

Evolution of Institutions

INTRODUCTION

The powerful influence of the writings of Charles Darwin changed the definition of the word “evolution.” Prior to Darwin, the word was a relatively unpopular synonym for the word “development.” Developmental concepts had been used in numerous descriptive hypotheses from Vico and Condorcet to Hegel and Comte.. These studies were more celebrations of various “stages” of human progress through assumedly productive learning than predictive or explanatory analyses of the developmental process. A similarly non-rationalized optimism was found in Lamarck’s influential work on animal development through inheritable environmental adaptations. Darwin’s theory burst these and related bubbles by arguing that the relatively fit have survived regardless of whether progress or retrogression has taken place. Nothing, not even divine planning, provided a better explanation of the observable characteristics of natural organisms. By the end of the 19th century, then, “evolution” came to predominantly signify a process of development in which a biological or social characteristic becomes more or less prevalent in the population depending on its ability to enhance its possessor’s survival.¹

The following discussion accepts the newer definition and thereby concentrates on predictive discussions of the developmental process and its realized outcomes.

¹ Note that learning (or, in biology, the pre-Darwinian, Lamarck-emphasized, notion of the inheritance of environmentally acquired characteristics) is not precluded from this definition. Of course, the definition also admits natural selection: A process featuring a large number of initial varieties, a systematic inheritance of the inherited physical characteristics of one’s predecessors, and a greater likelihood of survival to reproduction of those organisms whose characteristics are most suited to the environment. Darwin did not deny Lamarck’s inheritance process. Nor did he discover the process of natural selection; indeed, he admits that there were several late 18th century antecedents, including the inexorable struggle for existence appearing in Malthus’ Essay on Population.

Natural selection was first employed in a poem by Empedocles to similarly counter divine explanations of the characteristics of various animals, including humans. Only fragments of the poem remain, but it was such a popular theory that Aristotle critically reviewed it. Aristotle did not see that the same argument could be used to explain the physical laws. Thus lacking an appropriate physical theory, he could not eliminate his prime mover as the primary cause of all observed order. Once his order-generating prime mover was admitted, Aristotle considered natural selection to be superfluous. He also added, in rather startling anticipation of 20th century anti-Darwinian thought, that our failure to observe any record of a continuum of species lends casts doubt on the sufficiency of natural selection as a force generating the observed variety of species in nature.

ROOTS OF A MODERN THEORY OF INSTITUTIONAL EVOLUTION

Like the modern theory of biological evolution, the modern theory of institutional evolution was born as a reaction against popularly held theories of rational planning. Its first articulate advocate was Edmund Burke, who was not impressed with the “Enlightened” political theories underlying the French Revolution. Burke strenuously argued for respecting the fact that France’s survival and emergence as perhaps the richest state in Europe was evidence for the efficacy of her implicit constitution. Even though it was practically impossible to rationalize this desirable outcome, Burke argued that it was not in the interest of France to overturn the pragmatic, piecemeal, trial-and-error process that had created France’s institutional inheritance and political-economic dominance. Many economists endorsed this argument, which became the cornerstone of Austrian institutional conservatism through the late-19th century influence of Karl Menger and the early 20th century works of Fredrick von Hayek, Ludwig von Mises, and Joseph Schumpeter. All of these Austrians followed Burke in criticizing grand social reforms and praising the “spontaneous order” created by individualistic decision processes.

These Austrian institutional theories against reforming basic institutions with reason-based theories imply a conjecture that a social-evolutionary equilibrium both exists and is Pareto optimal. Remarkably, modern game theory has developed to where now, over two hundred years after Burke’s original argument, we are able to establish, at least under a set of sometimes-reasonable assumptions, the veracity of this Austrian conjecture.

EXISTENCE AND EFFICIENCY OF SOCIAL-EVOLUTIONARY EQUILIBRIA

The problem at hand induces us to consider a set of societies, or n -person non-cooperative games, in which the individuals each experiment with a wide range of strategies. All individuals, or their replacements if they should die, adopt new strategies as a result of experience or past observations on the payoffs in dealings with other players. These strategy changes satisfy “payoff-positivity.” In other words, whenever a strategy generates an-above average payoff, whether because of learning or selection, the proportion of similarly situated individuals adopting that strategy will increase.

Since we anticipate the achievement of unconstrained social optimality, the process must generally admit experimentation with all possible strategies. To achieve this, a significant-random-variation-producing process is introduced in order to generate

sufficient strategic experimentation. But if excessive random variation occurs, even a most-fit organism will practically never represent a significant part of the population. The way to handle the problem is to have environmental stress increase the random variation rates and environmental success reduce these rates. Thus, following a period of social stress and experimentation, after which individuals come to unquestioningly accept a particular institution, little random variation will occur. In other words, as an organism or institution matures and establishes a successful track record, random variation rates will steadily decrease. Although some random variation is required if the organism is to be able to adopt to future shocks, as long as these external shocks approach zero, it is natural to allow random variation rates to also approach zero. The pioneering paper of Foster and Young introduce this latter assumption, albeit in a highly simplified form and under very simplifying conditions, to generate the first modern theorem demonstrating the convergence of an evolutionary equilibrium to a Nash equilibrium. Weibull has subsequently generalized this theorem to environments suitably general to fit our discussion. Although Weibull's convergence result requires asymmetric environments (e.g. individuals have different roles or select their strategies at different times) and individuals who are never indifferent between actions, the strategies in his model asymptotically converge (meaning that the strategies will not cycle) to Nash strategies.

Asymptotic convergence is practically important because it speeds up the path to equilibrium. (Cycles and our variably randomized strategies could even indefinitely prolong a society's search for an equilibrium.) When dynamic paths are slow, an initial equilibrium target is very likely to have significantly shifted before the process even even approximates it.

Of course, Nash equilibria are generally numerous and inefficient. However, our context here is an entire society, where there is an order-preserving ruling class whose members each issue committed reaction functions to inferiors in a highly asymmetric social hierarchy. These ruling-class commitments define the "institutions" that the rest of the society lives under.

Ruling out indifference between actions, which we have already done to satisfy the conditions of Weibull's convergence theorem, there is one and only one static equilibrium, and it is Pareto optimal (Thompson-Faith). The reason for this static efficiency is simple. Suppose that the static equilibrium (a very special Nash equilibrium) were not Pareto optimal. Then the top member of the ruling class in this hypothesized equilibrium would increase her utility by committing herself to a reaction function of the

following form: “I’ll substitute my part of the Pareto-superior allocation for my hypothesized equilibrium action if everyone else does; otherwise I’ll do what I was doing in the hypothesized equilibrium.” The others in the ruling class will similarly enhance their utilities by following with equivalent statements. The reason these utility enhancements arise is that the non-ruling class members will then rationally choose their appropriate actions and thereby move the society to the Pareto superior allocation. So the strategy of the top member of the ruling class in the hypothesized equilibrium is not a utility-maximizing strategy and the hypothesized equilibrium cannot represent a genuine equilibrium. The genuine static equilibrium must therefore be Pareto optimal.

Note that the above reasoning, originally produced under conditions of complete information about the preferences of others, obviously does not change when we replace the known utilities described above with objectively expected utilities and define Pareto optimality in terms of objectively expected rather than realized utilities.

While the Foster-Young assumptions on the nature of random variations are overly simple and the corresponding convergence theorem is not robust to some reasonable statistical generalizations (e.g., Kandori, Mailath, and Rob, and Fudenberg and Harris), it is difficult to relate the corresponding non-Nash (“risk-dominant”) equilibria to either social equilibria or informationally constrained Pareto optima. Although such an exercise will have await future discussions, a plausible conjecture would be that the more informationally rich process would similarly convergence to a social optimum under suitably generalized definitions of social equilibrium and uncertainty-constrained social optimality.

APPLICATION OF THE SOCIAL-EVOLUTIONARY OPTIMALITY THEOREM

1. *Social Darwinism.* Applying Darwinian selection to an entire society, and correspondingly arguing for the efficiency of a social-evolutionary equilibrium, has a shady past. The first application was by Herbert Spencer, a sociologist who, years before Darwin’s “Origin of the Species, began pioneering a highly influential intellectual movement later called “Social Darwinism.” Spencer was so impressed with the social-evolutionary equilibrium and the selection process that aided in it its achievement that he regarded every attempt to help the weakest adults as an unfortunate delay in the achievement of an ideal society. If a society’s least productive adults starved in the cold, it was a good thing because it hastened our move to a productive long-run equilibrium. Of course, the social-evolutionary optimality theorem has no such implication.

Depending on human sympathy and the costs of social insurance, the efficient equilibrium that the society is approaching may be extremely compassionate. Moreover, even if the long-run equilibrium lacks both sympathy and social insurance, there is no apparent externality to suggest that the selection process leading to the equilibrium is overly slow.

Spencer is actually the first in a long and crowded line of “cultural evolutionists,” non-economists who generally lack the sophistication to deal with the normative aspects of their subject and whose economic errors are too numerous to discuss in a mere encyclopedia entry.

An economic journalist, Walter Bagehot, subsequently adopted a Darwinian view of international competition and thereby founded the “Struggle School” of sociology. Here, since the beginnings of society, there has been a survival of the fittest occurring in a hypothesized race in which the militarily strongest state eventually devours the others. Besides ignoring the ability to form alliances and possible diseconomies of scale, Bagehot’s argument, like Spencer’s, ignores the possibly excessive short-run costs of competing for the conjectured long-run gain. The argument was nevertheless used to somehow rationalize British imperialism.

Finally, early in the 20th century, a Social Darwinist argument for eugenics, or “Reform Darwinism,” arose. Like the other forms of Social Darwinism, this argument ruthlessly disregards the present on the basis of a hypothesis the long run will be dominated by states with a superior kind of people. Even if the conjectured long-run benefit were correct, there is no reason that a society would want to pay the costs to work to achieve it. Like the other forms of Social Darwinism, no dynamic failure is identified that would justify the hastening the achievement of the hypothesized equilibrium. The unjustified eugenics of Hitler’s Nazism was, of course, a substantial motivating factor in WWII. The fact that the Nazis lost has fortunately given eugenics, and Social Darwinism itself, such a bad name that the various postwar Social Darwinist movements have garnered but few respectable supporters.

Fortunately, professional economists have rarely adopted Social Darwinism in any form.

2. *Applied Austrianism: A Preliminary Inspection.* The most frequent application of the social-evolutionary optimality theorem by economists is, as we have indicated, extreme skepticism with respect to theory-based arguments for basic social reform. Although, logically, a novel theory might improve things, the Austrians and their

optimality theorem are pointing to the high opportunity cost of theory-based reforms. Nevertheless, since almost all theory-based social reforms are reversible experiments, it is difficult to come up with an empirically persuasive Austrian argument. Moreover, any Austrian policy application is necessarily a negative one: It is impossible to use the theorem to significantly reform social institutions. For all institutions are endogenous in the model and rapidly evolve toward efficiency.

A more general, inefficiency-generating, evolutionary model is therefore necessary in order to generate positive policy applications.

A MORE GENERAL EVOLUTIONARY MODEL

1. Ideology. Recall that objectivity was required of the learning process that enabled the ruling class to select institutions that converged to a Pareto optimum. How would members of a ruling class, whose individual utilities increase with the efficiency of the institutions they select, become non-objective in evaluating alternative institutions? The answer is that their teachers are not objective. Why would teachers be non-objective? The answer is that the teachers have formed a unified intellectual cartel that collectively biases the information that they disseminate in a direction that increases the demand for their services as teachers and government advisors.

Now the normal activities of many teachers include cultural training, which creates in students the values that make them suitable for ruling-class positions by inducing them to carry out whatever their utility-maximizing commitments happen to be. Such training requires teachers to adopt various exaggerations, which in turn require an intellectual cartel of teachers, or “school,” to protect their exaggerations from the objectively justifiable skepticism of maverick teachers. Religious training is an example. But there are many others. Good business schools teach responsible business values, values that enable business leaders to attract workers, consumers, and investors. Economics and related policy subjects represent a significant exception in that ruling class evaluations of alternative institutions must be objective if efficiency is to be obtained. Whether or not a school’s subjects require exaggerations in order to efficiently supply the market, as long as the various schools compete, whatever exaggerations they do teach can be counted on to generate values that maximize the utilities of the students.

However, if the schools within a field of knowledge combine into a single cartel, a professional organization with its own internal hierarchy and therefore joint-utility-maximizing organizational strategies, then the benefits of the members of the future

ruling class will be traded-off against the benefits of the members of the profession. We should then expect the institutional evaluations of the students to be biased in a teacher-serving direction. When this happens, in other words, when the ruling class is captured by an “ideology,” then the objective learning condition for an optimum is no longer satisfied.

While a Pareto optimum cannot be expected, it would be difficult to apply the resulting evolutionary model if ideology led to an incoherent, essentially unstable, society rather than an alternative, rapidly achieved, “ideologized” equilibrium. The existence of such an equilibrium can be established by introducing “vital institutions” into the environment. Vital institutions, such as adequate national defense expenditures, do two things. First, they greatly hasten the dynamic process by rapidly eliminating the entire set of inherently inefficient states that are incapable of generating them. Second, although ideology works by leading the ruling class to violate payoff-positivity by inducing them to reject objectively profitable institutions in favor of ideologue-benefiting institutions, no substantial bias can survive with respect to the choice of vital institutions. Hence, there are always **some** strategies for which payoff-positivity holds, some strategies such that relatively high payoffs imply increasing frequencies of the strategies. This is important because the general Weibull theorem that we have been using states that a Nash equilibrium will also be asymptotically approached if only **some** of the equilibrium strategies are payoff-positive. Hence, acknowledging the existence of vital institutions insures a rapid convergence to a static equilibrium despite its ideology-created inefficiencies.

2. Basic Applications. Ideologies can be classified into two types, those that do not attack vital institutions and those that do. The former ideologies, exemplified by law and political science, are pragmatic in that the ideologues proceed by empirical observation on real world experiments with various institutional reforms. Such ideologies quickly eliminate any idea that attack a society’s vital institutions because, despite the potential universal character of their ideas, it is surely not in their interest have one of their supporting societies fail. Such ideologies can therefore become “deeply rooted” in the states that adopt them. Thus, the basic forms of ancient Greek democracy and of ancient Roman law represent the founding political and legal ideologies of the modern West. Now when several ideologized nations militarily compete, those whose profession-serving ideas work to **most severely bias** the state towards military effectiveness are those that will win the competition for ultimate acceptance in the

ideologized evolutionary equilibrium. Such institutions can thus be expected to be grossly inefficient.

The way to eliminate such “deeply rooted” ideologies (*e.g.*, the militarization of youth) is to counter-educate the ruling classes, making them aware of the nature and cause of the gross legal and political inefficiencies that surround them. In the process, the society would eliminate the professional associations generating these ideas, leaving an environment in which domestic intellectuals compete by producing ideas that benefit the state rather than their professions.

Such idealistic reforms would represent great victories for insight over evolution.

Economic ideology, always noted for its abstract, theoretical, boldly reforming, character, has typically come to attack the vital institutions of its society by reforming institutions that, unbeknownst to the economists, have been vital to their societies. The result is that economics has been a perishable ideology in comparison to the more pragmatic fields of politics and law. Thus, ancient Greco-Roman economic ideology, by following the monetary theories of Plato and Aristotle, led the Ancient Roman empire to a 3rd century monetary reform that permanently eliminated the Empire’s ability to issue seignorage-generating money, not understanding that the reason a government produces such money in the first place is to finance vital warfare. So, while states that retained Greco-Roman politics and legal ideologies were able to survive the dark ages, those retaining their economic ideologies did not. Similarly, soon after the rise of late Renaissance ideology, which elevated artists over merchants and thereby attacked guild entry restrictions in the name of domestic free trade, began to “succeed” in eliminating guild entry restrictions, one by one, the states lost both their independence and their internal dominance by economic ideologues. Again unbeknownst to the free-trade ideologues, these entry restrictions had long been a vital source of guild military support during defensive emergencies. So early modernity witnessed a sharp shift toward Germanic pragmatism and mercantilism. The reason mercantilism was efficient solution was that it used high tariffs to appropriately internalize the externality that consumer durable imports have on a region’s defense cost. These tariffs have indeed been vital to countries that face exceptionally high defense-externalities because of internal as well as external military threats. Led by the Physiocrats, the first organized school of economists in the modern period, the Enlightenment eliminated simple pragmatism, ideologizing its unfortunate victims into abandoning their mercantile protections. This leads us to the French Revolution and Mr. Burke, who laid the foundations of the ideology-ignoring

Austrian argument.

Hence, rather than simply continuing or detailing the above time-line (which is done in Thompson-Hickson), we now take the opportunity to view Austrianism in historical perspective.

3. *A Critique of Applied Austrianism.* Because the social-evolutionary optimality theorem, and applied Austrianism as well, fail to consider ideology, Austrians have failed to see that theories of the perverse nature of certain evolutionary processes may be useful in, and sometimes even necessary to, the elimination of evolutionary traps..

First consider Burke and Menger. Both had actively participated in a generation-long series of expanding free-market-ideology-based economic reforms. Then, in the face of a growing popular realization of the high costs of these policies, and correspondingly sudden move against them, they strenuously appealed to the benefits of gradualism to argue for resisting the sudden reversals. So, in retrospect, rather than appropriately pleading for de-ideologization, Burke and Menger worked perversely to **oppose** the appropriate operation of efficiency-generating, economically de-ideologizing, evolutionary processes.

Thus, although Burke ostensibly opposed the French Revolution because of its sudden imposition of an abstract theory on an efficient evolutionary equilibrium, the Revolution he was decrying was actually beneficial because it was **against** the theory-extolling ideologues that had, for 20 years, been capturing the French aristocracy and creating excessively laissez faire policies.

Menger's approval of the free market ideologization that had been steadily growing in France and Austria during the 1850's and early '60's led him to ignore the fact that their late '60's military failures were attributable to their extreme free market policies. So, when he saw the pragmatic German reaction to the policy failures, he reacted just as did Burke, with an appeal to gradualism that ignored the fact that the German reaction was actually a conservative movement back to an earlier, long evolved, equilibrium. As in the case of Burke, it was **appropriate** that the sudden learning of the failures of a recent ideology led to a sharp reaction against that ideology.

Hayek, Mises, and Schumpeter vociferously reacted against the egalitarian policy shocks that followed WW's I and II. Such egalitarian shocks are actually quite appropriate reflections of the domestic gratitude felt for their sacrificing masses after an expensive war fought largely by citizen soldiers, the apparent "redistributions" effecting a

vital reward for successful wartime sacrifices. Because such gratitude payments -- although a historical regularity in Western Europe and a result of efficiently evolved political institutions -- are not part of economic ideology, these 20th century Austrian economists perversely considered them to be devastating **attacks** on the long-evolved distributional equilibrium and incorrectly predicted dire consequences.

Summarizing then, social evolutionary models ignoring the profound effects of ideology on the nature of evolutionary equilibria lead to perverse empirical beliefs. In particular, while ideology-ignoring models lead to extreme skepticism with respect to the role of theory in reforming our deeply rooted political and legal institutions, the serious inefficiencies that have predictably evolved in these long-ideologized fields can only be eliminated with a theory-based victory of insight over evolution. And while ideology-ignoring evolutionary models allow economists to indulge a cartel-distorted worldview that artificially increases the demand for their advice, ideology-recognizing economists admit the frequent disasters created by established economics and appreciate the ability of their highly evolved governments to solve some important economic problems without their help.

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