

Eckardt, Martina

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**Thünen-Series of Applied Economic Theory**

**Thünen-Reihe Angewandter Volkswirtschaftstheorie**

**Working Paper No. 47**

**Evolutionary Approaches to Legal Change**

by

Martina Eckardt

**Universität Rostock**

Wirtschafts- und Sozialwissenschaftliche Fakultät

Lehrstuhl für Volkswirtschaftslehre

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# Evolutionary Approaches to Legal Change

by

Martina Eckardt

## ***Abstract:***

*Institutions matter both for long-term economic evolution as well as for more short-termed economic performance. The law is particularly important in shaping the institutional framework for economic activities. This paper gives an overview of typical evolutionary explanations of legal change, i.e. the generation and dissemination of legal innovations over time. The main actors, the key determinants, and the central mechanisms are identified. In addition to approaches which deal primarily with statutory respectively judge-made legal change, the concept of legal paradigms and path dependence, the co-evolution of law and technology and the impact of institutional competition on legal change are discussed.*

**JEL:** B52, B53, K 40, P16

**Keywords:** Evolutionary Economics, Law and Economics, Judge-made Legal Change, Legislation, Technological Change, Path Dependence

## 1. Introduction

Institutions matter. They have a decisive impact on economic performance over time. The law is particularly important in shaping the institutional framework for economic activities. Legal rules can be perceived as socio-technological devices that help people to solve coordination problems and interpersonal conflicts which arise in the presence of scarce resources (Eckardt 2001, p.11-15; Kerber/Heine 2003). Law affects both the allocation as well as the distribution of resources, and is itself influenced and altered by economic evolution. However, our knowledge as to the determinants and mechanisms of legal change is still rather weak.

Neo Institutional Economics and the Law and Economics literature have contributed a lot to our understanding of the law, both theoretically as well as empirically (Cooter/Ulen 2000; Eggertsson 1990; Furubotn/Richter 1998; Posner 1998).<sup>1</sup> But since they are deeply rooted in neoclassical microeconomics, they are mainly concerned with the impact of given legal rules on economic activities, while legal change has scarcely been analysed. To some extent this reflects the inherent static nature of neoclassical microeconomics (stable preferences, rational choice behaviour, equilibrium concept) (Eggertsson 1990). The economic problem is reduced to optimisation, i.e. choosing the best option from a given set of alternatives. The decisive question how the legal alternatives themselves are generated is not analysed and so novelty and change are assumed as exogenous.

But this is exactly the main starting-point of Evolutionary Economics. In contrast to neoclassical economics, it assumes innovation (Schumpeter 1950), uncertainty and the “constitutional lack of knowledge” (Hayek 1969) as central characteristics of modern economies which have to be addressed in economic theorising. Its very aim is the explanation of economic, technological, or institutional change over time. The generation of innovations and their diffusion through imitation and learning are central issues. Quite obviously, this renders the optimisation approach of standard economics questionable, since no longer a given set of alternatives can be assumed. While recently the variation-selection concept has drawn a lot of attention as an heuristic evolutionary approach to cope with such endogenously generated change (Nelson/Winter 1982), Evolutionary Economics cannot be reduced to its application. A number of different methods from different disciplines are applied reflecting the rather recent interest in these issues (Herrmann-Pillath 2002; Hodgson 1993; Metcalfe 1998; Nelson 1995; Witt 2001).

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<sup>1</sup> The law is part of the formal institutions of a society. Nevertheless also informal rules, which are not considered in the following, play an important role for legal change. See Hayek (1973, 1979); Knight (1992); North (1990a); Okruch (1999).

So far a comprehensive evolutionary theory of legal change has not been developed. But there are some promising approaches which seem to be a good starting point for further research efforts. This paper intends to give an overview of typical evolutionary explanations of legal change. The main actors, key determinants, and the central mechanisms of the different approaches which bring about legal change are identified. By pointing out the evolutionary aspects of the different approaches, their contribution to the explanation of legal change becomes clear. The following analysis is confined to the change of specific legal rules. Both the overall legal order as well as the constitutional rules, which govern the access to and the mechanism of the generation of legal rules, are taken as given.<sup>2</sup> From an Evolutionary Economics point of view legal change takes place through the generation and dissemination of legal innovations over time.<sup>3</sup> The main mechanisms are statutory and judge-made legal change. While statutory legal change relies on legislation and thus on collective action, judge-made legal change is brought about by the judiciary through single lawsuits. In the following, besides approaches to legal change which are explicitly part of Evolutionary Economics, also such approaches are presented which implicitly use evolutionary arguments.

*Section 2* starts with a short account of the Public Choice approach to politics and thus to statutory innovations. It is followed by an cognitive-evolutionary approach to policy-making which analyses statutory legal change in the Schumpeterian tradition. *Section 3* considers both Hayek's explicit evolutionary view of judge-made legal change as a trial and error process as well as the Law and Economics literature which implicitly uses evolutionary arguments. While the approaches discussed so far more or less exclusively deal with the generation and dissemination of single legal innovations, *section 4* turns to the notions of legal paradigms and of legal path dependence which allow to draw more specific hypotheses about the direction of legal change over time. *Section 5* widens the horizon by presenting an approach which analyses the co-evolution of law and technology, a field widely neglected so far. Finally, *section 6* explores the explanatory potential of institutional competition as an additional mechanism that brings about legal change. *Section 7* concludes with a short summary and a brief outlook on further promising research areas.

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<sup>2</sup> Approaches which deal with cultural evolution are not considered in the following, see however footnote 11.

<sup>3</sup> A comprehensive evolutionary theory of legal change has to further clarify its research object. For example, a legal rule can be defined as comprising the following three components: (1) the facts which decide to what economic activity it applies; (2) a legal norm which prescribes which actor is allowed to carry out what action; and (3) the burden of proof which states who has to bring the necessary information before the court in case of an action. For more details see Eckardt (2001, p.19-22).

## 2. Statutory Legal Change as an Innovation Process

### 2.1 The Public Choice Approach to Politics

Since in modern democracies economic policy is implemented by legal rules, the economic analysis of politics is at the same time a positive analysis of statutory legal change. The dominant approach to political economy is based on traditional neoclassical economics (Buchanan/Tullock 1962; Olson 1965, 1982; Niskanen 1971; Rowley/Tollison/Tullock, 1988; Rowley 1989; Mueller 1997, 2003; Mercuro/Medema 1997, p.84-100; Tullock 1998; Breton 1998). Its main focus is on equilibrium outcomes which are brought about by marginal adaptations of rational utility-maximising actors to changes in exogenous variables. The relevant actors are voters, interest-groups, politicians or political parties, and bureaucracies, maximising rents and votes. Exchange is modelled as an exchange of votes for election promises or for the expected legislation by the parties elected. Politicians, political parties, and the government are largely conceived as only passively reacting to the demands expressed by voters or interest groups. Accordingly, the content of a statute is based on the interests of the median voter, the predominant interest-group or the bureaucracy. Political markets are characterised by market failures, so that statutory legal change leads to largely inefficient outcomes.<sup>4</sup> By specifying exogenously given restrictions, objective functions and exchange mechanisms, empirical testable hypotheses are derived and tested as to the outcome of political bargaining processes and thus also about the typical content of statutory legal change. While the various strands of Public Choice deal with specific aspects of legislation, they all have in common that they usually assume the set of political options and thus the set of legal alternatives as given. Recently the implication of deviations from the standard assumptions of neoclassical economics has come under more systematic scrutiny.

The most prominent example might be the “cognitive turn” by North (1990a, 1990b) who deviates from the behavioural model of standard microeconomics. Besides assuming that individuals act under incomplete information and bounded rationality, he supposes that they also interpret the information received in the light of subjective theories and beliefs. For collective action to take place, communication transmits these subjectively held views of the world in commonly shared views (ideologies), which govern decisions and behaviour (Denzau/North 1994). As a consequence, the set of alternatives from which to choose is not objectively given anymore. Thus, even under competition, feedback-effects to select out

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<sup>4</sup> However, supporters of the *efficiency redistribution - hypothesis* argue that competition among different interest groups leads to efficient redistribution See Becker (1983); Bullock (1995); Wittman (1989; 1995).

inefficient alternatives might not work because individuals do not hold the ‘true’ cognitive models about the cause-and-effect relations on which their decisions are based. This effect might even be intensified because of the path dependent nature of institutional change.<sup>5</sup>

Although Public Choice theories are based on Schumpeter’s idea of democracy as competition for political power (Schumpeter 1950), scarcely any approach applies the Schumpeterian notion of creative entrepreneurs to the political arena.<sup>6</sup> Nevertheless, the Public Choice literature provides us with rich insights into the determinants and mechanisms of different institutional settings for statutory legal change. However, it only negligibly deals with the question of how collective goods and thus statutory legal innovations are actually generated and disseminated.

## 2.2 A Cognitive-Evolutionary Approach to Policy-Making

The cognitive-evolutionary approach to policy-making conceives statutory legal change as an innovation process (Meier/Haury 1990; Meier/Slembeck 1998; Slembeck 1997, 2003). It applies Schumpeter’s notion of the entrepreneur who creates innovations to all participants in the political process. Politicians and the government are no longer modelled as merely passively reacting to the demands of voters, interest-groups, or the bureaucracy. They are actively engaged in generating novel solutions to collective problems leading to new statutes. Moreover, it is assumed that even the problems themselves are not given, but are created in a collective process of cognitive construction. In contrast to Public Choice theories both the set of alternatives from which the new statute has to be chosen and the very problem itself to which it provides a solution is not seen as objectively known (Slembeck 1997, p.227).

Obviously, the endogenisation of these hitherto exogenous variables limits the explanatory power of the traditional utility-maximising method by calculus, because it requires a given, invariable, and closed set of alternatives. This cognitive-evolutionary approach applies a multi-level variation-selection concept which allows to derive empirically meaningful and testable hypotheses. Three main levels are distinguished, which are characterised by different variation mechanisms, selection environments and principles: the individual, the collective and the constitutional level (*figure 1*). They are interlinked (1) by the individual actors, who

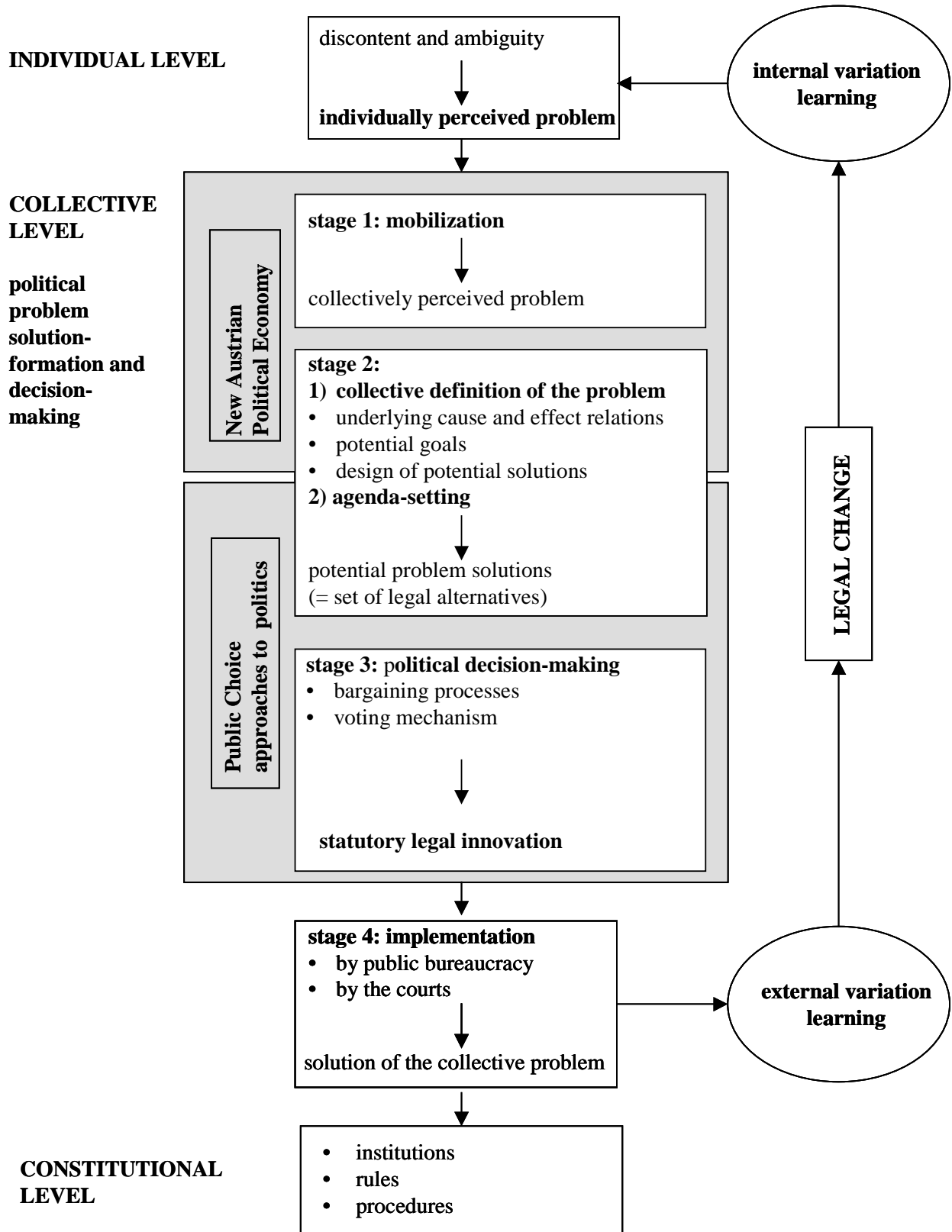
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<sup>5</sup> North (1990a) also refers to the importance of entrepreneurs for creating innovations and for enhancing the adaptive efficiency of an economy and thus alludes to the Schumpeterian line of evolutionary economics. But so far he has not systematically integrated this notion in his transaction cost approach to politics. For a critical appraisal of the cognitive turn in Neo Institutional Economics see Lindenberg (1998).

<sup>6</sup> See Breton (1998); Dunleavy (1991); Eichenberger/Serna (1996); Frey/Eichenberger (1991); Kirchgässner/Pommerehne (1993) who explicitly supplement traditional Public Choice analysis by integrating Schumpeterian ideas.

generate variations on each level – although through different mechanisms, and (2) by the outcomes of the different selection processes which in turn affect the working of the other levels.

*Figure 1: A Variation-Selection Approach to Statutory Legal Change*



Source: According to Slembeck (1997, 229).



While the constitutional level defines the institutions, rules, and procedures which govern the problem-solving process on the collective level, the starting point for all statutory innovations are individuals (Slembeck 1997, p.230-231). Based on methodological individualism this approach applies a cognitive model of action which incorporates elements from cognitive science. By assuming cognitive creativity, novelty can emerge endogenously. Continuously generated novel ideas and perceptions finally lead to innovations, which can be interpreted as resulting from Schumpeterian entrepreneurs. But bounded rationality and satisfying behaviour set a first limit to the ubiquitous generation of variety. Individual discontent with the actual situation and ambiguity with respect to the information received and the theories held lead individuals to the perception of problems that have to be solved.

The implementation of a statutory innovation requires the passing of a four-stage collective problem solving process. On the first stage mobilization of other persons and resources must be sufficiently high to convince others about one's own view of a problem (Slembeck 1997, p.231-233).<sup>7</sup> After successful mobilization the problem enters the second stage in which a collective definition of the problem is generated through public debate and opinion formation (Slembeck 1997, p.233-238). It encompasses the underlying causes, their potential effects, the goals to be pursued and the potential solutions. The more novel a problem is, the higher is the uncertainty pertaining to it and the more controversial are the resulting debates. Due to the limited problem-solving capacity of legislation, which itself is a consequence of the limited personnel resources and time available, a number of different collective problems "compete" with one another. If an issue is finally put on the political agenda, preliminary views about its proper definition, the goals, and the effective instruments have been reached.

On the decision-making stage political exchange and thus bargaining processes are predominant (Slembeck 1997, p.238-241). Here the questions dealt with by the Public Choice approach come into focus. The resources available to the political decision-makers and the institutional setting like the voting rules, the role of committees etc. prove to be the decisive selection criteria for the finally enacted legal innovation. While traditional approaches to statutory legal change end with the passing of a statute, in the cognitive-evolutionary approach its implementation is explicitly taken into account (Slembeck 1997, p.241-243). Both public administration and/or the courts have discretionary power to modify its content.

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<sup>7</sup>The resources necessary to mobilise support and political pressure differ according to the number of potentially affected persons and the extent of the problem. Accordingly elite problems, structural problems, interest group problems and crisis problems can be distinguished (Slembeck 1997, p.232).

Therefore, new processes of reinterpreting the underlying problem as well as the meaning of the statute may start over again, which perhaps also entail new bargaining processes.

A statutory innovation thus implies hypotheses about the cause-and-effect-relations of the collectively perceived problem, which are based on the subjective theories and beliefs of the actors and which therefore can be wrong. As a consequence, both the underlying problem might remain unsolved as well as new problems originating from unforeseeable reactions to the new statute might emerge. The resulting external variation initiates new efforts which will perhaps lead to additional legal innovations. Moreover, learning takes place because the effects of the statutory innovation are assessed on the individual, the collective, and the constitutional level. Thus, there is an ongoing process of legal change (Slembeck 1997, p.245-248).

This variation-selection approach to statutory legal change is a comprehensive framework for analysing the different aspects of statutory innovations in detail. In contrast to Public Choice theory it stresses the importance of political entrepreneurs for statutory legal change.<sup>8</sup> Moreover it not only allows to integrate the findings of Public Choice theory, but also Austrian reasoning, which is based on Hayek's idea of competition as a discovery procedure. Wohlgemuth (2002a, 2002b) for example gives some hints how the process of collective opinion formation can be explored in more detail. His main focus is on the incentives in democracies to find, test, and use political knowledge by political entrepreneurs, an aspect so far neglected in Public Choice theories.<sup>9</sup>

### **3. Judge-made Legal Change as a Discovery Procedure**

#### **3.1 Legal Change as a Trial and Error Process – The Austrian Perspective**

Hayek's notion of competition as a trial and error process plays a prominent role in evolutionary economics. The starting point of his reasoning is the fundamental knowledge problem of human beings (Hayek 1973, p.11-15). This is quite in contrast to the neoclassical assumption that preferences, tastes, information, resources, skills etc. are already given as data *before* competition starts, which then works solely as an allocation mechanism. According to Hayek, the economic problem is exactly that the data of neoclassical economics are not and cannot be known by anyone in advance. Therefore competition serves as a mechanism to discover and communicate information about the underlying variables (Hayek

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<sup>8</sup>For a general discussion of entrepreneurship see Casson (2003), with respect to elections Aranson (1998).

<sup>9</sup> With respect to the analysis of individual and collective opinion formation see also Choi (1999); Fu-Lai Yu (2001); Hutter (1986); Kuran (1995); Rizzello/Turvani (2000); Vanberg (1993); Witt (1996).

1948a, 1948b, 1948c, 1968/2002). It sets incentives for individuals to search for new knowledge. Since competition allows for the parallel testing of different hypotheses, it makes more information available than could be used otherwise. Competition can be thus conceived as a permanent trial and error process in which new hypotheses are continuously generated and tested.<sup>10</sup> This notion of competition as a discovery procedure underlies also Hayek's reasoning about the evolution of societies and their institutions which he refers to as cultural evolution (Hayek 1967a, 1979, 1988).<sup>11</sup> Consequently, he has also analysed judge-made legal change from this point of view.<sup>12</sup>

Like markets, he regards the law as a spontaneous order which is the result of an ongoing evolutionary process (Hayek 1967b, 1969, 1973, p.100). He sees judge-made legal innovations as an mainly unintended outcome of administering the law (Hayek 1973, p.94-123). The necessary precondition is that conflicts are brought to the courts at all. If conflicts arise out of novel economic situations, legal innovations have to be generated, since legal rules are always only a response to past conflicts. Because a judge cannot refer to an already established legal norm or convention, he or she has either to derive a legal innovation from higher legal principles or to create one from the start. But also in the case of already well-known situations, conflicting expectations of the actors involved about the relevant legal rule can result in an action by which it will be modified just by chance. By referring to informal legal norms and conventions a judge will derive the legal rule applicable to the case at hand. However, in the course of explicitly articulating an informal legal rule, quite inevitable more or less slight modifications and thus legal innovations occur. This also holds for routine cases. Accordingly Hayek assumes that judge-made legal innovations are to some degree the result of chance (Hayek 1973, p.78, 99-118).<sup>13</sup>

The variety of viable legal innovations is restricted by the selection mechanisms inherent to the court system. In particular, a judge has to be able to defend his legal innovation according to the valid legal principles against other members of the judiciary. Thus for Hayek, the socialisation of the judges is decisive (Hayek 1973, p.65-67). He assumes that they acquire a preference for interpreting conflicts in accordance with the given legal order during their professional training. Therefore, each judge strives to decide single cases in line with the legal

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<sup>10</sup> The Austrian notion of competition as a discovery procedure is thus also compatible to Poppers idea of hypothesis testing and falsification, see Popper (1972).

<sup>11</sup> Hayek's concept of cultural evolution has been extensively criticized, for a detailed analysis, see for example Hodgson (1993); Okruch (1999, p.123-136); Vanberg (1994, p.77-94, p.95-106).

<sup>12</sup> Hayek discusses statutory legal change largely according to public choice theory; see Hayek (1979, p.1-40, p.98-105).

<sup>13</sup> For a more elaborated discussion of this argument see Eckardt (2001, p.95-106); Okruch (1999).

principles handed down by legal tradition. In addition, he supposes that the same holds true also in the case of applying statutory law, even if legislature had once intended that a statutory legal rule should be interpreted in a quite different way (Hayek 1973, p.66). In general, Hayek prefers judge-made legal rules since he assumes them to be better able to create stable expectations based on abstract legal rules, which are a prerequisite for the working of a market economy. But he also acknowledges that under specific circumstances statutory legal innovations are more advantageous. Because of the gradual evolution of judge-made legal rules, they may also result in an undesirable path, which can not be reversed that easily and quickly by the courts. In addition, in case of novel conflicts immediate legal action may be required. For legislation it takes less time to generate publicly known legal innovations than for the judiciary (Hayek 1973, p.88-89).<sup>14</sup>

For Hayek, administering the law by the courts is a trial and error process in which hypotheses as to the proper interpretation of legal rules are continuously tested. The central selection mechanism of the finally applied legal rule is the socialisation of the judges (Hayek 1973, p.120). Gradual modifications and novel interpretations of well-established legal rules may lead to their application to quite different economic situations in the future. In addition, novel conflicts may arise because of conflicting expectations of the individual actors about the valid legal rules, and again have to be decided by the courts (Hayek 1973, p.78, 120). As a consequence the administration of law by judges entails a permanent process of trial and error which contributes to the evolution of the law (Hayek 1973, p.65, 102).

“This will in some measure always be an experimental process, since the judge (and the same applies to the law-maker) will never be able to foresee all the consequences of the rule he lays down, and will often fail in his endeavour to reduce the sources of conflicts of expectations. Any new rule intended to settle one conflict may well prove to give rise to new conflicts at another point, because the establishment of a new rule always acts on an order of actions that the law alone does not wholly determine” (Hayek 1973, p.102).

Hayek thus directs the attention to the knowledge-creating features of legal change which is an ongoing task in an evolutionary environment. More recent research has emphasised that Hayek’s concept of judge-made legal evolution cannot only be applied to the Anglo-Saxon Common Law system (Eckardt 2001; Okruch 1999; Wangenheim 1993, 1995). Also in the case of statutes, courts have to decide about the precise content of a statutory legal rule while applying it to the concrete case at hand. Thus, at any given point in time, there usually are

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<sup>14</sup>Hayek also admits that sometimes judges may even destroy the legal tradition they had supported so far. However, he is not precise as to the underlying causes and mechanisms (Hayek 1973, p.66).

quite a number more or less differing interpretations of the same overall legal rule applied within a jurisdiction. However, legal heterogeneity is limited due to the selection mechanisms inherent to legal systems. Thus, conceiving judge-made legal change as a trial-and-error process holds also for Civil Law systems.

### 3.2 Legal Change and the Frequency to Litigate: The Law and Economics Approach

Statutory and judge-made legal change differ fundamentally. A statutory legal innovation is the outcome of a collective problem-solving process and is immediately binding for the whole jurisdiction once it is enacted. In contrast to that, judge-made legal change is mainly an unintended by-product of the ordinary administering of law by the courts. To be binding for the whole jurisdiction, judge-made legal innovations first have to be disseminated through the hierarchical court system.<sup>15</sup> For the explanation of judge-made legal change in detail, both the generation and the diffusion of legal innovations have to be analysed. While Hayek remains rather non-specific in this respect, it is an explicit topic in the Law and Economics literature (Cooter/Ulen 2000; Mercuro 1988; Mercuro/Medema 1997; Posner 1998). Like the Public Choice approach to statutory legal change, it applies the main ideas of standard microeconomic theory to judge-made legal change (*table 1*),<sup>16</sup> but it also implicitly uses evolutionary arguments.

*Table 1: Analogy Between Markets and Courts*

	<b>Markets</b>	<b>Courts</b>
<b>Supply side</b>		
Actors	firms	judges
Behavioural assumption	profit maximization	utility maximization (income, reputation)
<b>Demand side</b>		
Actors	consumers	litigants
Behavioural assumption	utility maximization	income maximization
<b>Objects of exchange</b>	goods and services vs. money	legal rules (public good) and income (private good) vs. reputation (private good) and income of the judges (public costs)
<b>Coordination mechanism</b>	invisible hand of the market (price mechanism)	impartiality of the judges

*Source:* Own composition based on Posner (1998, 565-569).

<sup>15</sup>In case of a legal innovation which is generated by a court of the highest hierarchical level, it is diffused far more rapidly because it serves as a precedent which at once binds lower level courts.

<sup>16</sup>The behavioural approach of the Law and Economics literature deviates further from the standard assumptions of the neoclassical paradigm by considering the implications of incomplete information and bounded rationality, for an overview see Jolls/Sunstein/Thaler (1998).

On markets all relevant information is communicated through price signals, with the price mechanism as the decisive coordination mechanism. For Posner (1998, p.565-569), the market mechanism guarantees an efficient resource allocation according to consumers' preferences, which are revealed by their willingness-to-pay. However, he assumes that in cases of high transaction costs, courts provide a more economical allocation of resources and thus work as a substitute for the market mechanism.

Legal rules impose 'prices' on potential economic activities. It is assumed, that utility maximising individuals take these into account when they decide whether to carry out an activity or not. Thus, like on markets the willingness-to-pay (for the sanctions imposed by certain legal rules) reflects the preferences of individuals. According to Posner (1998, p.581-584), the impartial judge takes on the part of the invisible hand of the market. Besides the specific ethics, which is learned by the judges in the course of their professional training, the hierarchical structure of modern court systems ensures the efficient allocation of property rights by the courts. Therefore, utility-maximising self-interested judges will pass only decisions which are in line with the overall legal order, since otherwise the overruling of a judgement by a higher court would lead to a loss of reputation for the judge of the lower court.

Legal innovations are assumed to be unintentionally generated by judges through the application of given legal rules to the specific case at hand (Posner 1998, p.587-596). By chance a judge might slightly modify an existing legal rule. Such legal innovations, which at first only hold for the case at hand, are disseminated in two ways. Firstly, the party defeated might appeal to a higher court, which in turn might confirm the decision of the lower court, thus turning this legal innovation into a precedent. Secondly, similar conflicts might lead to a higher frequency to litigate, therefore the underlying legal rule is brought to court more often. So the probability rises that it will be modified more often by different courts of the jurisdiction. These mechanisms generating legal change inherently use evolutionary ideas. No longer a given set of legal alternatives is assumed, but the process through which legal innovations and thus variety is created is explicitly modelled as well as the selection mechanisms that restrict the range of viable legal rules.

The well-known hypothesis that judge-made legal change tends to enhance the proportion of legal rules which promote economic efficiency, entails a statement about the direction of judge-made legal change over time (Priest 1977; Rubin 1977; Landes/Posner 1979; Priest/Klein 1984; Aranson 1986; Posner 1998; Cooter/Rubinfeld 1989; Cooter/Ulen 2000;

Hackney 2003). It implies that the court system would be able to perfectly mimick competitive markets.<sup>17</sup> The underlying assumption is that inefficient legal rules ones lead to a higher frequency to litigate than efficient ones. Therefore inefficient legal rules would be modified more often in the course of their ordinary interpretation and application by judges just by chance. This would increase the proportion of efficient legal rules over time.

Against this hypothesis a number of objections has been raised. They mainly concern the specification of the selection environment which is necessary to render the term “efficiency” meaningful (Kerber 1996, Vanberg 1994), and the common goods characteristic of efficient legal rules.<sup>18</sup> Since both litigants as well as judges are assumed to maximise their individual utility, a suboptimal production of efficient legal rules is to be expected as individual actors take into account only those costs and benefits which directly accrue to them. Thus, it is not that convincing that inefficient legal rules are brought to court more often than efficient ones since this would imply different incentives for individual actors for taking legal action (Cooter/Kornhauser 1980; Cooter/Ulen 2000).<sup>19</sup> It seems just as plausible that efficient legal rules are contested more often than inefficient ones due to their distributive effects, if certain actors are systematically burdened by an efficient legal rule, and if the costs of taking an action are relatively small compared to the potential gains (De Alessi/Staaf 1991; Hackney 2003). Thus, Cooter/Ulen (1988, p.496) conclude that “(t)he problem with viewing a court as a market is that redistributive gains are frequently more important than inefficiencies in channelling litigation.”

To sum up, the efficiency thesis of judge-made legal change cannot be supported from an Evolutionary Economics point of view. Nevertheless, the Law and Economics approach to judge-made legal change provides a good starting point for further elaboration. In contrast to the standard neoclassical model, it takes legal rules not as given, but explicitly deals with their generation and dissemination. The frequency to litigate and the hierarchical structure of the court system define the relevant selection environment, which influences the pace and direction of legal change. In criticizing the efficiency thesis of the Chicago Law and Economics literature, attention has been drawn to the (re-)distributive effects of legal

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<sup>17</sup>The argument is similar to that of the early natural-selection debate in microeconomics and thus also to the ensuing criticism, see Alchian (1950); Penrose (1952); Winter (1964; 1975).

<sup>18</sup>Another proposition is that judges intentionally generate efficient legal innovations. However, this would require them to have complete information about all possible legal rules and their efficiency attributes, see Aranson (1986, 1992); Hayek (1948a, 1948b; 1948c); Schmidtchen (1991).

<sup>19</sup>A similar objection can be raised to the argument that the Common Law system sets incentives for judges to generate efficient legal rules since otherwise this field of law would be transferred to legislation, thus reducing the scope and therefore the influence of the judiciary (Posner 1998, p.578-581); see Bourdeaux/Pritchard (1994); Eckardt (2001, p.42); Wangenheim (1993).

innovations which might have feedback effects also on the direction of judge-made legal change.

#### 4. Legal Paradigms and Path Dependence

The approaches presented so far have focused on the mechanisms of either statutory or judge-made legal change. To derive hypotheses about the direction of legal change, its complexity has to be taken into account.<sup>20</sup> For this, the concept of legal paradigms might prove fruitful (Eckardt 2001; Heine 2003; Kerber/Heine 2003). It allows to integrate on the one hand a model of human action which includes cognitive creativity as an endogenous source of novelty and thus as a variation mechanism and on the other hand the concept of path dependence which serves as an additional selection mechanism.

Both the notion of paradigms and of path dependence have been developed in the economic analysis of technological change. Therefore, they allow to draw from the rich insights gained in the evolutionary branch of innovation economics (Dosi 1988; Metcalfe 1998; Nelson 1995; Saviotti 1996). Legal paradigms can be defined analogous to technological paradigms. This concept was introduced by Dosi (1982; 1988) who draws on Kuhn's notion of scientific paradigms (Kuhn 1970). According to him

“(b)oth scientific and technological paradigms embody an *outlook*, a definition of the relevant problems, a pattern of enquiry. A ‘technological paradigm’ defines contextually the scientific principles utilized for the task, the material technology to be used. In other words, a technological paradigm can be defined as a ‘pattern’ of solution of selected technoeconomic problems ... A technological paradigm is both an *exemplar* – an artifact that is to be developed and improved ... and a set of *heuristics* (e.g. Where do we go from here? Where should we search? What sort of knowledge should we draw on?)” (Dosi 1988, p.1127).

Since legal rules can be conceived as socio-technological devices to cope with interpersonal coordination problems and conflicts as a consequence of scarce resources, legal paradigms can be defined as encompassing all positive and negative heuristics how to legally cope with particular problems as well as the specific legal rules generated and applied to them (Eckardt 2001, p.196-200; Heine 2003; Kerber/Heine 2003). A legal paradigm defines both the cognitive frame within which novel legal problem-solutions are looked for as well as the methods used to generate and disseminate legal innovations. A given dominant paradigm entails the prevailing way of perceiving and dealing with legal problems. Only if

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<sup>20</sup>Although the interdependence between statutory and judge-made legal change has been addressed by a number of authors, so far no coherent explanation as to the relative weight of these two main mechanisms of legal change has been developed. See for example Bourdeaux/Pritchard (1994); Eckardt (2001, p.176-201); Hayek (1973); Landes/Posner (1975); North (1989); Posner (1998).



inconsistencies and contradictions prove too strong under the given legal paradigm, the underlying positive and negative heuristics will be scrutinised and eventually changed.

The legal paradigm in place also delimits the scope for viable legal innovations if a novel problem emerges or a given legal rule is modified. As a consequence it also strongly influences the direction of legal change, however without prescribing the particular content of the legal rules applied. At any point in time there are a number of different legal rules which can solve the underlying socio-economic problem while at the same time being compatible with the overall legal paradigm. However, the actually applied legal rule is the outcome both of chance and of the contingencies (like the influence of different interest-groups etc.) as well as the result of the legal rules applied in the past and thus of path dependence.

Although the concept of path dependence was developed without reference to the notion of technological paradigms, they are complementary to one another (Arthur 1988, 1994; David 1985; Liebowitz/Margolis 1995; North 1990a, p.92-104). While the concept of legal paradigms might serve as a heuristical device which delimits the overall scope for legal innovations, the concept of path dependence helps to explain the mechanisms which link the applied legal rules to one another over time. Therefore legal innovations are partly shaped by the previously applied legal rules.<sup>21</sup> So far no consistent classification of the factors which cause path dependences through positive feedback effects has been developed.<sup>22</sup> But it seems to be uncontroversial that (1) sunk costs due to set up- and fixed costs and institution specific-investment, (2) dynamic economies of scale which result from network externalities and learning effects, and (3) complementarities contribute to the persistence of a particular legal path (Eckardt 2001; Hathaway 2001; Heine 2003; Kerber/Heine 2003; Kiwit 1995; North 1990a, p.92-104). Furthermore, also the complexity and genuine uncertainty which characterise the process of legal change foster path dependence, since the actors involved will rather base their decisions on routines than taking an optimisation approach (Nelson 1995; Nelson/Winter 1982, p.96-136). Such routines are also part of the overall legal paradigm, since the positive and negative heuristics guide both the perception of the legal problem under consideration as well as the search for novel legal problem-solutions (Eckardt 2001, p.196-200).

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<sup>21</sup>The existing legal rules form a legal trajectory. See Dosi (1982, p.152), according to whom a technological trajectory is “the pattern of ‘normal’ problem solving activity ... on the ground of a paradigm”.

<sup>22</sup>For a detailed formal treatment of legal path dependences by applying the concept of frequency-dependency, see Wangenheim (1993; 1995).

The path dependence of a given legal trajectory might lead to lock in-effects which prevent the application of superior legal rules (Kerber/Heine 2003). Nevertheless, a given legal paradigm is compatible with various legal trajectories. Generated by creative actors legal innovations might be adopted which eventually lead to either ramifications of the given legal trajectory<sup>23</sup> or even to competing trajectories. Also shifts between legal paradigms are possible which would imply a change in the positive and negative heuristics applied to the search for legal problem solutions. Although the notion of both legal paradigms and legal path dependences seems to be a fruitful approach to derive additional statements about the direction of legal change over time, more conceptual and empirical work is necessary to explore its contribution to a comprehensive theory of legal change.

## 5. Co-Evolution of Law and Technology

The approaches discussed so far have in common that they concentrate on the mechanisms inherent to the law which bring about legal change. Although they assume changes in economic variables as one of the main driving forces for legal evolution, the impact of economic change, which is itself an evolutionary process, is not analysed in more detail. A more comprehensive framework for analysing the co-evolution of law and technology is presented in Eckardt (2001). Technological, economic and legal change are viewed as the outcome of specific variation-selection-processes which are nevertheless linked to each other due to the wealth effects they cause, since the latter set incentives for individual actors to actively engage in the generation and dissemination of technological as well as legal innovations (*figure 2*).<sup>24</sup>

The starting point of this approach are novel negative technological externalities, which arise as an unintended, but inevitable by-product of technological innovations.<sup>25</sup> Similar to the variation-selection approach to statutory legal change discussed in *section 2.2*, a cognitive model of human action is applied, according to which cognitive creativity is the main source from which novel ideas emerge (Eckardt 2001, p.69-75). The various variation and selection mechanisms finally lead to technological and legal innovations.

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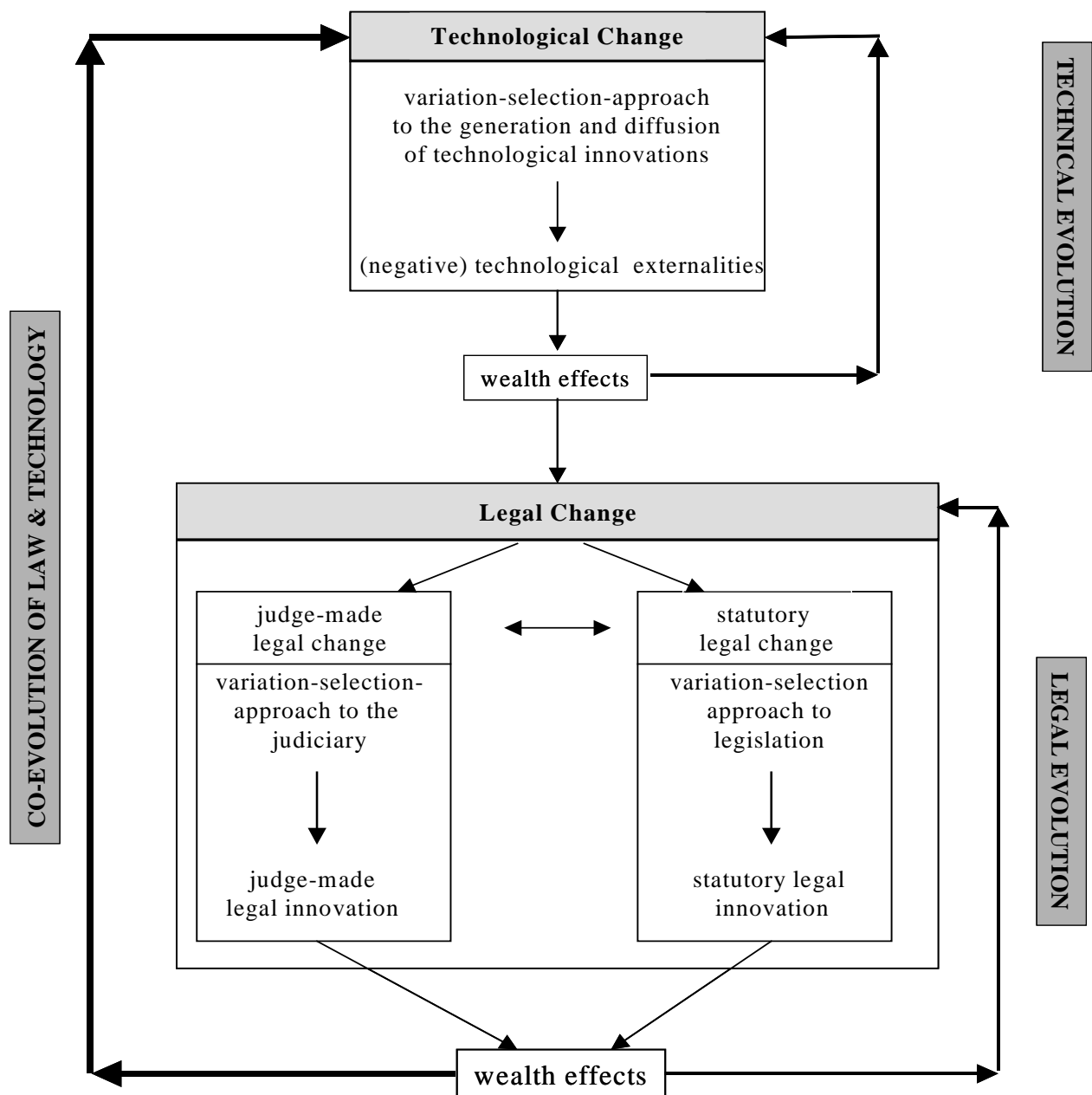
<sup>23</sup>Such ramifications might result when a legal innovation is generated to solve a particular aspect of the underlying socio-economic problem which so far has been addressed also by the original legal rule. As a consequence, both legal rules will form independent paths in the future.

<sup>24</sup>The fruitfulness of this approach is shown in several case studies which focus on the evolution of the German tort and accident law which was a result of the introduction of modern technologies like railroads and steam engines in the 19<sup>th</sup> century, see Eckardt (2001, p.207-311; 2004).

<sup>25</sup>Due to the complexity of the subject dealt with, this approach concentrates on the impact of negative technological externalities on legal evolution. However, it should become obvious that it can be easily modified to analyse other aspects of the co-evolution of law and technology as well.

To cope with the particularities of technological change the concept of the industry life cycle is used as an heuristic device (Eckardt 2001, p.75-87). It allows to specify the economic selection environment which changes over time due to the generation and dissemination of technological innovations. Several phases in the evolution of a market can be distinguished, each with its own constraints, behavioural incentives, and outcomes. According to the concept of the industry life cycle, industries show some uniform patterns with respect to the rate of adoption of technological innovations, their improvements and market entries and exits, output growth, changes in prices and qualities etc. (Audretsch 1995; Cohen/Klepper 1992; Klepper 1996; Klepper/Graddy 1990).

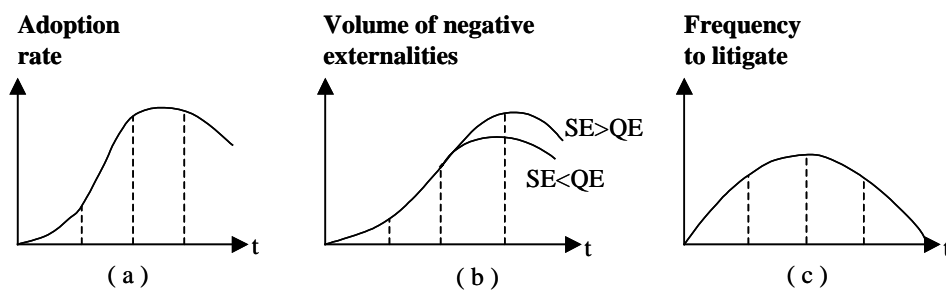
Figure 2: Co-evolution of Law and Technology



Source: Own Composition.

Successful technological innovations, which are disseminated over time, usually have not only positive, but also negative effects. These arise as an unavoidable by-product of a new technology. However, their extent also changes over the industry life cycle (Eckardt 2001, p.112-116). It depends positively on the rate of adoption of the new technology (scale effect) and negatively on additional technological improvements which take place *inter alia* through learning-by-doing and learning-by-using (quality effect) (figure 3 a, b). As a consequence, over the different market stages not only the volume of negative externalities but also the ensuing volume of wealth reduction varies systematically so that, in principle, empirically testable hypotheses can be derived.

Figure 3: Judge-made Legal Change Over the Industry Life Cycle



$t$  = time;  $SE$  = scale effect;  $QE$  = quality effect

Source: Own Composition.

Eckardt (2001) suggests that these wealth effects link legal change to technological change. Since judge-made and statutory legal change are different mechanisms for generating legal innovations, they have to be discussed separately. However, the impact of technological innovations is incorporated in this approach in a consistent way through the industry life cycle, which constitutes the economic selection environment. It is assumed that the wealth effects set incentives for individuals negatively affected by a new technology to turn to the law. They are induced so by the potential redistributive gains from legal innovations. both statutory as well as judge-made legal innovations can be linked to technological change in a systematic way, which allows to identify regularities and thus again to derive testable hypothesis about the co-evolution of law and technology.

Judge-made legal innovations are linked to the industry life cycle since the incentives for individual actors to take legal action increase, the more they are negatively affected by wealth reductions due to the use of the new technology (figure 3 c). Individual actors can go to court to get either a compensation and/or to prevent additional negative externalities. Judge-made legal change is modelled using a variation-selection-approach, which is based both on the

litigation frequency approach of the Law and Economics literature<sup>26</sup> as well as on Hayek's view of judge-made legal change as a permanent trial and error process (Eckardt 2001, p.132-149). All actors involved (judges, litigants) are assumed to be creative. Because abstract legal rules are applied to particular cases, interpretations are inevitable so that the administering of the law by the judges unavoidably generates legal innovations. The extent of the variety and heterogeneity of these legal innovations depends positively on the novelty of the underlying legal conflict. It is the highest in the early stages of the industry life cycle of a new technology. It takes time until a specific legal innovation has passed the hierarchical structure of the court system and eventually has become a precedent, which then is binding for the decisions of lower courts in similar cases. It is assumed that the frequency to litigate positively varies with the wealth reductions caused by the new technology.

Thus, the diffusion of a legal innovation which at first only applies to the particular legal case at hand, depends on (1) the selection mechanisms provided by the court system<sup>27</sup> and on (2) the economic selection environment which is represented through the industry life cycle and the resulting incentives to litigate. During the life cycle a legal problem-solving routine evolves which leads to a growing homogeneity of court decisions.<sup>28</sup> As a consequence the frequency to litigate decreases, since potential litigants can form more stable expectations as to the outcome of an action. Therefore out-of-court settlements become more attractive.

Also interest groups can influence judge-made legal change.<sup>29</sup> On the one hand they can affect the frequency of litigation, because generally they have more resources available for taking legal action. On the other hand, they can provide more specialised information, and thus can even influence the content of judge-made legal innovations. Since the costs for the formation of interest groups also vary over the market life cycle (Eckardt 2001, p.161-170), again testable hypotheses about the potential impact of different kinds of interest groups on judge-made legal change in different stages of the life cycle can be derived.

If actors are not content with the distributional results from judge-made legal innovations, they can try to alter them through the legislation. However, this requires the formation of

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<sup>26</sup>However, the notion that judge-made legal change is directed towards more efficiency is rejected, see *section 3.1* for more details.

<sup>27</sup>This is for example characterised by the juridical socialisation, the rules of interpreting the law, legal theory, the hierarchical structure of the court system, the role of precedent (Eckardt 2001, p.138-142).

<sup>28</sup>According to Nelson (1995, p.68) "routines can be understood as the behaviors deemed appropriate and effective in the settings where they are invoked". For a formal treatment of the impact of litigation on the generation of new legal remedies through judge-made legal change, see Fon/Parisi (2003); Fon/Parisi/Depoorter (2002).

<sup>29</sup> See also Hutter (1986); Parisi (2002), Rubin/Curran/Curran (1999).

interest groups. To analyse statutory legal innovations the variation-selection approach presented in *section 2.2* has been applied (Eckardt 2001, p.150-176). Again, technological and legal change are linked through the wealth effects exerted by the new technology, which vary over its life cycle and constitute the economic selection environment. It is assumed that in the early market stages first a collective perception of the problem at hand must be generated. Successful statutory innovations require that the negative externalities produced as by-products of the new technology are collectively perceived as a problem which should be regulated by the law. In the later market stages, bargaining processes dominate, which can be analysed by employing the findings of the Public Choice approach to politics (*section 2.1*).

In any case, however, creative political entrepreneurs play an important role. They not only react passively to the demand of voters or interest groups, but actively create commonly shared perceptions of the underlying problems and offer statutory innovations. Again the selection mechanisms of the legislative system limit the variety of viable statutory innovations. The rules laid down by the constitution define the relevant political selection environment. They determine what kind of problems can be treated by legislation and what actors are formally involved. Actors who are formally not allowed to take part in legislation have higher costs of putting through their interests than other parts of the population. The demand for statutory innovations is further influenced by the economic selection environment, since the costs of interest group formation vary according to the type of problem and the opportunity costs of the dominant interest groups<sup>30</sup>. Since these too change systematically over the industry life cycle, again testable hypotheses about the timing and the potential content of statutory innovations demanded for by interest groups can be derived.

Statutory and judge-made legal innovations and their resulting wealth effects not only affect the legal, but also the technological evolution, since the law is part of the selection environment under which technological change takes place (*figure 2*). Who has to bear the costs of negative technological externalities, which arise as a by-product of technological innovations, is itself a consequence of the legal rules in force. For example, if the producers of the negative externalities have to bear these costs, they will have stronger incentives to invest in technological change which is aimed to reduce these externalities. But if the persons negatively affected have to bear them, they will have incentives to demand products which eventually may help to reduce them. There are incentives for additional technological innovations. However, they will lead to another path of technological change.

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<sup>30</sup> The most relevant interest groups are the producers of the negative externalities, their competitors, and the persons negatively affected by the resulting wealth reductions (Eckardt, 2001, p.161-170).

Although this approach to the co-evolution of law and technology needs further analytical and empirical elaboration, it provides a uniform and consistent way to cope with the relationship of technological and legal change.

## **6. Institutional Competition and Legal Change**

All the approaches discussed so far analyse legal change within one jurisdiction. Both legal history and current developments, however, show that legal change does not take place in isolation. Legal rules are often imitated from rules in other jurisdictions and even from quite different legal traditions. Additionally, due to the growing economic and political integration, institutional competition<sup>31</sup> has become more intense over the last years. Moreover, both on a regional as well as on a global level there is a growing number of supranational bodies trying to solve coordination problems and internalise externalities among different autonomous jurisdictions. For example, within the European Union there is a broad discussion about centralisation / harmonisation on the one hand and decentralisation / regulatory competition on the other hand which concerns about every policy area. So far the precise mechanisms through which institutional competition takes place are largely treated as a black box, although an extensive literature deals with its causes and consequences (Bodenstein/Ursprung 2001; Breton 1998; Oates 1999; Ogus 1999; Sun/Pelkmans (1995); Tiebout 1956; Wellisch 2000).

Most approaches dealing with institutional competition draw a more or less explicit analogue to the concept of neoclassical competition theory. By assuming that preferences, technology, and resources are given, the decision-making problem of a jurisdiction is reduced to the supply of that bundle of public goods and services which best matches the preferences of the citizens. It is implicitly assumed that the range of alternative bundles of public goods and services is known and well structured, so that the remaining task is just to select the optimal one. A rare exception is Oates (1999) who discusses fiscal federalism as laboratory federalism which allows for learning from policy innovations of other states or jurisdictions. By referring to neoclassical innovation theory, he stresses that the production of policy innovations might be suboptimal because of positive information externalities which set incentives for free-riding behaviour.

But due to the limitations of neoclassical innovation theory which assumes a given set of innovations from which only the best one has to be chosen, it seems to be more promising to

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<sup>31</sup>In the following the term institutional competition refers to the literature on locational competition, regulatory competition, systems competition, interjurisdictional competition as well as about competition among governments.

apply an evolutionary approach which conceives institutional competition explicitly as a discovery procedure (Kerber 2003; Kerber/Budzinski 2003; Kerber/Heine 2003; Sinn 1997, 2003; Streit 1996; Streit/Wohlgemuth 1999). It cannot be assumed that all relevant solutions to political and economic problems are already known. In this view institutional competition is a mechanism which allows for parallel experimentation which bundles of public goods and services best fulfil the preferences of the citizens. In contrast to mere sequential experimentation, the parallel testing of different hypotheses in various jurisdictions generates more knowledge about the possible design and outcome of legal innovations than could be obtained otherwise. Institutional competition is a trial and error process which, in principle, allows for a higher rate of learning. As a consequence unsuited legal rules and the related economic policies should be modified or sorted out more easily.

But certain conditions have to be fulfilled for institutional competition to produce the desired outcomes. In particular it requires a clear-cut feedback mechanism between the application of a particular legal rule and its effects. For learning to take place there must be some observable signals which link cause and effect and which inform the legal decision-makers about the quality of the applied legal rules through rewards or sanctions. Otherwise, no incentives exist to alter legal rules with a poor performance. On markets profits and losses serve as signals for enterprises about how consumers assess their goods and services compared to those offered by their competitors. But even here problems arise about the adequate interpretation of such signals and the conclusions to be drawn.

The case of institutional competition is even more intricate, since there is nothing similar to a market for legal rules, neither within nor among different jurisdictions.<sup>32</sup> The assessment of the quality of legal rules is particular difficult because of the complexity and the multitude of intervening variables, which affect the performance of a certain legal rule. Moreover, there are also conflicts about the very objectives a legal rule should achieve, let alone a unanimous assessment of its performance. While these problems arise already within a jurisdiction, the evaluation of legal rules and their impact by other jurisdictions proves to be even more difficult due to language barriers, cultural and structural differences.

Despite these objections, different states and jurisdictions do in fact compete against one another for mobile resources. To this end, they offer specific bundles of public goods and services, including regulations, which affect their competitiveness both with respect to home-

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<sup>32</sup>For a critical discussion of drawing a market-analogue in the case of legal change see Nelson (1995, p.83); for a more sceptical view about the suitability of analysing economic evolution as a pure variation-selection process see Witt (2001).



produced goods and services and with respect to their attraction of foreign investment. The degree to which foreign purchasing power, mobile factors and enterprises are attracted serves as a signal which indicates the relative success or failure of states in supplying legal rules which are well adapted to the preferences and needs of their citizens. By taking into account this information, jurisdictions are in principle able to mutually learn from one another.

But a more precise distinction between different forms of institutional competition seems to be appropriate. It seems to be useful to classify institutional competition according to the factors which are mobile between jurisdictions (Kerber/Budzinski 2003). Depending on whether only information, or also goods and services, or even labour, capital and enterprises are mobile, different mechanisms of institutional competition exist. Furthermore, it has to be distinguished whether actors can choose merely between the whole bundle of legal rules offered by a jurisdiction or whether they are free to choose even single legal rules from various jurisdictions (choice of law). Only in the latter case institutional competition is akin to market competition because in that case single legal rules directly compete with one another. In all other cases legal change is almost exclusively the result of intra-jurisdictional competition among the various political actors of the respective jurisdiction.

But the feedback mechanisms which signal the relative success or failure of legal rules applied in other states extend the set of known alternatives from which a jurisdiction can choose. It increases the heterogeneity and variety of potential legal alternatives as well as the knowledge about their potential performance. Nevertheless, even if legal rules exist which are definitely superior to those currently applied, it depends on the statutory or judicial mechanisms of legal change whether the superior legal rule will actually be applied (*section 2 and 3*). Moreover, as the analysis of the path dependent nature of legal change shows (*section 4*), due to lock-in effects a transition to superior legal rules might be prevented.

This short discussion of institutional competition as a discovery procedure shows its knowledge creating effects and the potential learning effects about the working of economic policy measures and thus of legal rules and their impact on resource allocation, income distribution and innovations. Therefore valuable insights in the causes and factors influencing the imitation of legal rules from other jurisdictions can be gained. However, to draw final conclusions about this approach would be premature, since both more analytical as well as empirical work has to be done to be able to appreciate the contribution of this approach to our understanding of legal change.

## 7. Summary and Outlook

Law matters – both for long-term economic evolution as well as for more short-termed economic performance. The approaches presented above give an overview of the main lines of argumentation about the central mechanisms of legal change from an evolutionary point of view. Evolutionary Economics seems to be fruitful for explaining the generation and dissemination of legal innovations over time. The approaches discussed show that cognitive behavioural models, which stress creativity as a source for the endogenous generation of novelty, and various methods and concepts developed to explain technological and economic change are also appropriate for dealing with the peculiarities of legal change. In addition, distributional conflicts prove to be a relevant determinant of legal change. Evolutionary Economics thus extends the explanatory power of an economic approach to legal change.

We are, however, still far away from a comprehensive theory of legal change. The most elaborated approaches deal either with statutory or with judge-made legal change. But there is still scope for further research. Moreover, the impact of public bureaucracy on legal change during the implementation and application of legal innovations has been largely neglected so far. Also the interdependence of statutory and judge-made legal change merits more attention. An evolutionary approach to intra-jurisdictional competition might perhaps be a promising starting point for further insights. Although it is widely acknowledged that legal change is of an inherent path-dependent nature, the theoretical foundation for this assertion is rather weak so far. But this is a very important question both with respect to interjurisdictional competition as well as to the co-evolution of law and technology. In regard to the latter, more empirical studies about the hypotheses presented in Eckardt (2001) can increase our knowledge about the fruitfulness of this line of reasoning for explaining the interdependences of technological and legal change. Finally, the impact of informal norms and conventions on legal change has to be integrated in a comprehensive evolutionary theory of legal change.

## References

- ALCHIAN, A. A., 1950. Uncertainty, Evolution, and Economic Theory. *Journal of Political Economy*, 58, 211-221.
- ARANSON, P.H., 1986. Economic Efficiency and the Common Law: A Critical Survey. In: Skogh, G. and J.-M. von der Schulenburg, eds. *Law and Economics and the Economics of Legal Regulation*, Dordrecht: 51-84.
- ARANSON, P.H. 1992. The Common Law as Central Economic Planning. *Constitutional Political Economy*, 3, 289-319.
- ARANSON, P.H., 1998. Electoral Competition and Entrepreneurship. *Advances in Austrian Economics*, 5, 183-215.
- ARTHUR, B.W. 1988. Self-Reinforcing Mechanisms in Economics In: Anderson, Ph.W., Arrow, K. and D. Pines, eds. *The Economy as an Evolving Complex System*, Santa Fe Institute, Studies in the Science of Complexity 5: 9-.
- ARTHUR, B.W., 1994. *Increasing Returns and Path Dependence in the Economy*. Michigan.
- AUDRETSCH, D.B., 1995. *Innovation and Industry Evolution*. Cambridge/Mass.
- BECKER, G.S., 1983. A Theory of Competition Among Pressure Groups for Political Influence. *Quarterly Journal of Economics*, 98, 371—300.
- BODENSTEIN, M. AND H.W. Ursprung, 2001. Political Yardstick Competition. Economic Integration and Constitutional Choice in a Federation. *CESifo Working Paper*, No.501, München.
- BOURDEAUX, D.J. and A.C. Pritchard, 1994. Reassessing the Role of the Independent Judiciary in Enforcing Interest-Group Bargains. *Constitutional Political Economy*, 5, 1-21.
- BRETTON, A., 1998. *Competitive Governments. An Economic Theory of Politics and Public Finance*, Cambridge/UK, New York, Melbourne.
- BUCHANAN, J.M. AND G. Tullock, 1962. *The Calculus of Consent*, Ann Arbor.
- BULLOCK, D.S., 1995. Are Government Transfers Efficient? An Alternative Test of the Efficient Redistribution Hypothesis. *Journal of Political Economy*, 103, 1236-1274.
- CASSON, M., 2003. *The Entrepreneur: An Economic Theory*, 2nd ed. Cheltenham et al.: Elgar.
- CHOI, Y.B., 1999. Conventions and Economic Change: A Contribution toward a Theory of Political Economy. *Constitutional Political Economy*, 10, 245-264.
- COHEN, W.M. AND S. Klepper, 1992. The Anatomy of Industry R&D Intensity Distributions. *American Economic Review* 82, 773-799.
- COOTER, R.D. AND L. Kornhauser, 1980. Can Litigation Improve the Law Without the Help of Judges?. *Journal of Legal Studies*, 9, 129—163.
- COOTER, R.D. AND D.L. Rubinfeld, 1989. Economic Analysis of Legal Disputes and Their Resolution. *Journal of Economic Literature*, 27, 1067—1097.
- COOTER, R.D. AND T. Ulen, 1988. *Law and Economics*, 1st ed. Glenview
- COOTER, R.D. AND T. Ulen, 2000. *Law and Economics*, 3rd ed. Reading/Mass.
- DAVID, P.A., 1985. Clio and the Economics of QWERTY. *American Economic Review*, 75, 332-337.

- DE ALESSI, L. AND R.J. STAAF, 1991. The Common Law Process: Efficiency or Order? *Constitutional Political Economy*, 2, 107-
- DENZAU, A.T. AND D.C. NORTH, 1994. Shared Mental Models: Ideologies and Institutions. *Kyklos*, 47, 3-32.
- DOSI, G., 1982. Technological Paradigms and Technological Trajectories. A Suggested Interpretation of the Determinants and Directions of Technical Change. *Research Policy*, 11, 147-162.
- DOSI, G., 1988. Sources, Procedures, and Microeconomic Effects of Innovation. *Journal of Economic Literature*, 26, 1120-1171.
- DUNLEAVY, P., 1991 *Democracy, Bureaucracy and Public Choice*, New York.
- ECKARDT, M., 2001. *Technischer Rechtswandel und Rechtsevolution. Ein Beitrag zur ökonomischen Theorie der Rechtsentwicklung am Beispiel des deutschen Unfallschadensrechts im 19. Jahrhundert*, Tübingen.
- ECKARDT, M., 2004. The Evolution of the German Tort Law in the 19<sup>th</sup> Century – An Economic Analysis of the Evolution of Law. In: O. Volckart, ed. *Institutional Analysis of History*, Homo Oeconomicus, Special Issue, München, forthcoming.
- EGGERTSON, T., 1990. *Economic Behaviour and Institutions*, New York et al.
- EICHENBERGER, R. AND A. SERNA, 1996. Random Errors, Dirty Information, and Politics. *Public Choice*, 86, 137-156.
- FON, V. AND PARISI, F., 2003. "Litigation and the Evolution of Legal Remedies: A Dynamic Model. *Public Choice*, 116, 419—433.
- FON, V., PARISI, F., AND B. DEPOORTER, 2002. Litigation, Judicial Path-Dependence, and Legal Change., Gorge Mason University School of Law, *Law and Economics Working Paper Series*, 02-26.
- FREY, B.S. AND R. EICHENBERGER, 1991. Anomalies in Political Economy. *Public Choice*, 68, 71-89.
- FU-LAI YU, T., 2001. An Entrepreneurial Perspective of Institutional Change. *Constitutional Political Economy*, 2, 217-236.
- FURUBOTN, E.G. AND R. RICHTER, 1998. *Institutions and Economic Theory. The Contribution of the New Institutional Economics*, Michigan.
- HACKNEY, J.R., 2003. Law and Neoclassical Economics Theory: A Critical History of the Distribution/Efficiency Debate. *Journal of Socio-Economics*, 32, 361-390.
- HATHAWAY, O.A., 2001. Path Dependence in the Law: The Course and Pattern of Legal Change in a Common Law System. *Iowa Law Review*, 86, 601-661.
- HAYEK, F.A., 1948a. Economics and Knowledge. In: F.A. Hayek, ed. *Individualism and Economic Order*, Chicago: University of Chicago Press: 33-56.
- HAYEK, F.A., 1948b. The Use of Knowledge in Society. In: F.A. Hayek, ed. *Individualism and Economic Order*, Chicago: University of Chicago Press, 77-91.
- HAYEK, F.A., 1948c. The Meaning of Competition. In: F.A. Hayek, ed. *Individualism and Economic Order*, Chicago: University of Chicago Press, 92-106.
- HAYEK, F.A., 1967a. *Studies in Philosophy, Politics, and Economics*, London, Henley.
- HAYEK, F.A., 1967b. The Results of Human Action but not of Human Design. In: F.A. Hayek, 1967a., *Studies in Philosophy, Politics, and Economics*, London: Henley, 95-105.

- HAYEK, F.A., 1968/2002. Competition as a Discovery Procedure. *The Quarterly Journal of Austrian Economics*, 5, 09-23.
- HAYEK, F.A., 1969. Rechtsordnung und Handelsordnung. In: F.A. Hayek, ed. *Freiburger Studien. Gesammelte Aufsätze*, Tübingen: 161-198.
- HAYEK, F. A., 1973. *Law, Legislation and Liberty, Vol.I, Rules and Order*, London, Henley.
- HAYEK, F. A., 1979. *Law, Legislation and Liberty, Vol.III, The Political Order of a Free Society*, London, Henley.
- HAYEK, F.A., 1988. *The Fatal Conceit – The Errors of Socialism*, London: Routledge & Kegan Paul.
- HEINE, K., 2003. *Regulierungswettbewerb im Gesellschaftsrecht. Zur Funktionsfähigkeit eines Wettbewerbs der Rechtsordnungen im europäischen Gesellschaftsrecht*, Berlin.
- HERMANN-PILLATH, C., 2002. *Grundriß der Evolutionsökonomik*, München: Wilhelm Fink.
- HODGSON, G.M., 1993. *Economics and Evolution. Bringing Life Back into Economics*, Cambridge, Oxford.
- HUTTER, M., 1986. Transaction Cost and Communication. A Theory of Institutional Change, applied to the Case of Patent Law. In: G. Skogh and J.-M. Graf von der Schulenburg eds. *Law and Economics and the Economics of Regulation*, North-Holland, 113-132.
- JOLLS, C., SUNSTEIN, C.R. AND R. TALER, 2001. A Behavioral Approach to Law and Economics. *Stanford Law Review*, 50, 1471-1550.
- KERBER, W., 1996. Recht als Selektionsumgebung für evolutorische Wettbewerbsprozesse. In: Priddat, B.P. and G. Wegner eds. *Zwischen Evolution und Institution. Neue Ansätze in der ökonomischen Theorie*, Marburg, 297-326
- KERBER, W. AND O. BUDZINSKI, 2003. Towards a Differentiated Analysis of Competition of Competition Laws. *Zeitschrift für Wettbewerbsrecht / Journal of Competition Law*, 1, 411-448.
- KERBER, W. AND K. HEINE, 2003. Institutional Evolution, Regulatory Competition and Path Dependence. In: Pelikan, P. and G. Wegner eds. *The Evolutionary Analysis of Economic Policy*, Cheltenham, 191-222.
- KIRCHGÄSSNER, G. AND W.W. POMMERHNE, 1993. Low-Cost Decisions as a Challenge to Public Choice. *Public Choice*, 77, 107-115.
- KIWIT, D., 1995. Path-Dependence in Technological and Institutional Change – Some Criticisms and Suggestions, Max-Planck-Institut zur Erforschung von Wirtschaftssystemen, *Diskussionsbeitrag*, 10-95, Jena.
- KLEPPER, S., 1996, Entry, Exit, Growth, and Innovation over the Product Life Cycle. *American Economic Review*, 86, 562-583.
- KLEPPER, S. AND E. GRADDY, 1990. The Evolution of New Industries and the Determinants of Market Structure. *Rand Journal of Economics*, 21, 27-44.
- KNIGHT, J., 1992. *Institutions and Social Conflict*, Cambridge/Mass.
- KUHN, T., 1970. *The Structure of Scientific Revolutions*, 2nd ed. Chicago
- KURAN, T., 1995. *Private Truths, Public Lies. The Social Consequences of Preference Falsification*, Cambridge, London.

- LANDES, W.M. AND R.A. POSNER, 1975. The Independent Judiciary from an Interest Group Perspective. *Journal of Law and Economics*, 18, 875-911.
- LANDES, W.M. AND R.A. POSNER, 1979. Adjudication as a Private Good. *Journal of Legal Studies*, 8, 235-284.
- LIEBOWITZ, S.J. AND S.E. MARGOLIS, 1995. Path Dependence, Lock-in and History. *Journal of Law, Economics, and Organization*, 11, 205-226.
- LINDENBERG, S., 1998. The Cognitive Turn in Institutional Analysis: Beyond NIE and NIS?. *Journal of Institutional and Theoretical Economics*, 154, 716-727.
- MEIER, A. AND S. HAURY, 1990. A Cognitive-evolutionary Theory of Economic Policy. In: Dopfer, K. and K.F. Raible, eds. *The Evolution of Economic Systems. Essays in Honour of Ota Sik*, Houndsmill, London: 77-
- MEIER, A. AND T. SLEMBECK, 1998. *Wirtschaftspolitik: kognitiv-evolutionärer Ansatz*, 2nd ed. München.
- MERCURO, N., ed., 1988. *Law and Economics*, Boston/Dordrecht/London.
- MERCURO, N. AND S.G. MEDEMA, 1997. *Economics and the Law. From Posner to Post-Modernism*, Princeton.
- METCALFE, S.J., 1998. *Evolutionary Economics and Creative Destruction*, London.
- MUELLER, D.C., 2003. *Public Choice III*, 3rd ed. Cambridge/Mass.
- MUELLER, D.C., ed., 1997. *Perspectives on Public Choice: A Handbook*, Cambridge/Mass.
- NELSON, R., 1995. Recent Theorizing about Economic Change. *Journal of Economic Literature*, 33, 48-90.
- NELSON, R. AND S.G. WINTER, 1982. *An Evolutionary Theory of Economic Change*, Cambridge.
- NISKANEN, W., 1971. *Bureaucracy and Representative Government*, Hawthorne.
- NORTH, D. C., 1989. Institutions and Economic Growth: An Historical Introduction. *World Development*, 17, 1319-1332.
- NORTH, D. C., 1990a. *Institutions, Institutional Change and Economic Performance*, Cambridge.
- NORTH, D.C., 1990b. A Transaction Cost Theory of Politics. *Journal of Theoretical Politics*, 2, 355-367.
- OATES, W.E., 1999. An Essay on Fiscal Federalism. *Journal of Economic Literature*, 37, 1120-1149.
- OGUS, A., 1999. Competition between National Legal Systems : A Contribution of Economic Analysis to Comparative Law. *International and Comparative Law Quarterly*, 48, 405-418.
- OKRUCH, S., 1999. *Innovation und Diffusion von Normen: Grundlagen und Elemente einer evolutischen Theorie des Institutionenwandels*, Berlin.
- OLSON, M., 1965. *The Logic of Collective Action*, Cambridge/Mass.
- OLSON, M., 1982. *The Rise and Decline of Nations: Economic Growth, Stagflation and Social Rigidities*, New Haven.
- PARISI, F., 2002. Rent-Seeking through Litigation: Adversarial and Inquisitorial Systems Compared. *International Review of Law and Economics*, 22, 193-216.
- PENROSE, E., 1952. Biological Analogies in the Theory of the Firm. *American Economic Review*, 42, 804-819.
- POPPER, K.R., 1972. *Objective Knowledge – An Evolutionary Approach*, Oxford: Clarendon Press.

- POSNER, R. A., 1998. *Economic Analysis of Law*, 5.ed., Boston, New York.
- PRIEST, G. L., 1977. The Common Law Process and the Selection of Efficient Rules. *Journal of Legal Studies*, 6, 65-82.
- PRIEST, G.L. AND B. KLEIN, 1984. The Selection of Disputes for Litigation. *Journal of Legal Studies*, 13, 1-55.
- RIZZELLO, S. AND M. TURVANI, 2000. Institutions Meet Mind: The Way out of an Impasse. *Constitutional Political Economy*, 11, 165-180.
- ROWLEY, C.K., TOLLISON, R.D. AND G. TULLOCK, eds., 1988. *The Political Economy of Rent Seeking*, Boston.
- ROWLEY, C.K., 1989. Public Choice and the Economic Analysis of Law. In: N. Mercuro, ed. *Law and Economics*, Boston/Dordrecht/London, 123-173.
- RUBIN, P. H., 1977. Why is the Common Law Efficient?. *Journal of Legal Studies*, 6, 51-63.
- RUBIN, P.H., CURRAN, C. AND J.F. CURRAN, 1999. Litigation versus Legislation: Forum Shopping by Rent Seekers. *Independent Institute Working Paper #8* [online], Available from: <http://www.independent.org/tii/WorkingPapers/LitigationVsLeg.pdf> [Accessed 11.November 2003].
- SAVIOTTI, P.P., 1996. *Technological Evolution, Variety and the Economy*, Cheltenham.
- SCHMIDTCHEN, D., 1991. Jenseits von Maximierung, Gleichgewicht und Effizienz: Neuland für die ökonomische Analyse des Rechts. In: Schäfer, H.-B. and C. Ott, eds. 1991. *Ökonomische Probleme des Zivilrechts*, Berlin et al.: 316 -.
- SCHUMPETER, J.A., 1950. *Capitalism, Socialism, and Democracy*, 3rd ed. New York.
- SINN, H.-W., 1997. The Selection Principle and Market Failure in Systems Competition. *Journal of Public Economics*, 88, 247-274.
- SINN, H.-W., 2003. *The New Systems Competition*, Oxford.
- SLEMBECK, T., 1997. The Formation of Economic Policy: A Cognitive-Evolutionary Approach to Policy-Making. *Constitutional Political Economy*, 8, 225-254.
- SLEMBECK, T., 2003. Ideologies, Beliefs, and Economic Advice – A Cognitive-Evolutionary View on Economic Policy-Making. In: Pelikan, P. and G. Wegner, eds. *The Evolutionary Analysis of Economic Policy*, Cheltenham: Edward Elgar, 128-161.
- STREIT, M.E., 1996. Systemwettbewerb und europäischer Integrationsprozess. In: Immenga, U., Möschel, W. and D. Reuter, eds. *Festschrift für Ernst-Joachim Mestmäcker: zum siebzigsten Geburtstag*, Baden-Baden, 512-535.
- STREIT, M.E. AND M. WOHLGEMUTH, eds., 1999. *Systemwettbewerb als Herausforderung an Politik und Theorie*, Baden-Baden.
- SUN, J.-M. AND J.J. PELKMANS, 1995. Regulatory Competition in the Single Market. *Journal of Common Market Studies*, 33, 67-89.
- TIEBOUT, C.M., 1956. A Pure Theory of Local Expenditures. *Journal of Political Economy*, 64, 416-424.
- TULLOCK, G., 1998. *On Voting. A Public Choice Approach*, Cheltenham.

- VANBERG, V., 1993. Constitutionally Constrained and Safeguarded Competition in Markets and Politics with Reference to a European Constitution. *Journal des Economistes et des Études Humaines*, 4, 3-27
- VANBERG, V., 1994. *Rules and Choice in Economics*. London, New York.
- WANGENHEIM, G.v., 1993. The Evolution of Judge-made Law. *International Review of Law and Economics*, 13, 381-411.
- WANGENHEIM, G.v., 1995. *Die Evolution von Recht. Ursachen und Wirkungen häufigkeitsabhängigen Verhaltens in der Rechtsfortbildung*, Tübingen.
- WELLISCH, D., 2000. *Theory of Public Finance in a Federal State*, Cambridge.
- WINTER, S. G., 1964. Economic 'Natural Selection' and the Theory of the Firm. *Yale Economic Essays*, 4, 225-272.
- WINTER, S.G., 1975. Optimization and Evolution in the Theory of the Firm. In: Day, R. and T. Groves, eds. *Adaptive Economic Models*, New York, 73-118.
- WITT, U., 1996. The Political Economy of Mass Media Societies, Papers on Economics and Evolution. Max-Planck-Institute, No.9601, Jena.
- WITT, U., 2001. Evolutionary Economics: An Interpretative Survey. In: K.Dopfer, ed. *Evolutionary Economics: Program and Scope*, Boston: Kluwer Academic Publ., 45-88.
- WITTMAN, D., 1989. Why Democracies Produce Efficient Results. *Journal of Political Economy*, 97, 1395-1424.
- WITTMAN, D., 1995. *The Myth of Democratic Failure: Why Political Institutions are Efficient*, Chicago.
- WOHLGEMUTH, M., 2002a. Evolutionary Approaches to Politics. *Kyklos*, 55, Fasc.2: 223-246.
- WOHLGEMUTH, M., 2002b. Democracy and Opinion Falsification: Towards a New Austrian Political Economy. *Constitutional Political Economy*, 12, 223-246.