following example

²⁰ The argument here may be confusing with respect to institutional elements. Is an institutional element that is a quasi-parameter exogenous in the short-run? Or is it endogenous and self-enforcing as has been argued in part I? Some institutional elements (particularly internalized norms) are, as discussed in section 7.3, exogenous in the short run. Others, such as organizations are endogenous. What is parametric, however, are their attributes such as size, speed of information transmission, etc. Note that in the above historical and other examples, this distinction has been made. For example, it has been claimed that the Genoese and Venetian institutions had distinct influences on the size of clans and factions.

illustrates this point. Suppose that belief in collective punishment within a community leads to a particular regularity of behavior. To study this institution, we have to examine this community, its beliefs, and its behavioral rules as a self-enforcing system of institutional elements generating that behavior. We have to study why each member of the community is endogenously motivated to retain his membership in the community, hold these beliefs, follow the behavioral rules, and participate in a collective punishment. But even if such self-enforceability prevails at a particular point in time, this does not imply that this institution will last. For this to be so, the institution has to be (weakly) self-reinforced, but this may not be the case. For example, the economic success of the community's members implied by the collective punishment may lead the community to grow over time. Growth can undermine the extent to which beliefs in collective punishment will prevail. If information transmission within a larger group is so slow that it takes too much time to initiate collective action, belief in collective punishment will not prevail. Similarly, each member of the community can become, over time, sufficiently wealthy so that the threat of communal punishment will no longer be sufficient to make past patterns of behavior self-enforcing.

Demography and wealth distribution were quasi-parameters in the above example of communal punishment, but technological and other knowledge, political power, and social networks are examples of social factors that can also be quasi-parameters. But quasi-parameters can also be individual-level features such as patterns of personal trust, capabilities, internalized beliefs, and norms.

But are quasi-parameters common? Or is their existence rare, implying that self-reinforcing and self-destructing processes are the exception rather than the rule? Quasi-parameters are common if it is usually true, with respect to a given institution, that there are social factors (1) whose change reflects the behavioral implications and processes that institution implies; (2) whose marginal change does not imply that the associated behavior cannot prevail; and (3) whose marginal change would not lead to an immediate change to another possible behavior (for a range of parameters). I will argue that these conditions hold.

First, an institution governing a particular transaction usually has ramifications which go beyond behavior in that transaction. We have seen such ramifications in the above examples. In Venice and Genoa inter-clan cooperation gradually altered such factors as the wealth and

patronage networks. In the above community's example, the institution influenced demography and wealth. In the discussion that follows, I will provide other examples of institutions that influence such factors as identity, ability, knowledge, the size and number of cities, and occupational specializations. Providing examples does not prove the general existence of factors endogenously altered by existing institutions, but it seems difficult to think of any institution that in the long run does not have implications that go beyond behavior in the transaction under consideration.

Second, particular behavior usually prevails for a wide range of situations (parameters). Cooperation was self-enforcing in Genoa and Venice for clans of various military capabilities. Cooperation can be a self-enforcing outcome of a podestaria system with clans of various sizes and military abilities. A collective punishment within a community can be self-enforcing for communities of various sizes and for members having different levels of wealth. Game theory, as discussed in chapter 6, indicates the large extent to which the same behavior can prevail in a changing environment. Even when behavior is limited to that which is self-enforcing, it usually can prevail for a large parameter set. Cooperation in a repeated prisoners' dilemma game, for example, can be self-enforcing for a wide set of discount factors. More generally, the mapping from parameters to an equilibrium - and hence the associated self-enforcing behavior - is a set-to-point mapping.

Third, when parameters mildly change in a way that implies that past behavior can still prevail, individuals are likely to continue to follow the old behavior. This is the case because rules of behavior that are part of existing institutions guide and direct behavior while reflecting existing knowledge. A parameter is thus transformed into a quasi-parameter: its marginal change would not lead to behavioral change. In the language of game theory, as long as the behavior associated with the existing institution is self-enforcing, it is likely to prevail.

In other words, past self-enforcing behavior is likely to persist in marginally changing situations for two inter-related reasons. First, when the situation marginally changes, individuals face the problem of which behavior to assume in the new situation, given the multiplicity of self-enforcing behavior. Because people do not share the expectations that some new equilibrium behavior will be followed, they are likely to rely on past institutions to guide them. Part of these

institutions may be individuals and organizations whose role is coordinating behavior. The influence of past institutions on the direction of institutional change is explored in the next two chapters. Such individuals and organizations can respond to changes in quasi-parameters and coordinate on new regularities of self-enforcing behavior. At the same time, political science and economics present many reasons why this may not be the case even when, for one reason or another, it is beneficial. Sunk costs associated with coordinating change, free-rider problems, distributional issues, uncertainties, limited understanding of alternatives, and asymmetric information may hinder coordination on new behavior.

Second, as discussed in chapter 6, institutions that prevail in a society reflect the knowledge its members share. The Venetians and Genoese who interacted in the late medieval period along the shores of the Mediterranean were unable to know the details of the strategic situations in which they were involved. How could the head of one clan know the details of another clan's military strength or its willingness to make a sacrifice today for the benefit of its future members? What these Venetians and Genoese did respond to, however, was the knowledge that their respective political institutions worked well in the past, and those who did not cooperate and revolted did not benefit from it. Hence, even if a clan's relative strength marginally increased, it might not have been enough to induce that clan to cease cooperation even if, in reality, it could have benefitted from doing so.

Hence, past regularities of behavior may still prevail even when their underpinning quasi-parameters change in a manner that, in the long run, will undermine them. Furthermore, changes in quasi-parameters are likely to be unintended, difficult to observe, or only slowly occurring. Marginal changes in quasi-parameters would not, in general, be enough to induce deviating from past regularities of behavior. Deviation may require a relatively large change in quasi-parameters, the actions of individuals willing to experiment and risk deviating from past behavior, or the emergence of individuals with better knowledge of the situation.

The discussion so far has been conducted on the conceptual level. It is thus important to highlight how the analytical framework developed above can be used to deductively restrict the set of admissible arguments. In terms of the analytical framework, **for an institution to prevail, it has to be self-enforcing. For it to perpetuate over time, it has to be (weakly) self-reinforcing.**

A self-reinforcing institutions is one whose implications increase the set of parameters in which the regularity of behavior associated with it is self-enforcing. Conversely, an institution is self-undermining or self-destructing when its implications erode the quasi-parameters underpinning its self-enforceability. Analytically, we can take quasi-parameters, similar to parameters, as exogenous (that is, roughly speaking, part of the rules of the game) when studying an institution's self-enforceability. Unlike parameters, however, quasi-parameters can endogenously be changed in the long-run due to the implications of the self-enforcing institution they underpin. Hence, in considering an institution's long-run perpetuation, the quasi-parameters relevant in this particular case should be considered as endogenous.

In other words, a necessary condition for an institution to perpetuate is that it becomes, over time, self-enforcing in a set of situations that is not smaller than it was before: its behavioral implications have to (weakly) reinforce it. Using the terminology of chapter 5, it has to become (weakly) more robust. A sufficient condition for endogenous institutional change is that the institution's implications do not weakly reinforce it but undermine its self-enforceability. The idea that we can **deductively restrict** the set of admissible institutions to those that are (weakly) self-reinforcing, and the notion of self-reinforcement have already been introduced in chapter 5. In discussing internalized constraints we claimed that we can deductively restrict the admissible argument regarding internalized constraints by considering the process of their self-reinforcement.

Quasi-parameters are likely to exist and be altered by the behavioral implications and processes the related institution implies. Institutions can alter quasi-parameters in ways that reinforce this behavior, namely, that cause the associated behavior to become self-enforcing for a wider set of situations. In this case we can say that the institution is self-reinforcing. But quasi-parameters can also change in a way that, over the long run, undermines the self-enforceability of the associated behavior. Institutions endogenously change when self-reinforcing processes fail to transpire. In such cases, institutions are self-destructing: they foster processes that change quasi-parameters in a way that, over the long run, undermines the self-enforceability of the associated behavior. Self-enforcing institutions can and do lead to their own demise. Hence, in studying institutional statics, we can deductively restrict the set of admissible institutions to those that are self-enforcing and self-reinforcing. At the same time, the distinction between self-enforcing and

self-reinforcing reveals how we can study institutional statics and dynamics within the same conceptual and analytical framework.

But are quasi-parameters likely, in general, to endogenously change in a manner that reinforces or undermines the institution they underpin? The next two sections address this question. The first argues that self-reinforcement, and hence institutional inertia, is common. The second argues that institutions nevertheless can and do undermine themselves and discusses these processes by providing a particular historical example.

Before turning to these sections, however, it should be emphasized that the above discussion has concentrated on how an institution can influence its rate of change. In reality, no institution prevails in a vacuum. Each is, as chapter 9 elaborates, part of a broader institutional system. Hence, the quasi-parameters relevant to one institution can theoretically be, and in reality are, reinforced and undermined due to the behavioral implications of institutions governing other transactions. Similarly, other institutions can influence the process through which new institutional elements emerge to reinforce a particular behavior in a particular transaction after it has ceased to be self-enforcing. The extension of the argument made here to such situations is straightforward and thus I will not elaborate on it here.

7.3 Self-Reinforcement and Institutional Inertia

This section argues that institutions tend to be self-reinforcing. By demonstrating the general tendency for institutional reinforcement, this discussion indicates why **institutional inertia** or hysteresis is likely to prevail. Regularities of behavior, once they prevail, have the propensity to become self-enforcing in a **wider** set of situations than before. To make this point this section examines, in particular, self-enforcement due to changes in institutional elements. Hence, it focuses on how past institutions lead to the intentional introduction and unintentional emergence of institutional elements that reinforce existing regularities of behavior. This focus does not reflect the unimportance of other quasi-parameters but only the observation that the nature of, and the process related to, quasi-parameters that are not institutional elements are more case-specific, and hence general assertions regarding them are more illusive. It is therefore more difficult to generalize from their analysis about the tendency for self-enforcement.

Self-reinforcement reflects the implications of an institution that goes beyond behavior in the transaction it governs. Hence, reinforcement often occurs at a level broader than that of a certain transaction. In particular, the tendency for reinforcement often expresses itself at the level of the individual and at the level of social, political, and economic interactions among many individuals. The discussion of reinforcement thus requires integrating into the analysis issues central to, and long explored in, sociology, psychology, political science, and economics. At times, it requires us to explicitly recognize the inter-relationships among many institutions, an issue further explored in chapter 9. At the same time, it should be clear that the focus of the following discussion is not on why the inter-relationships among institutions may reinforce each of them. Although this issue is important and is dealt with later in the book, the attention here is on the tendency of an institution to reinforce itself.

Self-reinforcement Sociology

Sociological studies have exposed various ways in which individuals are shaped through social interactions. Many of these ways imply self-reinforcement. The behavior implied by institutions is reinforced by the fact that it shapes individuals. It influences, for example, their internalized norms, personalities, identities, self-images, habitual actions and thinking patterns, and ideologies. While the exact meaning of, and distinctions among, each of these terms, as well as the details of the related processes, are still being refined and defined in sociology, the point made here transcends these debates. Institutions shape individuals in a way that tends to reinforce these institutions.

Chapter 5 has already mentioned some channels through which past institutions were reinforced by shaping individuals. It argued that individuals tend to assign normative values to past patterns of behavior. Humans tend to think that what has been done in the past is the “right” way to behave - past patterns of behavior become internalized norms. These norms, in turn, reinforce the patterns of behavior that led to their emergence: this behavior will be followed in a larger set of situations than before. This reinforcement process has been noticed, for example, by

the eminent sociologist Davis (1949).²¹ He argued that "in human society there is what may be called double reality - on the one hand a normative order embodying what ought to be, and on the other a factual order embodying what is. In the nature of the case, these two orders cannot be completely identical, nor can they be completely disparate. The normative order acts, for example, as a determinant (though not the only determinant) of the factual order.... In turn, the factual order exercises an influence on the normative system, for the norms must always refer to events in the real world and take into account the factual situation.... The normative system, since it aims to achieve results in the factual world, is subject to constant modification by events in that world" (pp. 52-3).²²

More broadly, sociologists have argued that social interactions shape the development of individuals' personalities, that is, a fairly consistent pattern of feeling, acting, and thinking that they exercise. Since past institutions influence the nature of social interactions, they shape personalities in a way that is congruent to the behavior they imply. Once personalities have been established in a way that is congruent to existing institutions, they are reinforced. To further clarify this argument, let me comment on some aspects of the nature and implications of each of the components of personalities, namely, feeling, acting, and thinking.

Feeling: One way to capture feeling in this framework is as a specification of normatively appropriate behavior in various situations. It has been argued and confirmed in experimental studies that individuals tend to attach a normative value to past patterns of behavior and they are willing to bear the cost of punishing others from deviating from what they consider the appropriate behavior. Deviation from appropriate, fair behavior - which is shaped by the behavior associated

²¹ For similar recent statements about organized hypocrisy, see, for example, Krasner (forthcoming, chapter 2) and Meyer and Rowan (1978).

²² See also Homans (1950), Scott (1987, p. 16), March and Olsen (1989). For a recent economic analyses, see Sugden (1989), Rabin (1994), Kuran (1998), Ben-Ner and Putterman (1998), and Hodgson (1998). For evidence of a status quo bias in decision-making, see, for example, Samuelson and Zeckhauser (1988). Another view regarding the formation of norms is influenced by the works of behavioral biologists, such as Wilson (1975) and Dawkins (1976) and asserts that norms emerge in a manner that serves the material welfare of those who hold them. In this case as well, institutions matter in the formation of norms because they determine which behavior is beneficial. For an economic application, see Frank 1987.

with past institutions - becomes more costly than it would otherwise have been. In other words, the institutions generating past behavior are being self-reinforced.²³

Acting and thinking about actions: Habitual behavior is another product of past institutions that self-reinforces them. It has long been noticed that individuals tend to adopt habitual behavior - the propensity to behave in a particular way in a particular type of situation.²⁴ It has been claimed in psychology (Clark 1997a, 1997b), that the reliance on habits to guide behavior reflects the fact that individuals have scarce time resources and face a complex world. Hence, they rely on external structures and circumstances to provide them with cues for action, while habit and judgement are inter-related in guiding behavior (Margolis 1987: 29). Hence, once a particular pattern of behavior is established in a society, it will be reinforced by habit. Guided by habit and with less reliance on judgement, a change in the environment that would undermine past patterns of behavior would have to be larger than otherwise.

Thinking: Sociologists have long held that human nature is such that a “complex of social actions” prevailing in a society tend to become the social equivalent of an instinct (Berger 1977: 104). Past regularities of behavior mold the way that individuals think about what possibilities are open to them. For example, in a society in which monogamous marriage prevails, “the average young man... not only rejects the options of polyandry or polygamy, but, at least for himself, finds them literally unthinkable. He believes that the institutionally predefined course of action is the only one he could possibly take, the only one he is ontologically capable” (ibid: 106).²⁵ To the extent that this is the case, regularities of behavior created by past institutions are being reinforced by the human tendency to ignore alternatives. Fear of the unknown generates a similar pattern of self-reinforcement.

²³ For this line of argument, see, for example, Hume??; Sugden 1989; Psychological games? Experimental studies?? Feher?? Gintis??, Rabin??

²⁴ The analysis of habit and institutions can be traced to Veblen. For recent elaborations, see Margolis (1994) and Hodgson (1998, forthcoming chapter 20) which contain extensive references. These analysis, however, tend to identify habits with institutions.

²⁵ Kuran’s the unthinkable and unthought??

Concepts close to that of personality are those of identity and self, and the processes giving rise to both are such that they reinforce existing institutions. Individuals tend to adopt, intentionally or unintentionally, an identity which can be thought of as a menu of behavioral instructions about how the individual should behave in various situations.²⁶ Once adopted, there is a psychological cost to deviating from the behavioral instructions associated with a particular identity which can be thought of as the cost of deviating from the related set of internalized norms. Even the Bible reflects such relationships when it mentions that Moses led the ancient Hebrews for 40 years in the desert so that the generation which adopted the slave identity or mentality would perish prior to settling as a free nation. A society's institutions determine the costs and benefits of various identities and hence influence their adoption. Once adopted, however, the psychological cost of acting in a way that is not congruent to one's identity reinforces these institutions.

A closely related human tendency that leads to reinforcement is the one concerned with the development of the self. The self is a concept central to social behaviorism in sociology (Mead 1962). One's conception of his or her self - that part of an individual's personality composed of self-awareness and self-image - develops only through social interactions and reflects the human tendency to respond - not only to what others do, but also to individuals' tendencies to respond to what they think others have in mind when they take an action. But what others do and the normative meaning they have imputed to various actions, reflects, as discussed above, past institutions.

Institutions are also reinforced by the ideologies to which they give rise.²⁷ Ideologies "are efforts to rationalize the behavior pattern of individuals and groups" (North 1981: 48). Various opinions are held about the function and the origin of ideologies: Economizing devices to facilitate decision-making; and to provide a moral and ethical explanation for the social world; a set of beliefs that justify social stratification and, in particular, the distribution of economic wealth and political power. All these notions of ideology relate to Plato's definition of justice as an agreement about who should have what. Whatever the meaning of ideologies, all of them reflect the behavior

²⁶ For a discussion of the concept and a recent economic analysis of the adoption of identity and its implications, see Akerlof and Kranton (2000).

²⁷ For a discussion, see, for example, North (1981 chapter 5), ??.

and implications of existing institutions. At the same time, they reinforce these institutions by providing them with an 'ideological' basis.

Marx (e.g. ??) and others have long claimed that ideology serves the interest of a society's economic, political, and social elite. Elites develop, intentionally or unintentionally, ideologies providing moral support for the prevailing distribution of economic and other rights in the society. This ideology thus provides a moral justification for the behavior implied by existing institutions because the prevailing distribution reflects this behavior. Because ideology provides a moral justification for the behavior implied by existing institutions, it reinforces them. In the terminology of chapter 5, ideology generates or reinforces internalized beliefs that further motivate individuals to follow the behavior associated with existing institutions. Members of a society in general tend to adopt this reinforcing ideology through the process of socialization and because individuals seek to align their system of beliefs and observed outcomes.

During the middle ages, for example, the ideology of the "three orders" was developed.²⁸ It reinforced the transfer of economic resources from the peasants to the nobles and the clergy. Similarly, feminist scholars (e.g., ??) have argued that ideology supporting male dominance reinforced the regularities of behavior that gave rise to this dominance to begin with.

Sociologists have long claimed that one's self, identity, personality, and ideology are shaped by the process of socialization in which role models and the education system play a crucial part. The behavior implied by a past institution, however, influences the role models one is exposed to in his or her formative years. Furthermore, educators - be they parents or teachers - are individuals whose own identity, personality, self-image, and ideology have been shaped by past institutions. Hence, their influence on those under their authority will tend to reinforce these institutions.²⁹

Self-reinforcement Politics

²⁸ See the discussion of the origin and development of this concept in Constable (1995): 249-360.??

²⁹ For a classic economic analysis, see Bowles and Gintis (1976).

Reinforcement tends to prevail also because of the inter-relationships between the implications of past institutions and political processes. Institutions, as we have seen above, have implications that go beyond behavior in the transactions they govern. They influence such social features as wealth, ideology, and norms which, in turn, are likely to influence political processes in a way that reinforces existing institutions. These implications of past institutions are likely to lead to the use of the political system to reinforce the behavior associated with past institutions. Laws, regulations, regulatory agencies, and the inquisition are manifestations of such reinforcement processes.³⁰ While there is a tremendous literature in political science on attempts by individuals to use the political process to improve their lot, the related - and often noted - point I am making here is that the details of such attempts and their probability of success are such that they reinforce existing institutions.³¹

There are two inter-related reasons why political processes tend to reinforce existing institutions. The first reason is an extension of the sociological sources of reinforcement. Institutions shape past behavior and hence, directly and indirectly, preferences, beliefs, ideologies, and norms. Once such social features have been shaped, those who hold them are likely to try to ensure that others will behave in a manner corresponding to these features. Using the political system to achieve this aim is an obvious venue to pursue such an agenda. But why are political systems likely to respond favorably to such pressures? It is clear that political systems, such as democratic or authoritarian regimes, that depend on popular support will attempt to accommodate the demands of their constituencies.³² But even other political regimes depend on their legitimacy and, furthermore, those who control the political system are likely to want to reinforce existing institutions because they benefit from them.

³⁰ As discussed in part I, for such institutional elements to influence behavior, they have to be self-enforcing.

³¹ E.g., ??

³² Although, as political scientists have often emphasized, the manner in which decision-making is carried out in a particular political system has a large impact on the outcome. The extent to which the political system maps the public's preferences into political outcomes depends on the details of the political organizations.

The second reason why political processes are likely to lead to reinforcement is that the wealthy are likely to be those who benefit from existing institutions. At the same time, they have the resources, the connections, and the ability required to influence the political decision-making in a way that favors them, that is, in a way that reinforces the operation of existing institutions. The prevalence of such reinforcement processes has been emphasized by Mancur Olson (e.g., 1982) who argued that interest groups organized by those who benefit from the existing economic institutions are likely to invest in ensuring that the political system will lead to their perpetuation. Similarly, North (1990) has claimed that organizations - groups of individuals with the same objectives - are likely to use the political system to advance the institutions favoring them.

Self-reinforcement Economics

Economics also revealed processes that tend to reinforce existing institutions and I will mention some of these. Past institutions are being self-reinforced through their implications on capabilities. While in the short run one's capabilities are often fixed and were assumed to be so in our discussion, in the long run this is not necessarily the case. Indeed, long-run endogenous changes in capabilities are likely to self-reinforce existing institutions. Such self-reinforcement can be due to the direct implications of past behavior. Adam Smith (1776) has argued that repetition increases dexterity while other more recent scholars (e.g., Arrow, e.g., 1997??; Rosenberg ??) have argued that learning by doing enhances ability. Enhanced ability to take an action, in turn, reinforces the institution that generated this action to begin with. It implies that this institution can support this action in a larger set of situations. Suppose, for example, that workers are induced to labor by the belief that this will increase the probability of gaining future profitable employment. If dexterity and learning by doing generated by past employment reduce the disutility of work, labor can thus be induced (everything else being equal) even if the probability of future employment has declined. The institution has been self-reinforced.

Institutions are self-reinforced also by the tendency of individuals and organizations to respond to the incentives that existing institutions imply and invest in improving their capabilities

(e.g., Nelson 19??).³³ North (1981) has provided the canonical example. If existing institutions lead to piracy, individuals will invest in acquiring the skills required for practicing piracy better. But once particular individuals have acquired these skills, they will find it beneficial to practice piracy in a larger range of situations than before. Similarly, intentional learning and unintentional experiments tend to be localized in the sense that they correspond to behavior and hence are likely to reinforce its underpinning institutions. More generally, sunk costs associated with establishing organizations and tacit knowledge generated within them reinforce existing institutions.³⁴

Institutions reinforce themselves through the social, political, and economic processes they entail. The above list of processes is not comprehensive but illustrative. Furthermore, in studying a particular institution in a particular historical episode, other processes specific to the situation can also contribute to institutional reinforcement. Hence, institutional inertia is likely to prevail.

Institutions have the tendency to be self-reinforcing but in the long run, nevertheless, they do change. Why?

7.4 Self-Destructing Institutions and Endogenous Institutional Change

Why, if institutions tend to reinforce themselves, would they change? In particular, why would institutions change endogenously? After all, if past institutions shape such human features as identities, ideologies, and preferences, then these institutions can become self-enforcing in, practically speaking, all situations. People would want to continue to behave in the same way they have been behaving. Some behavior seems indeed to reflect the process in which a set of institutions is able to perpetuate in a radically different world. The Amish, for one, provide a vivid illustration of how stable a behavior can be for a period that began before the English Industrial Revolution and has lasted until today.

But history is marked by institutional change. Some of these changes have been induced by events exogenous to the institutions under study. The visit of Captain Perry's Black Ships in Japan has been followed by the Meiji Revolution of 1868, and the Ottoman Empire's defeat during

³³ Check Langolis, Sen, etc??

³⁴ E.g. David (19??).

World War I has been followed by an institutional transformation led by Kemal Ataturk. Existing institutions governing political and economic transactions have been replaced by others. But history is also marked by endogenous institutional changes of a similar magnitude. The separation between the Church and the State in Europe, the Glorious Revolution in England, the French Revolution, and the decline of slavery are among the many possible examples. But large-scale endogenous institutional changes are only the tip of the iceberg. Endogenous institutional changes of a smaller magnitude routinely occur, as reflected in such events as the introduction of the interest rate, the rise of the modern firm, and the investment bank.

The argument advanced above is that an institution endogenously changes when change leads to its destruction: the institution gradually changes relevant quasi-parameters in a way that causes it to no longer be self-enforcing. The institution causes endogenous changes in the relevant quasi-parameters and this cumulative change eventually implies inconsistency between this institution and the associated behavior.

While there are general processes causing self-reinforcement to prevail, the processes through which institutions undermine their own self-enforcement seems to be case-specific. More precisely, because relatively little analytic attention has been devoted to the study of such processes, no generalizations about them have so far emerged. Although the above schematic conceptual and analytical framework presents a way to study endogenous institutional change, the details of its implementation depend on the particularities of the issue at hand. Accordingly, this section proceeds as follows. Section 7.4 demonstrates the empirical relevance of institutional self-destruction by presenting a study of the endogenous decline of a particular institution. This example also illustrates how game theory can facilitate such an analysis and the need to integrate, even when studying an economic institution, the economic, political, and social considerations. Section 7.4.2 discusses the promising emerging line of research that examines the general inter-relationships between institutions and a particularly important quasi-parameter - knowledge.

7.4.1 The Demise of the Community Responsibility System³⁵

³⁵ This section builds on Greif (19??Aoki, and AER??)

To illustrate the analysis of endogenous institutional change advocated here, consider again the example of lending during the late medieval period. As discussed in chapter 6, impersonal exchange during the late medieval period was facilitated by the Community Responsibility System under which each member of a community was held responsible for the inter-community contractual obligation of any other member of his community. The associated organizations - the communities and their courts - rules of behavior, and cultural beliefs regarding actions that would be taken in various circumstances were this institution's constituting elements. They constituted a self-enforcing institution that enabled a particular regularity of behavior - inter-community exchange - to prevail despite the lack of a legal system with jurisdiction over the transacting individuals.

Although the CRS enhanced efficiency by supporting inter-community exchange, the historical records of the late thirteenth century reflect attempts to abolish the system in Italy, France, and England. Indeed, at that time it was replaced, at least in England, by contract enforcement provided by the state and based on the concept of individual legal responsibility. What led to the decline of the CRS? It is difficult to consider this decline as reflecting an exogenous change in the environment, in other words, an exogenous institutional change. The common explanation to similar organizational and institutional changes that occurred in the late medieval period is that they reflect either population growth (North and Thomas, 1973) or an attempt by the state to fill its own coffers (Benson, 1989). Yet, there is not much evidence to support either of these hypotheses with respect to the CRS. There is no measure of the economies of scale associated with either system. Furthermore, it occurred in densely populated Italy, in sparsely populated England, and the historical records do not reflect a return to the CRS following the sharp and prolonged contraction of population that occurred in first half of the fourteenth century. Similarly, the mere fact that transition away from the CRS was repeatedly attempted also in politically fragmented Italy indicates that the rising centralized state was not necessarily the driving force behind this transition.

Hence, it is appropriate to consider whether the decline of the CRS reflects intra- and inter-community economic, social, and political processes that reduced the system's efficiency and undermined its intra-community political viability. In other words, it is appropriate to consider

whether the CRS had fostered processes that altered quasi-parameters in a way that led to its own demise. Addressing this issue requires examining the cost and limitations of the CRS and its interrelations with economic, social, and political processes inside and outside communities. The results of a preliminary examination show that the centrality of intra- and inter-community economic and social processes led to the decline of the CRS. These processes increased the system's inefficiency and decreased its intra-community political viability. Ironically, the process of economic growth, community expansion, and social integration which were facilitated by the CRS also led to its decline.

Theoretically, the first line of causation between the economic efficiency and social processes of the CRS is due to its dependency on particular knowledge - the knowledge of one's community affiliation. But the extent to which one's community affiliation is known depends on the social context within which exchange occurs. If this social context is such that it is relatively easy to falsify and difficult to verify one's affiliation, the CRS will be less efficient. In the early days of the Commercial Revolution, cities may have been sufficiently small and merchants' communities sufficiently few that falsification of one's community affiliation was difficult and verification of alleged affiliation was easy. Yet, the late medieval period was a time in which communities grew in size and number. For example, between 1200 and 1300 the population of Genoa increased from about 30,000 to 100,000, while that of Venice increased from about 70,000 to about 110,000. In England there were a little more than 200 boroughs at the turn of the thirteenth century, but there were about 500 at its end.

By the second half of the thirteenth century the ease of falsification and the difficulty of verification seem to have hindered the operation of the CRS in England. As Moore (1985) has noted, "this procedure [of the CRS] apparently worked well enough in many cases, but it could be cumbersome and time consuming both for the creditor and the court: it usually seems to have involved long disputes over whether or not the original debtor and/or the men actually being sued for the debt were truly members of their town community or guild, with everyone scurrying to disclaim responsibility for the obligation" (p. 119). Similarly, Plucknett (1949) noted that "there seems to have been much trafficking between foreign merchants and natives whose mercantile

status was doubtful, and whose assets and persons were by no means entirely within the territorial jurisdiction of a local court" (pp. 137-8).³⁶

Part of the cost of the CRS was that it entailed periods of costly retaliation during which two communities ceased exchanging for a period and each was confiscating the goods of the merchants from the other community present in its domain. Such retaliations are unavoidable transaction costs required to support informal contract enforcement in a world characterized by limited *ex-post* verifiability of actions. This limited *ex-post* verifiability implied that the courts of the two communities could have reached opposite conclusions regarding whether a member of one community did or did not fulfill his contractual obligations toward a member of the other. Theory indicates that in such situations, modeled as an imperfect monitoring repeated game, the equilibrium is characterized by period of "retaliation" in which exchange among the communities ceased for a while followed by a resumption of exchange. Such a pattern is indeed reflected in the historical records.

Periods of costly retaliation lead to another link between social and economic processes implied by the CRS and its efficiency. As communities and their trade expand, so does the

³⁶ The ability of individuals to falsify their identity and the strategic use of this ability is well reflected in a case brought before the court of the St. Ives fair "on Wednesday next after the feast of St. John before the Latin Gate in the eight year of Abbot William," which happened to be the year 1275. (The case: pro. SC 2/178/94: 8 May 1275. Parts of the document appeared in the Select Pleas in Manorial and Other Seigniorial Courts, Reigns of Henry III and Edward I. pp. 145-6, 155.) On that day William and Amice of Fleetbridge brought a complaint against Thomas Coventry of Leicester. But since he was not present at the fair, several of Thoma's other "peers and parceners," namely other merchant members of the community of Leicester, were summoned to the court. William and Amice claimed that Thomas owed Amice money for a sack of wool he bought three years ago from her (late) father, who lived in Leicester, and for which Thomas had been supposed to pay in the following year but had not. To prove their case, William and Amice produced a tally from the court of Leicester.

Leicester's merchants, who were present at the court and held responsible for the debt, denied, however, "any breach of the peace of the lord Abbot and the bailiffs or the fair and the damage of the said William and Amice" and were "ready to verify in such manner as the court shall award that the said Thomas Coventry was never peer or parcener of theirs or at scot and lot with them or a member of the commonality of Leicester." The court refused to accept their claim and judged in favor of William and Amice. Yet, shortly after these proceedings, Thomas of Coventry appeared at the fair and did not deny being from the commonality of Leicester. He did claim, however, that William and Amice had brought a false accusation against him, causing him "no small damage," most likely by the response of the merchants of Leicester whose goods were impounded by the fair court. William and Amice could not defend themselves but claimed not to be under the jurisdiction of the court since they were from London.

probability of dispute and hence retaliation. This is the case because the possibility of retaliation increases the uncertainty associated with trade to all merchants. When such uncertainty exists, the CRS implies that there is a positive probability that the goods of a (risk averse) merchant will be confiscated or impounded, he himself will be taken hostage, and his trade will be interrupted, even if he fulfilled all his contractual obligations. The courts' ability to impound goods only from some merchants - those present in their jurisdiction - but not from others, further increases the cost implied by this uncertainty. Whenever retaliation looms on the horizon, merchants are likely to attempt to ensure that their own goods will be saved by leaving the city that is likely to impose sanctions. Hence, theoretically, the relationship between trade expansion and the cost implied by possible disputes is not linear. Rather, the nature of the uncertainty implied that cost would rise faster than trade volume.

Indeed, Florence's historical records indicate that once a retaliation was expected, merchants of the communities involved would refrain from trading in each others' cities, and merchants who permanently lived in the other communities would leave their residences with their merchandise.³⁷ Communities attempted to reduce the inefficiency associated with these costs by agreeing to restrict the penalty that could be imposed on a particular individual or allocate the costs more evenly. In 1251, Genoa contracted with Florence to warn its merchants at least two months prior to a retaliation so that Florentine merchants could leave Genoa in an orderly manner.³⁸ After trade expanded sufficiently to enable the CRS to function without impounding or confiscation, taxes on members of one community were used by another to better allocate the costs of retaliation.³⁹ Statutes issued by Countess Margaret in 1252 regarding foreign merchants visiting the fairs of Flanders ruled that only a debtor or his guarantors could be imprisoned for debt. Only goods could be confiscated from other members of the debtor's community.⁴⁰ Yet, the uncertainty

³⁷ For this behavior and its costs in Italy, see Arias (1901), pp. 156-8.

³⁸ Arias (1901), p. 52.

³⁹ For example, on 22 February, 1296, Florentine merchants petitioned their city to agree that Bologna would impose a toll (*pedaggio*) on Florentine goods entering Bologna in order to settle a retaliation. Arias (1901), p. 165.

⁴⁰ Verlinden (1979), p. 135.

implied by the CRS could not be completely avoided and as the size of communities increased, the cost of retaliation and uncertainty increased by more.

An increase in the size of, and economic diversity within, communities reduces the economic efficiency of the CRS for yet another reason. The CRS's intensifies the adverse selection problem associated with credit financing and the extent of this problem increases with the size and diversity of communities. It provides insufficient incentives to lenders to examine the creditworthiness of borrowers and the extent to which incentives were insufficient increased with a community's size. Thus, a consequence of the CRS is that it increased the probability that a borrower would not be able to pay his debt. Since retaliation often occurred following a borrower's bankruptcy, the CRS also increases the probability that a retaliation will occur.

Under credit financing, the lender assumes all downside risks while the borrower retains all the gains above a certain amount. Hence, credit financing encourages borrowing for high risk ventures. Appropriate incentives to lenders to evaluate *ex ante* the creditworthiness of the borrowers mitigates this problem, but the CRS undermined such incentives. Under the CRS the future trade of all members of the borrower's community was the de facto collateral for the loan, and hence a lender had a relatively weak incentive to verify the borrower's ability to repay it.⁴¹ In other words, credit financing under the CRS attracted borrowers with "bad" projects which were likely to fail, and thus were more likely than other projects to lead to retaliation.

While the above discussion indicates a theoretical possibility, for it to influence the lenders' behavior during the late medieval period they had to be aware of it. Interestingly, lenders during this period clearly understood this adverse selection problem. For example, on February 8, 1281, several cities in Tuscany agreed not to retaliate against each other. In announcing this agreement to their merchants, the authorities stated that the merchants should start paying more attention to the personal creditworthiness of merchants from the other towns with whom they would be dealing. This extra precaution was required, it was argued, since from now on "*a chui dato, a*

⁴¹ Almost one hundred years prior to the invention of Information Economics, Arias (1901), pp. 166, noticed this adverse effect of the Community Responsibility System.

colui rechesto" (that is, "to whom it is given, from him it will be asked") because retaliation would not be permitted.⁴²

Theoretically communities could have attempted to mitigate this adverse selection problem by either increasing the cost of defaulting to a borrower who undertook a risky venture or increasing the cost of default to a lender.⁴³ Indeed, late medieval communities took such actions but with limited success. The increasing ease by which one could move from one city to another in the thirteenth century implies that, following bankruptcy, one could have escaped to another city. The extent to which this option was exercised and an attempt to curtail it is reflected in a treaty signed on April 7, 1279, among Florence, Genoa, and most of the other towns of Tuscany, Lombardia, Romana, and March Trevigiana. It established that merchants fleeing with money belonging to other people could be imprisoned in the territories of the towns who signed the treaty and there they would be kept until brought to justice.⁴⁴ In England the authorities were usually unable to locate an individual who escaped from his place of residence.⁴⁵ Furthermore, one did not even have to escape in order to avoid paying a debt. During this period English law precluded selling one's house or real estate to repay a loan, or even punishing a borrower who defaulted with imprisonment.⁴⁶

Another way to mitigate the adverse selection problem is to provide a lender with better incentives to screen prospective borrowers. Had the court of the lenders' community been able to perfectly verify the claim that a particular borrower indeed went bankrupt and not demand compensation in that case, the lender could have been provided with the appropriate incentives.

⁴² Arias (1901), pp. 166-7.

⁴³ Note, however, that if these costs were raised too high, they would undermine the operation of the CRS and the incentive to trade.

⁴⁴ Arias (1901), p. 100.

⁴⁵ Plucknett (1949), p. 142. As late as the seventeenth and eighteenth centuries, "a felon could consider himself distinctly unlucky if he was captured by the authorities. Policing was left largely in the hands of the local community. The maxim was not efficiency, but financial economy, making the system of public order pay for itself. A king with no proper permanent army, who could not pay the members of his own household with regularity, was not likely to visualize or finance a proper police system" (Bellamy, 1973, p. 201).

⁴⁶ Jones (1979).

Yet, medieval courts had limited ability to do this. Indeed, retaliation often occurred due to bankruptcy and disputes over the distribution of the remaining funds among various borrowers. Hence, in Italy and England alike, the authorities gradually resorted to increasing the cost of default to the lender by demanding that prior to requesting justice from the legal authorities of his own community, a lender had to travel to the other community and make his case there. Only if justice were not provided, could he apply to his own community court requesting retaliation.

For example, the city of Cambridge received a charter and the right to establish a merchant guild as early as the middle of the twelfth century. Yet, a charter given to the city by King Henry III in 1256 states that "our beloved burgesses of Cambridge ... may forever throughout the whole of our land and dominion have this franchise, namely that they themselves or their goods, wheresoever found in our dominion, shall not be arrested for any debt of which they shall not be the sureties of principal debtors, unless perchance the debtors shall be of their commonality and power and shall have to make satisfaction for their debts in whole or in part and the said burgesses shall have made default in justice to the creditors of the same debts and this can be reasonable proven."⁴⁷

The cost implied by the adverse selection problem depended, like the cost associated with falsification, on social factors. First, it depended on the size of a community - since the larger a community is the more likely it is that a lender will be able to recover, at relatively low cost, a debt in case of default. Second, it depended on inter-community ease of mobility. The more advanced the social and economic integration of a society is and the more secure the life and property for aliens abroad, the more difficult it is for a community to discipline its own members.

Finally, to the extent that community growth implies increasing intra-community social and economic heterogeneity, it is likely to reduce the intra-community political viability of the CRS. Community growth and heterogeneity imply that some segment of the community bear the cost, but not the benefit, of the CRS. This segment of the community will then be motivated to act within the commune to abolish the CRS. For example, rich, well-established merchants gain less from the CRS than others since they already have the connections, reputations, and wealth

⁴⁷ Maitland and Bateson (1901), pp. 14-5.

required to conduct trade, based on personal rather than impersonal exchange, and with little reliance on credit. Yet, the CRS implies that they will have to bear the cost of the system, and perhaps an even higher cost, than those less-well-to-do merchants whose trade depends on the CRS. As a matter of fact, the discussion of how the CRS aggravated the adverse selection problem implies that the growth of communities encouraged the relatively less experienced traders to utilize the system for their advantage but at the cost of the more established merchants, who had to pay their debt or bear the cost of retaliations. Similarly, the non-mercantile part of a community is likely to bear the cost implied by the absence of alien merchants in the community during retaliations without directly gaining much, or anything, from the CRS.

Hence, while the CRS fostered inter-community economic interactions and facilitated the growth of trade, as well as growth in the size, number, and heterogeneity of merchants' communities, theory suggests that these processes diminished the system's effectiveness, increased its economic costs, and undermined its political viability. Unfortunately, establishing quantitatively the extent to which this was the case seems impossible, but there is an indication that these costs were rising in the second half of the thirteenth century in England according to the Close Rolls. Debts could be registered in these chancery rolls, thereby placing the transaction under the jurisdiction of the Common Law. This implies that property and goods could have been placed as a bond for repaying debts.⁴⁸ Registration, however, was costly and prior to 1271 few debts, if any, were enrolled each year. Their numbers rose substantially by 1271, however, just before (as discussed below) the CRS was abolished in England.⁴⁹

Yet the historical records do reflect, consistent with the above theoretical considerations, that wealthy traders and large communities attempted, in England and Italy alike, to be exempted from or to abolish the CRS, and different segments of cities had distinct incentives with respect to the CRS. Moore (1985) examined cases brought before the court of St. Ives fair in England and noticed that in the second half of the thirteenth century there "was an increasing numbers of

⁴⁸ See discussion in Moore (1985), p.120 n. 105.

⁴⁹ Close Rolls of the Reign of Henry III, 1227-1272. 14 Vols. London: His Majesty's Stationery Office, years 1256-1272. There is one entry for 1257; four for 1269; and 43 for 1271. For the high cost to a merchant for using the common law court, see Plucknett (1949), p. 137.

individuals ... able to respond to ... suits [related to the CRS] by producing royal licenses of immunity from prosecution for any debts except those for which they were principal debtors or pledges" (p.119). In England large communities sought an exemption from the CRS from the king. With about 25,000 residents, twelfth-century London was the largest city in England and a large city by western European standards of that time.⁵⁰ In 1133, Henry I declared that the citizens of London "shall appoint as sheriff from themselves whomever they may choose, and shall appoint from among themselves justice whomsoever they choose" and "no other shall be justice over the men of London." Indeed, as mentioned above, William and Amice claimed that they could not be judged at the St. Ives court. Yet, as just cited, Londoners had the right to apply the principle of community responsibility to residents of other cities.⁵¹

Later, the king provided other large communities with various exemptions from the CRS. In Flanders, Ypres was the largest city and about twice the size of London. Indeed, King Henry III, sometime between 1225 and 1232, assured the merchants of Ypres that none of them "will be detained in England... nor will they be partitions for another's debts." Only the debtor, or those who made a pledge for him, would be liable for the debt. Yet, the King seemed to be aware of the need to induce the community of Ypres to ensure any merchant that he would receive justice if a complaint was brought against him. It was agreed that "if any aforesaid burger or merchant of Ypres were to offend the King or other men or merchants from England, or if a dispute were to arise between another man of his and a man from England, it will stand by law in the courts of the king by the king, or by his judges, or by his bailiffs in that place where the offense was committed for the purpose of amending the mistake and making proper payments."⁵²

The historical records from Italy reflect the reduction in the CRS intra-community political viability. Distinct incentives among various segments of Florence with respect to the CRS are reflected in an appeal made on 22 February, 1296, by some Florentine merchants to the authorities of the city regarding a retaliation with Bologna. These were merchants whose livelihoods

⁵⁰ Bairoch et. al. (1988), p. 33.

⁵¹ English Historical Documents, vol. II, no. 270, pp. 1012-3.

⁵² Calendar of the Patent Rolls Preserved in the Public Records Office, 1232-1339, p. 460.

depended on being able to pass through Bologna. They proposed setting up a toll (pedaggio) to be levied almost exclusively on their goods just to settle the retaliations in which they were probably not directly involved. It seems that the rest of Florence did not care about settling the matter.⁵³ Similar distinct incentives are reflected in Florence's fifteenth-century regulations. In 1415 it was forbidden to retaliate against foreign rectors, officials, or against traders coming to Florence to sell edibles.⁵⁴ The *mercatores* of Florence were the city's affluent merchants whose business during the thirteenth century was carried out over most of Europe, as far north as Sweden. While they may have had the ability to exchange based on their own reputations, they had a great deal to lose from retaliations. Indeed, once they secured political control over the city, they entered into a sequence of treaties aimed at moving Florence away from the CRS.⁵⁵

On April 9, 1279, the cities of Florence, Venice, Genoa, as well as most of the cities of Tuscany, Lombardy, Romagna, and Marca Trivigiana, agreed "that from this day forth nobody of the said city-states is able to be or should be, on behalf of another, detained or taken captive or disturbed, in person or goods, but it should be demanded of him alone to whom it should be given, or of him who by justice should be held." To enable impersonal inter-community exchange, however, it was also agreed that each town would imprison any merchant in its territory who was fleeing with others people's money and that his creditors would receive justice.⁵⁶ That most of Italy's large city-states also sought an end to the CRS in the second half of the thirteenth century suggests that by then the most important Italian communities sought to abolish the system.

The examination of the costs associated with the CRS, and the relationship between these costs, and social, economic, and political processes within and between communities, suggests that these processes were important factors in the decline of the CRS. In England, the state may have contributed to an increase in the ineffectiveness of the CRS by granting individuals and communities legal immunity from impounding or confiscating their goods. In doing so, however,

⁵³ Arias (1901) p. 165.

⁵⁴ Santini (1886), pp. 168-72

⁵⁵ Arias (1901), pp. 170-6.

⁵⁶ The Latin version of this treaty is contained in Arias (1901), pp. 400-404.

the state seems to have been responding to demands reflecting processes within and between communities. The observation that the Italian city-states also attempted to move away from the CRS toward the end of the thirteenth century, strongly supports the view that the state was not the originator of this transition.

Why did the CRS decline? It declined when it was no longer self-enforcing, when it was advantageous to communities and individuals to act in a manner contrary to the rules and cultural beliefs associated with it. And this happened because the behavioral implications of the CRS undermined its self-enforcing nature. The CRS failed to perpetuate in the long run because it was not **self-reinforcing**: its behavioral implications - those other than fostering inter-community exchange - undermined its self-enforceability and led to the endogenous demise of the CRS.

For example, knowledge of traders' communal affiliations was necessary for the self-enforceability of the CRS. Without knowing (at least with a sufficiently high certainty) a borrower's community affiliation a lender would not have been willing to lend. The CRS, however, fostered, over time, community growth and inter-community interactions, thereby eroding this knowledge. Over time a community's members were less likely to know each other and individuals could more easily acquire the knowledge required to mis-present their communal affiliation. Similarly, for the CRS to be self-enforcing, its benefit had to be sufficiently large and evenly distributed among a community's members so that each of them would lend his intra-community political support to the system. This lent credibility to the threat of intra-community punishment of a member who cheated a non-member. But the gradual increase in the size of communities decreased the gains from inter-community exchange by fostering costly periods of retaliation and increased intra-community occupational and wealth heterogeneity.

7.4.2 Knowledge and the Rate of Institutional Change

Changes in knowledge associated with the growth of the CRS contributed to its decline. Arguably, knowledge is a quasi-parameter central to self-reinforcing processes in general because the extent to which institutions endogenously foster the creation or adoption of new knowledge influences their reinforcement or undermining. Lal (1998), for example, has advanced this line of argument in claiming that the individualism that western institutions foster leads to their own

destruction. Individualism fosters the creation of new knowledge.⁵⁷ At the same time, the creation of this new scientific knowledge undermined the religiously-based internalized norms of guilt and fear from eternal punishment that had traditionally provided order in the West.⁵⁸ Hence, this new knowledge undermined the institutions supporting social order in the West.

Any analysis of the inter-relationships between institutions and the creation of new knowledge clearly has to have a historically specific component. The details of a particular institution and the historical context influence changes in the pool of knowledge. No general theory will explain why, during the pre-modern period, the data required to challenge the assertions supported by the Catholic Church regarding the movement of the stars was collected mainly in non-Catholic countries. Nevertheless, a better understanding of the general inter-relationships between knowledge and institutions will facilitate such historically specific analyses.

Recently, insights from various disciplines have been brought to bear on the issue of the relationship between knowledge and institutions. Cognitive science has extensively examined mental models and their relationship to the creation of knowledge (e.g., Eysenck and Keane 1995). Mental models constitute a person's understanding of the causal nature of a system and are used by that person to predict events and the relationships between actions and outcomes. Such models are usually incomplete and may even be ad hoc. When studying a strategic situation, a relevant mental model would be one's knowledge of, and beliefs about, the structure of the game. This knowledge may differ from the objective rules of the game: one may not be able to understand the possibilities or implications of taking certain actions. Furthermore, one may believe some subjective rules to be true, even though their relevance to the situation at hand cannot be proven scientifically or demonstrated by experience. Religious beliefs and myths are examples of these kinds of rules.⁵⁹

⁵⁷ See Greif (1994a) and the discussion in chapter 9 regarding Western individualism and institutions.

⁵⁸ Regarding the economic importance of guilt and fear in the rise of the West, see Platteau (1994).

⁵⁹ Another element of this cognitive system is beliefs about the behavior of other individuals when multiple sets of beliefs prevail as equilibrium outcomes. I discuss these types of beliefs below.

Mental models of a particular social situation can then be thought of as the knowledge and beliefs determining the rules of the game that members of the society perceive to be relevant. For simplicity, we can assume that knowledge and beliefs are shared by all members of a society. Indeed, one can argue that such models are shaped by a genetic legacy and a society's historical heritage, although individuals' experiences have an independent influence on their own mental models. To study institutional reinforcement in this situation, we must explore the relationships between the implications of existing institutions and the learning process through which members of a society change their mental models, or how they gain knowledge about possible rules and alter their beliefs regarding the implications of the new possibilities. We must examine the extent to which the knowledge and beliefs underlying people's perceptions of a situation are reinforced or undermined by the related learning process. Whether they are reinforced or undermined depends on the outcomes that transpired because of choices people made based on these perceptions. Although we are far from possessing a coherent theoretical framework permitting such a study, we can draw on several lines of research in economics, evolutionary psychology, and cognitive science that shed light on the processes of learning and belief formation.

Within economics, evolutionary and learning theoretical models provide a framework within which to examine the consistency between mental models and reality.⁶⁰ These models specify an environment - a game - and assume that the decision-makers have only a limited perception of the situation and a limited ability to learn, adapt, or evolve in response to outcomes. The knowledge and behavior of these decision-makers changes over time based on experiments, mutations, imitations, and diffusion of information. These models demonstrate that the way in which experiments, mutations, imitations, and information diffusion take place has a profound impact on the process of learning and evolution. Hence, this theoretical framework enables us, in principle, to evaluate consistency by examining the extent to which decision-makers with limited

⁶⁰ For first-rate recent surveys, see Dosi et al. (1996) and Marimon (1997). See also the recent contribution by Kurz (1994) regarding the process and indeterminacy of mental models. For survey of experimental results, see Hagel and Roth (1995).

knowledge of the rules of the game are able to either learn about the actual structure of the game or act as if they actually know the game.⁶¹

So far these studies have been theoretical. Hence, the way in which experiments, learning, etc. take place is considered to be primitive, not a function of society's institutions. However, intuition and history indicate that experiments and learning depend on existing institutions. The positive correlations between the effectiveness and nature of a country's patent system and the number of patents issued, for example, is as well documented.⁶² Hence, evolutionary and learning models can further the empirical study of consistency once we make the ways in which decision-makers experiment, learn, gather information, and change their behavior be a function of a society's institutions, while simultaneously assessing the effect on the self-enforcability of these institutions. This integration of institutional analysis with learning and evolutionary models has just begun.⁶³

Evolutionary and learning models are concerned with individuals' ability to learn about and respond to the actual rules of the game, but they are ill-equipped for studying the emergence of, and change in, subjective rules, such as religious beliefs and myths, that may have nothing to do with reality. Recently, however, deductive game theory (Matsui et al. 1998) and subjective game theory (Aoki forthcoming) have begun to develop theoretical frameworks that promise to contribute to the study of the consistency of these rules. A related theoretical framework is being developed in evolutionary psychology. Cosmides et al. (1992) claim that a key to understanding learning processes is understanding the way in which evolution has shaped human psychology. By indicating that the ability to learn and reason relates to a situation, this approach also promises to

⁶¹ Game-theoretic models and evolutionary and learning models are complementary theoretical frameworks as is evident from the use of the latter to evaluate the appropriateness of the Nash equilibrium concept.

⁶² Sokoloff (19??).

⁶³ See, however, the pioneering work of Young (199??), Aoki (1998); Okazaki and Okuno-Fujiwara (1997); and the related discussion in Greif (1996a).

advance consistency analysis since the nature of the situations one encounters depends on institutions.⁶⁴

Cognitive analysis offers some theories that are useful for studying consistency.⁶⁵ Since it focuses on knowledge and its origin, it facilitates the study of whether institutions impede or encourage the generation of knowledge required to envision alternative institutions. Bandura (1971) has discussed social learning theory and has argued that, among other factors, the observations and models that a society produces direct the way in which its members acquire new knowledge about alternative behavior. Hutchins (1996) has called attention to the fact that the primary concentration in cognitive science is on the generation of knowledge within individuals. This concentration leads us to ignore that knowledge “is always situated in a complex sociocultural world and cannot be unaffected by it” (p. xiii). Specifically, new knowledge reflects the historical accumulation of the cognitive structures that a society imposes on its physical environment in response to the problems it encounters, and the development of particular instruments to express and use knowledge. Furthermore, this cognitive structure may be the property of a group and does not have to be embedded within a particular individual. This position, therefore, links the existing institutional and other features of a society with its evolving cognition - cognition that may reinforce or undermine these institutions and features.⁶⁶

7.5 Concluding Comments

This chapter elaborated on why and how past institutions influence the **rate** of institutional change. Past institutions influenced the rate of institutional change through the self-reinforcing or self-destructing processes they entailed. They gradually altered quasi-parameters in a manner that

⁶⁴ This position gains some support from experimental economics (e.g., Fehr and Gächter 1998).

⁶⁵ Unlike classical game theory, cognition theory maintains that individuals have limited computational ability. I discuss this issue further in chapter 4. For a recent analysis of how optimal behavior can result despite one’s cognitive limitations, see MacLeod (1998).

⁶⁶ While Hutchins produced an empirical study to substantiate his point, no one has yet developed a theoretical and empirical framework that would enable us to apply his view to the study of institutions. For additional general discussion about the relationship between incentives and cognition, see Satz and Ferejohn (1994); Denzau and North (1996); Clark (1997); Williamson (1998).

enabled them to prevail in a larger or smaller set of situations. Hence, institutions influence their rate of change indirectly and directly. They influence their rate of change indirectly by making them more sensitive to exogenous shocks. And institutions influence their rates of change directly by leading to inconsistency between existing institutional elements and past regularities of behavior.

We can study such self-reinforcing processes in conjunction with the study of self-enforcing institutions. For an institution to prevail, it has to be self-enforcing; for it to perpetuate over time, it has to be (weakly) self-reinforcing. Otherwise, over time, the associated behavior will either cease to prevail or new institutional elements will have to support it. Analytically, one can combine the study of self-enforcing and self-reinforcing institutions using the following three-step analysis. First: examining an institution's self-enforceability considering quasi-parameters as fixed and exogenous; second: examining the implied self-reinforcing processes; third: examining the long-term implications of these processes on that institution's perpetuation.

Past self-enforcing institutions influence the rate of institutional change in a way that, in particular, can lead to endogenous institutional change. But do past institutions also influence the **direction** of institutional change? The next chapter argues that past institutions direct institutional change because the elements and implications of past institutions are enduring social features that constitute part of the initial conditions in the process of institutional change.