Strategies and public propositions in games of institutional change: Comparative historical cases☆

Masahiko Aoki*

Stanford University, 450 Serra Mall, Stanford, CA 94305, United States

ARTICLE INFO

ABSTRACT

Aoki, Masahiko—Strategies and public propositions in games of institutional change: Comparative historical cases

This paper argues that the game-theoretic approach is incomplete for institutional studies, because comparative institutions as well as institutional changes involve the possibility of multiple equilibria. In order to solve the common knowledge problem, this paper proposes to unify game theoretic thought with an analysis of public representations/propositions to summarize salient features of the recursive/emergent states of play. From this perspective the paper tries to reconcile differences in three accounts of institutions: endogenous outcome, exogenous rules and constitutive rules accounts. Then, the unified approach is applied to comparative and historical cases of Tokugawa Japan and Qing China. Specifically it sheds new light into the coalitional nature of the Tokugawa Baku-Han regime nesting the fundamental Samurai-village pact as well as the tendency toward decentralization of political violence and fiscal competence to the provincial level toward the end of Qing China. From these new historical interpretations, endogenous strategic forces and associated public propositions leading to institutional changes through the Meiji Restoration and the Xinhai Revolution are identified and compared. *Journal of Comparative Economics* **000** (2016) 1–17. Stanford University, 450 Serra Mall, Stanford, CA 94305, United States.
© 2016 Association for Comparative Economic Studies. Published by Elsevier Inc. All rights reserved.

1. Introduction

As well known, in economics there are two major accounts of institutions, endogenous-outcome-of-game account (Schotter, 1981; Aoki, 2001; Greif, 2006) and exogenous-rules-of-game account (North, 1990). In the latter, the rules are of two kinds, formal and informal. Are these endogenous and exogenous views reconcilable? The authority on comparative Law, Harold Berman, regards law as "an institution in the sense of an integral pattern and process of social behavior and

ideas" (Berman and Saliba 2009, pp. 4–5). He goes so far as to state that "it is foolish to approach law through a body of rules which is nothing but one of the devices that law employs." This distinction between law as an "institution" and "rules" as its "device" is an interesting suggestion.

This article adopts a framework for institutional study somewhat similar in its spirit to Berman's. It does so by identifying "social behavior" with "strategic behavior" in the game-theoretic sense and "ideas" with those having linguistic/symbolic public representations including, but not limited to, formal and informal rules. Why are these two items indispensable for an understanding of institutions and how are they related to each other in the "process" of generating a stable "pattern" of strategic behavior as an institutional reality?

A game-theoretic approach to institutions is useful to account for institutions as endogenous outcomes of societal games that agents play recursively. But the approach has one inherent problem. From this perspective, comparisons of institutions, as well as explorations into institutional change, may involve possible multiple equilibria. But how is one particular institution selected in one place but not in another? How does one institution change into another at a particular time? Game theory can only tell us that history matters. However, by remaining at a theoretical level it is known that the societal choice of one particular equilibrium from many other possible equilibria must involve the formation of common knowledge among the players. This famous problem, first pointed out and solved by David Lewis (1969), led to recognize the importance of external linguistic/symbolic devices mediating the state of strategic play and belief formation (Aoki, 2011). These devices are referred to below as public representations of a recursive state of play, or as public propositions when they are competing for saliency as a public representation in a state of equilibrium search. Depending on the context, public representations may take the form of external artifacts, such as enforceable formal rules, norms, organizations, rituals, deontological values, religious symbols, and the like.

By supplementing it with an explicit treatment of public presentations, game theoretic thought can be helpful to deal with the important question of whether it is the polity or the economy that is the causal factor for the other. My answer to this question is "neither." They do correlate and thus they do co-evolve. A powerful conceptual and analytical device for such an exploration is the game-theoretic concept of strategic complementarities and their super-modular analysis, leading to the notion of institutional complementarities (Aoki, 2001; Gagliardi, 2015). This article essentially follows such a path.

Section 2 presents a schematic conceptual framework for our suggested approach. The proposed framework is then applied in Sections 3 and 4 to historical and comparative narratives on the institutional arrangements and their ultimate demises in Qing China (1644–1912) and Tokugawa Japan (1603–1868). Section 3 describes the stable formal rules and deontological values connecting the ruler and the peasantry during the height of Qing and Tokugawa rule and derives the respective forms of fundamental complementarities between the tax state and the peasant-based economy. Section 4 focuses on the ways in which these fundamental complementarities were supported through strategic intermediation by gentry organizations in China, on one hand, and were embodied as an all-inclusive coalitional structure of the Baku-Han regime nesting a fundamental pact between the samurai, inc. and the village in each Han. They were respectively summarized as the canonical states of play as conceptual devices. Section 5 goes on to describe the ways in which strategic plays of varied agents destabilized those states and finally led to their demise with the Xinhai Revolution and the Meiji Restoration respectively. In light of the analytical results derived from a formal game-theoretic model in a companion paper (Aoki, 2014b), this article identifies the crucial role of a particular public proposition in selecting a specific pattern of institutional transition in each country. Section 6 presents our conclusions.

2. Theoretical premise

Although a historical narrative based on strategic interactions by agents may be potentially insightful, game theory on its own is incomplete as a theoretical tool for institutional studies. This is particularly the case when a comparison of various institutional arrangements and/or an understanding of an institutional transition are at issue. Such cases involve the possibility of multiple strategic equilibria (based on the premise that it is a transition from one equilibrium to another). Thus we need to explicitly take into account the role that societal devices play in aligning the strategic choices of agents in one direction or another. This is the role of the salient public proposition in the domain of the game. In other words, strategic and linguistic presentational considerations are mutually complementary for institutional studies. This section provides a simple preliminary framework for the historical and comparative narratives that will be presented in the following sections.

First, consult Fig. 1 in the space spanned by the horizontal individual–collective dimension and the vertical action–cognition dimension.[1] In this space, the four cells, representing (B) individual beliefs and preferences (what philosophers refer to as the individual intentionality), (S) strategic choice actions, (R) recursive (stable) pattern of play, and (P) public representations (by formal and informal rules), are arranged and linked clockwise. Classical game theory presumes that all players somehow have complete knowledge of the structure of the game (in the form of common prior knowledge), from which they can infer the others' strategies, derive their own optimal strategies (S) based on their beliefs and preferences (I), and join together to implement a Nash equilibrium state of play (R). Some scholars have identified institutions as regularities of social behavior, thus achieving a Nash equilibrium (e.g., Schotter, 1981).

---

[1] This figure is adapted from Fig. 1 in Aoki (2001, 2011). Another revised version is used in a modern restatement and interpretation of Hegel's theory of *Recht* and institutions by Herrmann-Pillath and Boldryev (2014).