Optimization, Path Dependence and the Law: Can Judges Promote Efficiency?

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Abstract

The thesis that judges could (voluntarily or not) promote efficiency through their decisions has largely been discussed since Posner put it forward in the early 1970s. There nonetheless remains a methodological aspect that has never (to our knowledge) been analyzed and that we address in this paper. We thus show that both promoters and critics of the judge-and-efficiency thesis similarly use a definition of optimization in which history, constraints and path-dependency are viewed as obstacles that must be removed to reach the most efficient outcome. This is misleading. Efficiency cannot be defined in absolute terms, as a "global ideal" that would mean being free from any constraint, including historically deposited ones. That judges are obliged to refer to the past does not mean that they are unable to make the most efficient decision because constraints are part of the optimization process; or optimization is necessarily path-dependent. Thus, the output of legal systems cannot be efficient or inefficient *per se*. This is what we argue in this paper.

Keywords: Judicial decision making; Historical inertia; Inefficiency; Adaptationism; Spandrelism; Global ideal; Rationality; Lock-in institutions.

JEL classification: B40, B52, K00

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1. Introduction

As attested recently by the debate around "legal origins" (e.g., Glaeser and Shleifer, 2002; Roe, 2006; La Porta, Lopez-de-Silanes and Shleifer, 2008), judge-made law systems are viewed as the most economically efficient ways of organizing justice and the provision of legal rules. It was actually one of the first, and most controversial, claims made by Richard Posner when he launched his "Economic Analysis of Law" in the early 1970s[2]. Besides this systemic aspect, Posner also had a complementary argument about judicial decision making and the behavior of judges. He argued that the *Common Law*[3] is efficient because judges (at least implicitly) adopt an economic reasoning that leads and allows them to make decisions that promote an efficient allocation of resources[4].

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[2] Posner wrote: "[t]he common law method is to allocate responsibilities between people engaged in interacting activities in such a way as to maximize the joint value, or, what amounts to the same thing, minimize the joint cost of the activities" (1972 b, p. 98).

[3] We do not focus on legal orders *in general*, but more specifically on common law systems (essentially because discussions are about those systems). This does not necessarily mean that our reasoning could not apply to other types of legal systems (implicitly, because our approach is methodological and relates to the role of constraints in a process of optimization, it could). However, whether the statement would also be valid for civil law or Muslim legal systems remains an open question and a question that is far beyond the limits of this paper.

[4] Posner (1972 a) grounded his demonstration in the analysis of the decision made by Judge Learned Hand in *United States v. Carroll Towing Co.* that was, according to Posner, based on a comparison of costs and benefits. Basically, one of the arguments made by Posner about efficiency and judicial decision making was that efficiency was a value, a norm that guides judges in their work. He wrote, for instance, that "[i]n searching for a reasonably objective and impartial standard, as the traditions of the bench require him to do, the judge can hardly fail to consider whether the loss was the product of wasteful, uneconomical resource use. In a culture of scarcity, this is an urgent, an inescapable question. And at least an approximation to the answer is in most cases reasonably accessible to intuition and common sense" (1972 b, p. 99).

But what is efficiency? This is a very controversial subject on its own and it would be impossible to discuss all the definitions that are "available". Stated briefly, in this paper, we follow Posner's definition: a judgement, an action, or a law enhances efficiency if it enhances *wealth* — rather than utility. Thus, we associate efficiency to wealth maximization where wealth corresponds to "the value in dollars or dollar equivalents [. . .] of everything in society" and is measured by "what people are willing to pay for something, or if they already own it, what they demand in money to give it up" (Posner, 1979, p. 119). In effect, Posner uses the Hicks-Kaldor —rather than the Pareto — criterion to characterise an optimal allocation of resources: Wealth is maximized if those who are made better off by a change can *compensate* those who are made worse off. By contrast, those who work on the economic efficiency of legal systems did not explicitly give a definition of their conception of efficiency.

Very rapidly too, it can be noted that what we propose to name the judges-and-efficiency thesis attracted the attention of scholars who, alternatively, tried to prove it right or to prove it wrong, but the debate did not settle with a definite conclusion. About 40 years later, scholars seem to be clearly split between two camps. One is a total rejection of the judges-and-efficiency thesis— i.e., there is no such thing as an efficient legal system and optimization through legal decisions is impossible. The other is a *partial* endorsement of the thesis— i.e., the legal system is inefficient but is improving, tending to efficiency but not reaching it. Thus, if the situation is currently better than it used to be, the debate does not seem to have reached a precise and definition conclusion to the question of the contribution of judges to the efficiency of a legal system. And, to be clear, it is not our purpose to settle this ambitious question in the paper. We do not

either wish to defend nor to criticize the judges-and-efficiency thesis. Our objective is rather to propose a methodological contribution to the debate by focusing on and discussing the nature of "efficiency" in these works. We thus want to show that those who criticize it and also, very surprisingly, those who defend it use a very misguided view of optimality. Our purpose is therefore to argue that debate about optimization and the law cannot proceed forward unless participants of the debate become clear on the nature and meaning of rationality and, in general, optimization. For terminological clarity, this paper uses the phrase "rationality" as one type of optimization; other types include natural selection.

Our claim is the following. The defenders and critics of the judges-and-efficiency thesis share the same assumption. If inefficient rules exist, they must be a proof that the optimization approach is, at first approximation, futile for the study of the legal system. The assumption, put differently, regards the existence or survival of inefficient rules as the hammer that nails the coffin of the optimization approach. We shall show that such an assumption retains a misguided view of optimization—where optimization entails supposedly the production of a "global ideal," i.e., an ideal set of legal institution that would be suitable in the abstract sense, i.e., abstracted from consideration of the particular constraints. To wit, the quest after the global ideal entails that one would, at first approximation, accord the optimization approach attention only if decisions of judges entail no constraints—i.e., as if the judges can be optimizing only if not restricted or restrained by historical particular circumstances. And the fact that optimization is logically impossible without constraints, and the fact that hardly any society enjoys a fairy-tale land of constraint-free economies, such a global ideal—i.e., constraint-free

decisions—is a non-starter as a criticism of the rational choice approach to law.

Put differently, we argue that no optimization problem can escape constraints—where constraints by definition is "scarce resources" that is deposited historically, i.e., from the past. Such constraints include the environment, in terms of the quantity of resources and the relative prices of such resources, as well as the ability of the productive agent as measured by human capital, health, physical capital, and social capital (such as trust or resilience of the social network).

We make what appears to be a strong thesis: No society can escape constraints, and its regret about existing constraints is either an expression of naivety or an expression of a revolutionary zeal to change institutions in order to set up in their place an imagined, more efficient constraints. So, even after a revolution, and after the introduction of a set of innovative laws, one still has to deal with constraints. Therefore, any social situation is necessarily an economic one: decisions have to deal with constraints. There is a little room for romanticism—no matter how revolutionary or how innovative one's program of institutional change is.

Thus, even when we pay attention to creativity, revolutionary zeal, and innovation [Khalil, 2007], the creative agent must still optimize. To assert otherwise, one would be a victim of the "global ideal" myth, as explained below. Even the innovative agent must embrace the given constraints. As much as the innovative agent changes some constraints, the agent has to deal with deeper constraints, on one hand, and deal with the revolutionary ones that the agent is instituting, on the other. Constraints, again, cannot be ignored—they express the means to action that are by definition the product of precious actions (the past) and consist of time constraints, resources, and ability. There

would be no meaning to rationality or optimization without constraints or scarcity. In fact, to characterize a rule as "inefficient," one must be appealing to particular constraints under which the legal rule is outdated or dysfunctional. This implies that optimization, by definition, cannot be called pure or impure—if "pure" means that it is constraint-free. At the theoretical level, it is impossible to have constraint-free optimization. This would be in a scarcity-free world—and if such a world exists, there would be no need for legal rules—not to mention a need decision making *per se*.

Our argument has its roots in a critique of the *spandrelist* theory, a theory advanced by Stephen Jay Gould and Richard Lewontin, which we discuss in **section 2**. Spandrelists use the example of the Panda's "thumb" as a proof that evolution cannot produce an optimal hand, where the thumb is situated efficiently in the palm, as it is the case of the primate thumb. **Sections 3 and 4** clarify our point: optimization is necessarily riddled with historically deposited constraints, i.e., evolution of institutions and the legal framework must be path-dependent. **Sections 5 and 6** show how these two forms of optimization apply in the evolution of law or, more precisely, how they are used by law and economics scholars either to justify or to criticize the efficiency of the evolution of law. We thus show that, either in a framework in which optimization is modeled as a consequence of rational choice or as a result of natural selection, path dependence and historical constraints are endemic of the process.

2. The Panda's thumb: A Critique of Efficiency

Many of the papers that criticize the possible efficiency of legal systems defend their claims by arguing that legal systems are subject to excessive historical inertia—where

the term "inertia" is used interchangeably with "path dependence" and "lock-in" institutions. The apotheosis of historical inertia in economics is the purportedly inefficient QWERTY keyboard, while the apotheosis of historical inertia in evolutionary biology is the supposedly inefficient Panda's "thumb".

The parallel between economics and biology is not artificial. Indeed, the two examples (the QWERTY keyboard and the Panda's "thumb) are frequently used in the same papers to prove the importance of history as a constraint on the evolution of legal systems and the irrelevance of the idea that these systems could be economically efficient. For instance, Hattaway (2001, p. 164) states that legal rules are the "(l)egal equivalents of the imperfect panda's thumb or the inefficient Qwerty keyboard— evidence of the rule's path of development". For his part, Roe (1996, p. 658) quotes the same example to sustain his claim that "(b)iological evolution is ... imperfect, based on preexisting structures that adapt to survive, not to be perfect". A reference can also be made to Elliott (1986, p. 306) who states that "evolution is not infinitely malleable" and that "(e)volutionary processes work by modifying existing structures". And such ideas are used to argue that Common Law is also riddled by historical structures that make the law greatly inelastic, which is taken to mean "inefficient," with respect to changing conditions or, what economists call 'incentives'. However, and this is where we depart from the standard argument on the (in)efficiency of Common Law and judge-made law: the panda's thumb is no more an instance of the inefficiency of the evolution of biological tools than the QWERTY keyboard, even if entrenched, is an example of the inefficiency the evolution of technological tools. While evolution may be burdened by historical structures and, hence, "not malleable", it nonetheless remains efficient.

To focus on the giant panda, as detailed elsewhere (Khalil, 2011a), let us stress that it has a unique biological tool that is essential for its daily production activity. While the tool functions as a "thumb"—anatomically it is not. It is an enlarged wrist bone, called "radial sesamoid," that is situated on the other side of where the "proper" thumb is located. The out-grown wrist bone is supported with a muscle that has been re-arranged so that the animal can manipulate the out-grown wrist bone as a "thumb". This manipulation allows the animal to grasp bamboo shoots and strip off the bark. Actually, bears and raccoons, the panda's closest relatives, have also out-grown wrist bone, but not to the extent found in the panda. Figure 1 illustrates the contrast between the out-grown wrist bone in the giant panda and a grizzly bear.
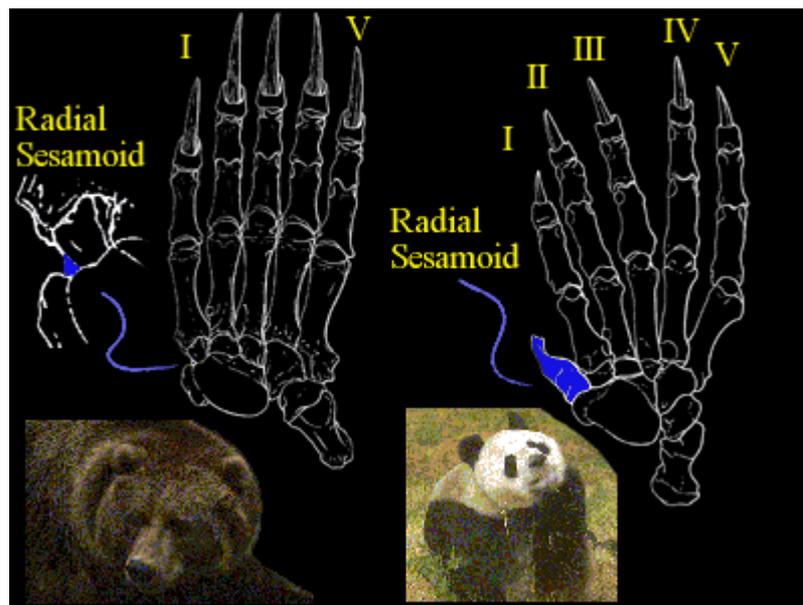
Figure 1: The Panda's Sixth "Digit"

(source: http://godlessliberal.xanga.com/704297531/unintelligent-design/)

The Panda's "thumb" actually functions as a sixth "digit", and it is an awkward one. It seems that it has been "added" to the basic plan of the forelimb, which specifies only

five digits, as an "after-thought", Now, according to Gould (1978), if evolution were efficient, the innovation (or what biologists call "mutation") should have been "thought out" thoroughly. To be more precise, given that the panda needs a thumb, an "efficient" innovation should have encouraged the specialization of one of the already existing digits as a thumb as it is the case with humans. Thus, the conclusion that Gould, and others too, draws from the instance of the panda's "thumb" is that evolution is *not* efficient. To wit, Gould has documented throughout his other essays how nature is rarely "efficient". He shows how nature selects tools (traits) that are usually clumsy, i.e., fall short of what he considers to be a *divine* (i.e., "efficient") plan. For Gould, only the divine plan is optimal (efficient). Gould argues that Charles Darwin himself was not only aware of but also accepted the supposed inefficiency of nature when Darwin (1984) studied the fertilization of orchids by insects. In effect, Darwin notes how fertilization takes place by improvising new functions to historical structures, existing pedals, which were never intended to be used for fertilization.

Gould (1987) extends his analysis to argue that also human tools evolve in a non-optimal manner. For Gould, humans, similar to nature, do not choose according to optimal (i.e., divine) plans: both simply work with the products of history, i.e., existing structures, by re-arranging existing parts to produce a tool that is functional but also that is almost invariably clumsy. More boradly, Gould considers that living entities in general evolve in a clumsy manner: they manipulate and rearrange the old parts of existing structures, and re-employ them in new functions, rather than start afresh with more "efficient" (i.e., ideally suited) structures. Nature fail to act like God: it does not take its time and re-design from scratch new structures that are better suited for the new

functions. For instance, once mammals took flight, i.e., as best illustrated by the bats, nature did not take its time to re-design for the forelimbs properly. So bats are not ideal flyers as the case with birds.

Thus, the role of history in evolution by natural selection is meant by Gould as a critique of adaptationism. Although adaptationism is a broad and sometimes vague perspective (see for instance, Ghiselin, 1966), it can be defined, at first approximation, as the view that natural selection is the most important factor in evolution—whereas natural selection entails that evolution is largely an optimal process. Gould's critique of adaptationism came to be commonly known as "spandrelism" after Gould and Lewontin (1979; see also Gould, 2022) had explained how the spandrels of San Marco cathedral in Venice are well-entrenched. In their joint work, Gould and Lewontin assert the relevance of history in evolution by natural selection by arguing that structures are not eradicated once they are proven to be non-useful; they are rather re-fitted and re-configured awkwardly for new functions. And therefore, historical structures limit the innovations that one or evolutionary selection can introduce. But, maybe more importantly, Gould and Lewontin derived from the importance history plays in evolution that innovations could never be "efficient"—they are rather limited by historically inherited pathways or constraints. They critique the adaptationist program for which "the near omnipotence of natural selection in forging organic design and fashioning the *best of all possible worlds*" (Gould and Lewontin, 1979, p. 584; emphasis added)[5].

The critique of Gould and Lewontin's of adaptationism can become complicated in

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[5] Beatty and Desjardins (2009, p. 232) note that Gould and Lewontin use the expression ''the best of all possible worlds'' 5 times in their article.

two other ways (see Beatty and Desjardins, 2009). First, the order of the succeeding environments in the past determines which structure is selected and, hence, which structure becomes more fundamental historically. Second, the order of random mutation in the past has equal importance in explaining what structure was selected in the past. But these two questions of order merely introduce the issue of contingency and chance, which is never denied by the natural selection argument. Actually, the natural selection argument depends on taking the environment as contingently given and taking the genetic material as arising stochastically. Therefore, by pointing out that environments and genetic material are contingent does not undermine the adaptationist (natural selection) argument: namely, current features are selected to fit the given environment, irrespective of how contingent is the past. Thus, the spandrelist critique only amounts to pointing out that there are spandrels, i.e., features that actually have no fitness value, i.e., they are simply the by-products of inherited structures.

As shown below, the spandrelist view of evolution actually expresses a misunderstanding of the nature of optimization in evolutionary biology. With respect to the "thumb" of the panda, Gould cannot assert that it is "inefficient"—simply judging it from the point of view of God or a global ideal. By definition, no global ideal can actually exist—and one may add, even in the mind of God. To hold the feasibility of some global ideal amounts to ignoring the role of costs and constraints in evolution—a situation where one cannot even provide a bare explanation of traits, tools, and institutions such as the legal system.

3. Optimization *à la* Natural Selection

Is the panda's "thumb" a good illustration of the limits of optimization? Does the persistence of structures, body plan, path dependence, or historical inertia means that newly evolved practices, rules, and behavior are necessarily inefficient? These questions have stirred great debates in evolutionary biology (Schwartz, 2002). These questions have crucial implications for economics. In particular, human institutions, and more specifically, legal framework and rules are greatly constrained by structures handed down by history. Does this mean that institutions and legal rules are inefficient—i.e., were capable to escape the optimization criterion? If so, as a corollary, the intervention of a central planner is necessary to ensure efficiency.

To answer the question, we have to submit the spandrelist agenda to a closer scrutiny. This requires a study of the nature of optimization in evolutionary biology. As mapped above, the debate concerning optimization in evolutionary biology is carried out by two opposing camps: adaptationism, which is spearheaded by Richard Dawkins (1989, 1999), John Maynard Smith, among many others—and spandrelism, which is represented by, for instance, Stephen Jay Gould and Richard Lewontin. As to the former camp, Dawkins (1999, pp. 38-41), e.g., concedes that organisms cannot escape history. He then, correctly notes that the evolution of clumsy re-arrangements of historically deposited structures should not undermine the idea that evolution proceeds via optimization. He argues that evolution is not about the production of some ideal plan.

A closer examination of the nature of optimization shows that the notion of "global ideal" is untenable on logical grounds—i.e., the issue is not a question of practicality, costs of adjustment, or historical inertia arising from transaction costs. The common

critique of the rational choice approach to law, on the ground that it does not attain the global ideal, hence, collapses because the global ideal is non-feasible even if "God" has to set up the institutions.

To demonstrate the point, following Khalil (2011a), let us examine how nature chooses a trait from the set t ($t=\{t_1 \ldots t_j \ldots t_m\}$). The trait can be seen as a biological tool. Each tool requires a corresponding behavior ($b=\{b_1 \ldots b_j \ldots b_m\}$). The trait or tool, and the corresponding behavior, must be chosen in light of the given resource constraints, the set of inputs x. The goal is to produce an end (E). Nature also has to take as given a transformational function, which is usually represented as a mathematical function, which can transform each trait, behavior, and inputs, into a particular end. The transformational function can be called "scheme" (s). The scheme can be seen as a "deeper" or a "higher-grade" trait. But it is not a member of the set t. It is rather the function that transforms each element of the set t to the set of ends ($E=\{E_i\}$):

$$\{x_1 b_1 t_1 \ldots x_i b_j t_j^* \ldots x_n b_m t_m \mid C_j\} \xRightarrow{s_k} E_1 \ldots E_i^* \ldots E_n$$
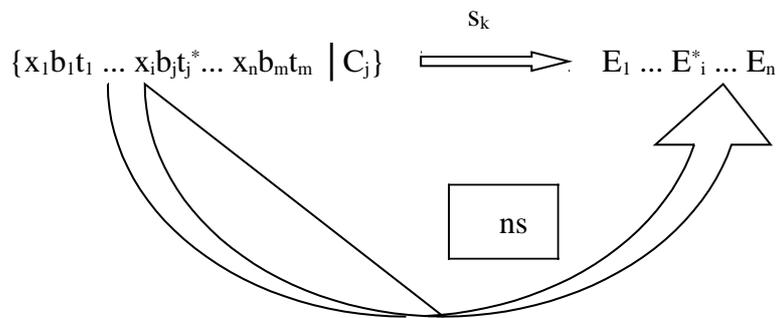
where s_k is a particular scheme among possible many schemes (k=1, ..., o). The scheme can be seen as the historical constraint or structure that typifies the species or higher taxon. As such, it differs from the set of environmental constraints (C) that are external to the structure. While the scheme typifies the set of organisms, C is the set of resources

such as nutrients, predators, climate, and so on.

The scheme is a neutral transformer. It is up to nature to decide which is best tool and associated behavior $(x_i b_j t_j^*)$ to produce the optimal end (E_i^*). This decision is taken in light of the determination of what is the optimal end (E^*). So, while the scheme, the upper arrow, acts as a functional operator for all the elements of the input set, natural selection (ns), the lower arrow, specifies a particular element and ranks it as better than other elements, and hence acts as a relator operator.

The main focus here is to distinguish between the scheme (s_k) and the set of traits (t). While there is only one scheme, the set of traits has many traits. The scheme itself is not subject to selection by nature. It only transforms values from inputs to outputs, and lets nature undertake the selection. But for nature to undertake the selection, there must be a scheme that cannot be simultaneously the subject of selection. This highlights that optimization, by definition, must assume a scheme that cannot itself be questioned or selected when natural selection takes place. Even if God, rather than nature, were performing the optimization, He would not be able to question the scheme—i.e., God has to accept what history has deposited. In contrast to what is usually argued, such acceptance cannot be regarded as a dark spot in the operation of optimization. Rather, it is the nature of optimization: if God or nature does not take the scheme as given, there can be no selection to start with.

This should not mean that the scheme can never be chosen or be the subject of selection. To the contrary, the scheme can be selected--but only when the scheme becomes a member of the set of schemes that are part of the inputs set—and there must be a deeper or a higher-grade scheme that is outside the selection. The deeper scheme,

again, transforms the input values, including the different lower-grade schemes, into output values. So, selection can operate at different levels or time spans, what Eshel and Feldman (2001) call "short-term evolution," which is governed by a fixed set of genotypes, and "long-term evolution," where the genotypes can themselves be subject to selection. In long-term evolution, there must be a deeper grade or design that is taken for granted and cannot be selected. As such, even God has to take the deeper scheme as given. That is, God, similar to nature, cannot escape the upper arrow, the given structure or body plan, and hence has to improvise the re-arrangement of parts in a clumsy manner. So, the notion of some global ideal, taken as if there is no limiting or constraining scheme acting as functional operator, is untenable.

4. Optimization *à la* Rational Choice

Optimization via rational choice is, at first approximation, no different from an optimization process through natural selection.[6] Such similarity between the two kinds of optimization can be demonstrated as follows. Let the agent, rather than nature, choose a particular technological tool from the set t ($t=\{t_1 ... t_j ... t_m\}$). Each tool, as in the case of biological tools, requires a particular behavior ($b=\{b_1 ... b_j ... b_m\}$) with respect to the nutrients or ingredients (x). Likewise, the agent has to make the decision in light of the set of constraints such as climate and market institutions. Each tool, along with the accompanying behavior, are used in conjunction with x to produce, via a transformational function, an end (E). Again, the scheme is a unique functional operator that translates the varied variables into the set of ends ($E=\{E_i\}$):

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[6] Obviously, there are differences, such as the level of change for instance, which need concern us at second approximation only (Khalil, 2009).

$$\{x_1b_1t_1 \ ... \ x_ib_jt_j^* ... \ x_nb_mt_m \mid C_j\} \xquad \overset{s_k}{\Longrightarrow} \quad E_1 \ ... \ E_i^* \ ... \ E_n$$
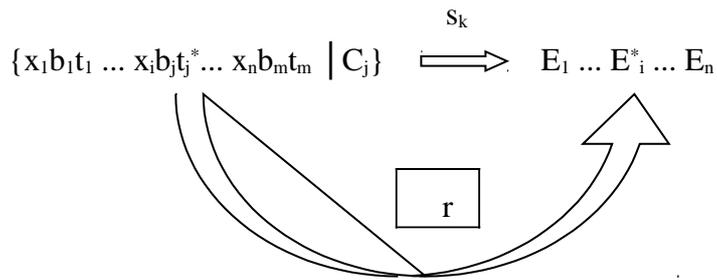
The scheme here again is a higher-grade technology and is not subject to choice, while the variety of lower-grade set of technologies (t) are the subject of choice. The scheme is unique functional operator that defines each output with respect to input. It differs from the relational operator, in this case rational choice, which acts as a relational operator. The relational operator ranks, according to a criterion, the inputs and identifies the best input ($x_i b_j t_j^*$) in light of the best output (E^*i). The relational operator, the lower arrow, cannot choose the scheme under such set-up. The scheme, the upper arrow, is outside the choice set. Again, the technological scheme is what has been deposited by history, such as the QWERTY keyboard, and cannot be questioned as engineers improvise and improve the typewriter.

This should not mean that engineers do not question the scheme. But this requires another set-up, where the scheme is part of the tool set and is transformed by a deeper technology. As such, the engineers can introduce a totally different scheme if justified by the constraints and given the deeper technology. In the case of typewriters, the most appealing and seemingly more efficient alternative to QWERTY is the Dvorak Simplified Keyboard (DSK). According to Paul David (1985), users initially favored the QWERTY keyboard over others such as DSK because the mechanical arms tend to jam less with the QWERTY keyboard than the alternatives. However, the arm-jamming

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problem was minimized in later developments of the typewriter and, in fact, totally eliminated with the innovation of the ball-point typewriter. Still users continued to favor QWERTY over the more obviously efficient DSK. David argues that the reason cannot be efficiency. The persistence of inefficient structures is the outcome of path dependence. Path dependence entails that the old technology or legal framework ensues increasing returns arising from learning-by-doing, which would block the introduction of a more efficient technology or legal framework.

Actually, path dependence turns out to be a more tricky phenomenon to discuss than it could be supposed at first sight. As can be shown by the analyses proposed by Stan Liebowitz and Stephen Margolis of the QWERTY keyboard. First, they have demonstrated that QWERTY is actually a bad example of inefficiency: i the keyboard has simply never beinferior to DSK. Second, even if one uses QWERTY as a stylized example of the persistence of structures, technologies, and legal frameworks that resist replacement for no reason other than historical inertia, even in that case, Liebowitz and Margolis (1994, 1995) continue to argue, QWERTY cannot be used as an example of efficiency or market failure. They provide a useful three-way distinction between three degrees of path dependence:

1. The first-degree of path dependence is the benign choice of standards that have no welfare advantage. For instance, a country can choose one kind of measurement standards or a language that would not make it less or more efficient if it has chosen another set of standards. We ignore this type of path dependence.

2. The second-degree of path dependence is the choice of technologies or legal

frameworks that afford economies of scale. This entails that there would be switch cost that would not be justified by the expected benefit of adoption of new and apparently more "efficient" technologies or legal frameworks.

3. The third-degree of path dependence is the continuous choice of technologies and legal frameworks *despite* the fact that the switch cost is lower than the expected benefits of adopting the more efficient technologies and legal frameworks.

Concerning the second-degree, Liebowitz and Margolis correctly maintain that, if QWERTY is not replaced because of economies of scale, it means that the switch cost is too huge to justify the switch. And such entrenchment is not indicative of market failure, not to mention inefficiencies in general. Even a central planner should not switch to the apparently better technology because the cost of switching, which includes the long-years of re-learning and adjusting, is not worth the benefit.

The above discussion of the difference between the scheme and the set of traits illustrates the second-degree path dependence. It might have been better to have adopted some other scheme in the past. But when one makes a rational choice, one cannot wish for the past to be different. One has to take the existing structure as given. But even whent the existing structure is compared to others, as when one subjects a variety of schemes to choice, the old scheme may continue to be the favourite given the enormous switch cost in light of the expected benefit.

This argument highlights that choice can never be about some global ideal. Any choice has to reckon with constraints, which are ultimately the products of the historical past. Such constraints include all the economies of scale garnered as a result of choice in

the past. So, the phenomenon of path dependence, at least at the second-degree, does not entail inefficiency.

Concerning the third-degree, it clearly entails inefficiency. But Liebowitz and Margolis, and many others such as Deirdre McCloskey (quoted in Lewin, 2002, ch. 11, pp. 16-17), doubt that it exists. When challenged to produce evidence of the existence of the third-degree of path dependence, David (2001b) avoided the particularly tricky question of empirical investigation. Instead, David (2001a) advanced the argument that humans might not choose according to the rationality criterion to start with. For him, humans are rather prisoners of their own habits, what is known as "habituation", That is, humans do not choose their own routines. They rather become habituated to the routines with which they possess.

This line of argument, which follows the approach of Herbert Simon, opens a whole discussion about the nature of action and routine with which agents start. This is not the place to discuss the merit of Simon's line of argument (Khalil, 2012). It suffices to raise two questions: If people are "stuck" with the routines with which they start, is the origin of the primordial or initial routines? That is, why would agents start with one set of routines rather than another set? Further, if agents are prisoners of routines, how come they search for alternatives and actually shed away their de facto routines?

5. Judicial decision making and the efficiency of common law

In the preceding sections, we have shown that optimization *à la* rational choice or *à la* natural selection can proceed only if there are constraints. If there were no constraints, i.e. no scarcity, individuals (either human beings, animals, plants, or firms and

organizations) would not have to make choices, to start with, about the best possible allocation of (non-scarce) resources among alternative ends. In other words, in the absence of constraints, there would be no scarcity and therefore there would be no need to economize resources and no need for optimal choices: any choice would be as good as its alternative.

In this section, we apply this reasoning to the issue of the efficiency of judicial decision making that was proposed by Posner in the early 1970s. The critics of Posner usually point out that judges make inefficient decisions because of the presence of constraints—implicitly meaning that efficiency cannot but arise in the absence of constraints.

To be clear, none of the promoters of judges-and-efficiency thesis — Posner (1972), Priest (1977) or Landes and Posner (1979) — addressed directly the issue of optimization (which necessarily involves constraints) and path dependence. This is not surprising since the concept of path dependence was absent from the literature when Posner and others wrote their first works on efficiency and judicial decision making. It is not before the mid-1980s in effect that the issue of path dependence was identified as discussed above with regard to David's QWERTY example. Certainly, . David eventually conceded to the argument made earlier, writing that "the concept (as understood here) itself carries no necessary implications whatsoever in regard to the existence or nonexistence of 'market failure'" and does not imply "that a decentralized competitive market process can result in a socially inefficient outcome" (*Ibid.*, p. 103)[7].

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[7] To David, the main difference between "path dependence" and "market failure" is that the former concept is "dynamic" and the second "static". Thus, it is "a total non sequitur to assert that the essence of path dependence – a property defined for

However, what still dominates the literature is the fact that the path dependence idea heavily connotes inefficiency or "potential market failure" (Heine and Kerber, 2002, p. 48).[8] In any case, the path dependence idea has proved to be helpful to understand the evolution of law especially with regard to the spontaneous rise of legal orders. Thus, anticipating David's 2007 claim that dependence should be regarded as "foundational" and essential for any social science, including the question of efficiency of legal systems, Hattaway (2001, p. 164) argued that the "path dependence theory to the law thus provides new insights into the course and pattern of legal change in a common law system ... offering a corrective to the evolution-to-efficiency claims that have dominated this scholarship in recent decades."

As discussed above, we need a precise idea what is efficiency and how can one characterize path dependence as inefficient. The historical inertia of past decisions does not engender necessarily wrong or suboptimal decisions—as shown in the case of second-degree path dependence. Legal practices of the past may remain prevalent and dominant even if the situation of the society has changed—and this should not necessarily mean inefficiency. Even if we define path dependence as the phenomenon when "rules are unable to change with the underlying social conditions that they

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analyses of dynamical and stochastic processes – consists in asserting propositions regarding the possibility of 'market failure' that were proved first in the context of purely static and deterministic models" (David, 2001 b, p. 23). He added that "[q]uite the contrary proposition holds: under full convexity conditions a non-tâtonnement general equilibrium process can be shown to converge in a strictly path dependent manner on one among the continuum of valid 'core' solutions which satisfy the criterion of Pareto optimality" (2001 b, p. 23).

[8] Few economists, mostly working in the Hayekian tradition, argue that path dependence plays a positive role in the evolution of the common law (e.g., Mulligan, 2002; Colombatto, 2003).

govern" (Hattaway, 2001, p. 164)—such rules are not necessarily inefficient.

It is rather characteristic of all legal systems to be conservative — or static in the terms used by Epstein (1980), i.e., to resist adaption or evolution in response to new conditions. Others have also stressed that legal rules are generally "unable to adapt to changes in the underlying conditions they seek to organize or accommodate. When an institution fails to adjust, we can say ... that it has become 'lock-in'" (Gillette, 1998, p. 813). In other words, path dependence is not problematic *per se* and is in fact desired to create stability and, in particular, to allow agents to form stable expectations. To wit, legal rules are usually embedded in legal paradigms that are intentionally designed to resist adaptation and change. Heine and Kerber (2002), for instance, provide an analysis of the path dependence of legal rules in terms of technological paradigms, i.e., inherited technological frameworks. Both legal and technological paradigms exhibit stability. As paradigms, legal systems transform inputs, situations and problems into legal solutions or legal decisions in a more-or-less predictable manner. Therefore, there exists a tension between this need for stability, on the one hand, and the need to change rules to face new challenges or new situations. From our perspective, it cannot be said that such tension is problematic. The problem arises when it is interpreted in terms of inefficiency. This is what Heine and Kerber (2002) do when they note that these paradigms determine legal trajectories that result in "considerable" or "severe" path dependence effects . The idea is that, once installed on one path, on one trajectory, the legal system cannot move up, switch to a more supposedly efficient one or, definitely, to some global ideal system: "the legal rules applied may not always be the *very best*, or *most efficient*, that could be constructed were courts *unconstrained by history*" (Hattaway, 2001, p. 164; emphasis

added).

As the preceding quotations suggest, efficiency and inefficiency are wrongly defined in absolute terms: a rule is efficient if it is the "very best"; one speaks of "most efficient" rules rather than simply efficient rules. And, accordingly, any departure from some supposed global ideal is interpreted as a proof of inefficiency. Such an absolute perspective is contrary to the definition of efficiency as shown above. It, in effect, defines efficiency as the consequence of the capacity to get rid of the constraints of history—which is impossible. In fact, the references to the past and to history are usually taken as a source of inefficiency. What is seen by revolutionaries as 'inefficient rules' sustained by inertia, can be interpreted as rules that have not exhausted their potential, i.e., they still have sufficient benefits to confer . This is the case when rules should not be judged along a "global ideal' but relative to the constraints, and some constraints may validate existing rules that seem to be inefficient. That is, not all rules that are the product of inertia can be lumped as inefficient.

The particularly Manichean reasoning — which envisages only two forms of legal systems, one in which rules can be efficient because history plays no role and another one in which judges make inefficient decisions because they are constrained by history — rests on a very misconstrued view of the role of history in legal decision making. The past normatively supposedly imposes its weight on judges and inevitably and univocally determines their decisions. To put it differently, judges are viewed as blindly and mechanically applying past decisions. In effect, as stressed by Hattaway, what matters to judges is "the order in which cases are presented to the courts" (2001, p. 164)—which is equivalent to the biological critique of natural selection based on the fact that mutations

are ordered by history. Therefore, "legal outcomes are shaped not only by the facts and issues presented in the courtroom but also by the history of the courts' consideration of similar cases" (Hattaway, 2001, p. 164).

This perspective supposes that judges are involved in third-degree path dependence—a path dependence such that superior rules exist and could have been chosen to replace outdated ones, and where the transition costs to the superior rules are lower than the extra benefit of the new rules, but agents do not choose the new rules simply because of the force of habituation or routines. As Kronman notes, it is not only that "(t)he past constrains us and limits our present possibilities, and ... that we must take these limits into account if we are to act rationally now, that is, with full awareness of the costs and benefits of our actions" (1990, p. 1036) but rather that "we are bound by the past in the sense of being obligated to respect it for its own sake" (1990, p. 1036), that is independently from the costs it imposes on us. No surprise if it can be read that path dependence is "a kind of irrationality closely connected with inconsistency" (Kornhauser and Sager, 1986, p. 107), by which it is meant that the reference to the past, which is blind and therefore irrational, leads to inefficient decisions.

Certainly, at secondary and tertiary approximations, mistakes are possible and, as Schauer notes it, because of the reference to the past and because of path dependence, "there is the omnipresent possibility that any mistake will be systematically more powerful than any later attempts to correct it" (2006, p. 909). It is possible for an actual legal practice to be out of step with new constraints because of errors. Also, it is usually the case that past limits current decisions because of the switching cost as illustrated by the cases of second-degree path dependence. But does it mean that legal practices, at

first approximation, are prisoners of the past in the sense of the third-degree path dependence?

Our claim is that we should avoid discussing the problem of the efficiency of legal decision making without first adequately delineating the issue, viz., whether the historical inertia is the outcome of second- or third-degree path dependence. In effect, the genuine questions that have to be raised are the following: is optimization conceivable only in a model in which history plays no role? Is it possible to get rid of the past and to assume that references to the past are generally the sources of irrationality and inefficiency? Alternatively, is it possible to reconcile optimization and path dependence, rationality and adherence to the precedent? Our argument consists in providing a negative answer to the first of these two questions and a positive answer to the second one. Just like *spandrelists* who confuse historical inertia with inefficiency, the critiques of the thesis that judges could promote efficiency forget that historical constraints cannot be avoided and, in fact, must be embraced by the all-perfect social planner. The past constraints provide, at first approximation, the cultural tools needed to tackle problems and, as Schauer notes, "(r)eliance on precedent is part of life in general" (1987, p. 572). Even if one admits that their behavior is routinized, the existence of routines does not imply irrationality and does not necessarily lead to inefficiency.

Thus, we follow Posner (2000, p. 588) when he writes that we rely "on the past either because we lack good information about how to cope with the present and future or because legal innovation involves heavy transition costs." Actually, the two reasons amount to one reason: as long as the costs of legal innovation are high, the legal system of the past should generate useful outcomes. The persistence of the past may not appear

as choice, but rather as being powerless in changing rules when we "cannot exercise choice in any meaningful sense at all" (Hirshleifer, 1977, p. 10). But such appearance should not deceive us into thinking that judges, when they accept historical constraints, they are behaving irrationally. They do not use past decisions mechanically but willingly in light of the prohibitive cost of legal innovations.

That judges are not prisoners of the past in the third-degree sense of path dependence can be evidenced, first, by the fact that precedents are not binding only because there are past rules. Judges may be obliged to follow precedent decisions because they are part of the hierarchy of rules[9]. Second, it may also be that there are no precedents to which judges could refer and therefore they are, to use Posner's words, in an "open area" and therefore necessarily depart from the past.

So, adherence to the past can be rational. To wit, there exists a vast literature that analyses path dependence and adherence to the precedent as the result of a rational behavior (see in particular Harnay and Marciano, 2003). This literature shows that legal precedent helps us to economize on the costs of decision-making similar to how heuristics, in light of the cost of cognition, economize on calculations. In addition, legal precedent improves communication between courts, thereby allowing for judicial specialization, the minimizing of errors, and allowing for correction of errors (Kornhauser, 1989; Macey, 1989). Judges may choose to utilize past rules and accept to substitute the opinions of their colleagues to their own because they believe that the

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[9] To make our point more explicit, and hopefully clearer, the "hierarchy of rules", that is the ordering of rules in a legal system that tells individuals which rule has to be used in which circumstances, which actually corresponds to the structure of the legal system is arguably a consequence of the evolution of the system. It is also a product of the past and is part of the set of constraints that affect judicial decision making.

other judges are, or were, better informed than they are (Barnejee, 1992; Bikhchandani, Hirshleifer, & Welch, 1992, 1998; Daughety & Reiganum, 1999, for an application to judicial decision-making). Judges may decide to follow precedent decisions because they rationally believe that these decisions were better than the one they can issue. So ironically, sticking to precedent can be indicative of rational decision making rather than of irrationality.

More broadly, it can be said that the routinized behavior of judges and their encapsulated forms, i.e. the precedent, are the products of rational choice. Routinized behavior are no different from biological tools, such as the panda's "thumb" or the claws of bats. Even when such tools are clumsy, as the case with the panda's "thumb," they are more efficient than trying to institute new radical tools that may not be justified by their cost. This finding should not be different if one supposes that natural selection is the motor behind the evolution of legal systems, to which we turn next.

6. Inefficient judges and efficient judge-made-law

The alternative to the maximalist interpretation of the judges-and-efficiency thesis, in which optimization results from rational behavior, consists in explaining the efficiency of the Common law as the result of an optimization process that operates through natural selection. Thus, certain legal *systems* are globally efficient because their functioning rests on an underlying evolutionary process that operates at the level of rules and selects the most efficient of them. This was pointed out, in its modern form, in the mid and late 1970s.[10]

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[10] Actually, the theory that legal rules evolve through a process similar to natural selection was older and the first attempts to propose evolutionary explanation of the

These 1970s were the times when economists and biologists found a reciprocal interest in their respective disciplines and believed that they could mutually help each other to gain insights in the phenomena they seek to explain. Quite interestingly for our analysis, it appears that one of the first area in which social scientists used biology was that of the emergence and evolution of legal rules; or, to be more precise, it was in the emerging field of "law and economics". Jack Hirshleifer, one of the most prominent supporter of bioeconomics, published his first papers on economics and biology in law and economics journals (Hirshleifer, 1977, 1982). Then, very rapidly, the idea that evolutionary models could be used to explain the efficiency of Common law attracted the attention of some economists (Rubin, 1977, 1980; Priest, 1977, 1980; Goodman, 1978; Terrebonne, 1981). These models developed, under various forms, a claim known as the selective litigation thesis. From the perspective of our paper, although important, Paul Rubin's articles may be less relevant than others since they argue that the evolution of legal rules essentially depends on the behavior of litigants. By contrast, the most interesting works are those written by George Priest precisely because they include a reference to judges and judicial decision making. Thus, wrote Priest,

> "[e]fficient rules "survive" in an evolutionary sense because they are less likely to be relitigated and thus less likely to be changed, regardless of the method of decision. Inefficient rules "perish" because they are more likely to be reviewed and review implies the chance of change whatever the method of judicial decision. If judges were to occasionally err then the tendency toward efficiency could not be reversed. If judges were able only to choose rules achieving partial inefficiency, even if they could do so infallibly, the set of legal rules still would tend over time to contain more efficient rules than judges desired, because rules that imposed greater inefficiency would be more likely to be relitigated. It is evident, furthermore, that the tendency of the common law over time to favor efficient rules does not depend on the ability of judges to distinguish

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law date back to the late 19th century (see, for instance, Hovenkamp 1990, p. 1016).

efficient from inefficient outcomes. Even where judges are ignorant of the allocative effects of their judgments, they will be led by the litigation decisions of individual parties to promulgate rules that increase the relative proportion of efficient rules" (Priest, 1977, p. 72).

Or, as another participant to the discussion, John Goodman, concludes: "even if judges decide cases randomly, the body of legal precedents will tend, over time, to have an efficiency bias" (1978, p. 394). In effect, "the more inefficient a legal rule, the greater the social cost it imposes and, thus, the greater the probability that it will be challenged through litigation since the benefits of litigation versus out-of-court settlement will also be greater. Conversely, once inefficient rules are overturned and replaced by efficient precedents, the new precedents will be less likely targets for ensuing litigation" (Goodman, 1978, p. 394). In other words, natural selection was precisely regarded as a means to explain efficiency *despite* judicial decision making. This interpretation does mean that judges are absent from the process but rather that inefficient individual decisions can nonetheless lead to systemic efficiency. This is what Cooter and Kornhauser (1980, p. 140) maintain when they note that "the law may improve over time ... even if judges lack any insight into the efficiency of laws and even if litigants only follow their self-interest." This is what we propose to call the minimalist interpretation of the judges-and-efficiency thesis according to which judges may promote efficiency even if they do not behave efficiently.

For our purpose, there is no need to go into more details about the reasoning that allowed these economists to conclude that a natural selection process is at work in a Common Law legal system. We rather want to discuss how the outcome of the process is described and, in particular, analyse how efficiency *and* inefficiency connect and

complement each other. From this perspective, it is striking to note the cautiousness of the conclusions reached by the different authors. Thus, all of those who worked on this issue insist that there is only a "tendency" or a "bias" towards efficiency. For instance, Priest notes that one important aspect of his 1977 paper is that it "has not shown that the rules of the common law are or ever will be *completely* efficient. It has suggested *only* that the common law process incorporates a strong *tendency* toward efficient outcomes" (1977, p. 81; emphasis added). Similarly, Cooter and Kornhauser describe as "pessimistic" (1980, p. 140) the conclusion they reach and that states that the evolutionary forces of natural selection "can *improve* the law relative to what it would be in their absence ...[but]... cannot achieve a maximum on some standard of goodness (such as economic efficiency)" (1980, p. 140; emphasis added). About thirty years later, these are the same conclusions that Gennaiopoli and Shleifer (2007) put forward: "the conditions for ultimate efficiency of judge-made law are implausibly stringent" (p. 61) but nonetheless there exists "a *tendency* for the law to become more efficient over time" (Gennaiopoli and Shleifer, 2007, p. 61; emphasis added).

Therefore, these models conclude that the optimization forces of natural selection do not guarantee the efficiency of the entire system (see also Priest's statement, 1980, p. 400)[11]. Just as in the models based on rational choices, optimization *à la* natural

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[11] It could also be said (as it was by one of the referees) that there is a "collective action" problem that prevents individual actions to have global consequences. In effect, what fundamentally mattersin decisions to go to court and challenge supposedly inefficient rules are the individual net gains (or costs) rather than the overall efficiency of a legal rule. Individuals do not care whether or not a rule is globally efficient to challenge it. However, this issue (collective action) is outside our focus because, anyhow, this problem is surmounted first, by class action suits, and second by "social movements," political parties, lobbies, and even revolutions. Collective action issues present only extra transaction cost—which is admittedly in this particular case "inefficient."

selection appears to be incomplete or imperfect. The process promotes only *partial* efficiency because, eventually, it will stop; that is, it will stop before total and absolute efficiency is reached and before all inefficient rules have been replaced by efficient rules: the evolution and natural selection "process will settle down to a stable state in which each legal rule prevails a fixed portion of the time. Both "efficient" and "inefficient" or "best" and "worst" rules recur perpetually" (Cooter and Kornhauser, 1980, p. 140) or as Hirsh (2005, p. 429) puts it "then we would expect common law rules to move toward efficiency, and then to cease moving at some point short of efficiency", Inefficient rules survive the natural selection process and do not always perish, which means that the system cannot be efficient. This involves circularity of reasoning: the tendency towards efficiency and improvement is explained by the survival of inefficient rules that, conversely are regarded as a proof of the inefficiency of the system.

In addition, and this represents a more important problem, the efficiency-through-natural-selection literature commits the same kind of Manichean fallacy as the one we have identified in the preceding sections. Namely, optimization, via rational choice or via natural selection, has to be perfectly efficient in the sense of the global ideal—i.e., as if constraints should be deleted or history erased. Evolution, like rational choice, must lead to a global ideal or perfect state in which there is no room for inefficient rules. The survival of old legal systems, despite the availability of apparently better ones, is necessarily indicative of the failure of natural selection to generate efficiency. We have, once again, an opposition between some global ideal or inefficiency[12].

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[12] Priest seemed to be aware of the problem. He noted that the standard literature on the efficiency of legal systems — in which he did not include the literature on natural

Quite interestingly, the impossibility of reaching a perfectly state of efficiency, that is the impossibility that optimization through natural selection be perfect, is also explained by the weight of the past. An argument that can be found in the writing about the evolution of the law is that the tendency towards efficiency can indeed be undermined by the weight of the past—a thesis that does not differ from the one that is used by the opponents of the efficiency-of-the-common-law thesis and that we have presented above. Thus, Rubin (1977, p. 61) stresses the anti-efficiency role that precedent plays: "when neither party is interested in precedent, there is no incentive to litigate, and hence, no pressure on the law to change", As a consequence, "the current rule will persist, whether it is efficient or inefficient" (Rubin, 1977, p. 56). Similarly, Priest's model includes path dependence, since the evolution towards efficiency depends on the proportion of efficient (relative to inefficient) rules in use in a society at the preceding period: "[i]n this simple model the proportion of efficient rules in force at any period is a function of the stock of efficient and inefficient rules in force at the previous period, the respective rates of relitigation of efficient and inefficient rules, and the proportion of efficient rules announced by judges (the judicial bias toward efficiency)" (1977, p. 69). Thus, if one interprets Priest's claim in terms of path dependence, it means that the evolution towards efficiency depends on the legal trajectory on which the system is. An important stock of inefficient rules will set the system on a "low" (that is, inefficient) trajectory, a trajectory that will be difficult to evade. Similarly, Goodman notes that "it may be impossible to reverse the precedents of the past when changing economic

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selection — rests on a "binary" (1980, p. 410) approach of efficiency in which rules are "regarded ... simplistically as either perfectly efficient or inefficient" (1980, p. 415).

conditions warrant such a reversal. Precedent tends to weigh heavily upon decisions of the court ... If the bias imparted by precedent is too great, however, a change in precedent may be impossible" (1980, p. 405). For their part, Cooter and Kornhauser argue that the use of a Markov process allows them to reduce the weight of the past: "[w]e believe this assumption introduces a bias towards the conclusion that the common law through blind evolution tends to efficiency" (1980, p. 142). By contrast, "Under a precedential system, one in which more-established rules are more likely to persist or ones in which "well-reasoned" opinions more strongly bolster rules than badly-reasoned ones, an inefficient rule might become entrenched and hence more likely to persist. Efficient rules, of course, might also become entrenched but in a system of "blind" justice there is no reason to believe that efficient rules will be more likely to be entrenched at the "outset" than inefficient ones" (ibid.).

The core of this reasoning, again, is based on the false opposition of efficiency with path dependence. Even if legal rules evolve via natural selection, rather than via rational decision, it does not mean that efficiency is tainted by historical inertia of deep biological structures. As depicted in the figures above, natural selection, or rational decision, necessarily mean that there is a scheme, the binary operator, which cannot be the subject of optimization. Therefore, the persistence of precedents is not a blemish but rather the hallmark of optimization.

To some extent, Priest (1980) comes close to such conclusion, that it remains possible to reason in terms of optimization even if the process does not affect certain constraints. In the course of his demonstration, he analyses how the decision made in *Hardley v. Baxendale* (1854), that was assumed to be efficient by Posner, was used in subsequent

litigation. Precisely analyzing this point, Priest shows that the rule established in Hardley was applied sometimes very differently in various cases and that "it is very difficult to conclude that each application is efficient" (Priest, 1980, p. 414). In other words, the initial decision made in *Hardley v. Baxendale* can be regarded as a legal frame that defines a set of future possible decisions. It therefore, and at the same time, constrains judicial decision making and also leaves judges sufficient room of maneuver to make efficient, and sometimes inefficient, decisions.

7. Conclusion

The judges-and-efficiency thesis can receive two interpretations: first, it can be argued that judges promote efficiency because their decisions are rational and efficient or, second, the legal system can be efficient even if judges take inefficient decisions. Either method of optimization cannot really be threatened if individual decisions turned out to be infected with error. Of more importance, either method of optimization cannot be threatened by showing historical inertia or the persistence of historically deposited legal systems. To the contrary, historical inertia is implied, by conceptual and mathematical necessity, in the process of optimization. In fact, optimization is not needed, or cannot even proceed, if there is no historical inertia as expressed in the underpinning scheme that acts as a binary operator, the transformational function that transforms inputs into multitude of possible outcomes. So, this paper departs from the critics of the judges-and-efficiency thesis insofar as these critics highlight historical inertia as evidence of the irrelevance of optimization.

Thus, our claim is a critique of the use of the path dependence phenomenon in the

attempt to demonstrate that legal systems cannot be efficient. But, the proposed critique does not amount to be a defense of the status quo or accepting whatever institutions produced by history. Our analysis differs from Friedrich Hayek's argument about the positive and stabilizing role of history, customs and the tradition in the process of evolution of rules. To Hayek and his followers, the past is important because it avoids rapid changes and permits changes only after time has checked and tested what could be useful. Similarly, although close by certain aspects, our argument differs from the one put forward by Richard Epstein on the static nature of the law (1980)—according to which, it is not the purpose of legal rules to change as the social, societal context changes. Our argument is of a different nature. We do not defend or attack the institutions of the past, as expressed in legal traditions and customs, as if following the institutions of the past have positive effects, or *vice versa*. Rather, we claim that it is impossible to use, in a *per se* fashion, path dependence and the reference to the past as a critique against the efficiency of a legal system.

On the other hand, this paper departs from the advocates of the judges-and-efficiency thesis. These advocates seem to apologize for the fact of historical inertia, agreeing implicitly that historical inertia is, in principle, a blemish on the march of optimization. The advocates have reached a consensus: optimization, whatever the form through which it operates, is globally impossible. Efficiency is only a tendency, that is visible through partial improvements, but cannot be used to describe a state that will be eventually reached. The consensus is best expressed in the position of Parisi who notes that "[o]ur history, in this sense, constrains our present choices. We may wish we had developed more efficient customs and institutions, but it would be foolish now to

attempt to change them" (Parisi, 2003, p. 257). From this perspective, rather than criticizing precedents as obstacles on the path towards efficiency, a more promising — in the sense that it is closer to our own argument — consists in showing that other legal environments and various doctrines of precedent will lead to different efficient allocation of resources (see Fon, Parisi and Depoorter, 2005 or Parisi and Luppi, 2009).

Such a consensus presumes that the global ideal is theoretically possible, but cannot be practically possible because of history—as if history is an extra detail that could be ignored at first theoretical approximation. To put it differently, the consensus presents history as a barrier that prevents, at the practical level, the possibility to reach some supposed optimal state regarded as the global ideal, a perfect state of efficiency. As this paper has argued, history or structures or legal systems deposited from the past are, at first approximation, needed and necessary. Optimization can never, even theoretically, attain the global ideal for the simple reason that optimization can only take place if there are historically deposited constraints. The argument that matters could be perfect if there were no historical inertia actually undermines the very *raison d'être* for optimization.

Our thesis might nonetheless appear weak on one point and can be criticized for, being *tautological*. In effect, it could viewed as meaning or implying that whatever exists must be optimal because it is efficient—in other words, the critic would be that we endorse the position of Dr. Pangloss that Voltaire ridicules in *Candide*.

However, at a deeper look, our thesis does not suffer from Panglossianism. We would be guilty of *Panglossianism* if and only if whatever exists was supposed to be the product of first- and second-degree path dependence—i.e., if and only if we would have excluded third-degree path dependence. But this is actually not the case: our thesis can

accommodate the possibility of third-degree path dependence because (or when) we recognize that legal systems does not operate and thus do not evolve in a political vacuum. As a consequence, legal systems are also the result or the product of the exercise of the power of some political or judicial elites. The latter are certainly able of influencing — in that case, one might even say "manipulating legal rules and accordingly of increasing artificially the cost of switching from one rule to another one to the detriment of the well-being of the population. Such manipulation allows the judicial and political elites to benefit from rents; or, in other words, expected rents are a good reason for elites to manipulate legal rules in order to prevent the evolution of the legal system towards more efficient rules. Conversely, this means that political and legal elites would increase artificially the cost of switching if switching weakens its grip over power or diminishes its rents. To provide a full account of such a possibility requires the introduction of the tools of public choice, or even the politics of collective action and the analysis of formation of political movements, which obviously falls outside the parameters of this paper.

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