

**Cognitive Rules and Institutions -
On the Interrelation of Intrapersonal and
Interpersonal Rules**

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1. Introduction

With the growing importance of the analysis of institutions in the last decades, the relationship of rules on the one hand and individual behaviour on the other hand increasingly gains attention in economics. In the course of past discussion, the idea that institutions influence individual behaviour without determining it has become widespread. Additionally, the scientific analysis of individual human behaviour in many different disciplines points to the fact that individual behaviour is largely governed by mental or cognitive rules. Consequently, economic analysis has to deal with rules on two different levels. On the level of competitive and cooperative interaction of individual agents on markets, systems of rules (institutions) serve to coordinate individual economic activities. In this branch of analysis the agent itself is often modelled as a black-box and the mechanisms that produce his economic behaviour are excluded from the analysis. But if the process of perception, cognition and decision becomes internalised, a second dimension is added to the analysis, where cognitive rules guide the formation of expectations and decision-making on the level of intra-individual processes. This leads to the question whether the rules appearing on the two levels (inter-individual and intra-individual) can be analysed similarly or whether substantial differences demand differentiated analyses.

In this paper I argue that a differentiation of the two kinds of rules offers fruitful insights. I especially inquire into the interrelation of cognitive rules and institutions and I suggest that the degree of harmony and conflict between the two types of rules substantially influences both the purposeful and the spontaneous evolution of the institutional framework of an economy. The importance of this issue for economic theory and policy has been stressed recently (*North 1994, Rizzello and Turvani 2000, p. 166, Kiwit, Mummert and Streit 2000*), but until now especially the interrelation of cognitive rules and institutions is poorly understood (*Rizzello and Turvani 2001, pp. 1 – 5*). I attempt to provide an approach to the theoretical analysis of this subject and to derive some – rather provisional – policy implications. By doing this I intend to contribute to scientific progress on this subject and to encourage further analysis.

The paper is organized as follows. Chapter 2 starts with a separated discussion of institutions (section 2.1.) and cognitive rules (section 2.2.). Then, section 2.3. suggests the use of the terms interpersonal and intrapersonal rules to distinguish institutions from cognitive rules and draws a brief comparison of the two (subsections 2.3.1. and 2.3.2.). The actual analysis of the interrelation of the two kinds of rules is presented in chapter 3. After an inquiry into the meaning of institutions for the formation and evolution of cognitive rules (section 3.1.), two principal kinds of interrelation of interpersonal and intrapersonal rules are discussed (sections 3.2. and 3.3.). Thereafter, the role of competition is considered (sections 3.3. and 3.4.) before chapter 4 presents an economic application to demonstrate first policy implications. The discussion will show that the problem of institutional reform offers an especially matching example. Finally, important conclusions are summarized (chapter 5).

2. Institutions and Cognitive Theories – Two Types of Behavioural Rules

2.1. The Economic Notion of Institutions

In the last decades, an increasing interest in the study of institutions has developed in economics. Since this movement has not been connected to “old” institutionalism, as it is represented by *Veblen* (1898, 1919) or *Commons* (1924, 1934), the term new institutional economics has been implemented to characterize institutional analysis that is based on methodological individualism and does not refer to some kind of holism (*Coase* 1984, *Williamson* 2000). Therefore, new institutional analysis was first concentrated almost solely on transaction costs and property rights. However, in the course of time, the meaning of institutions for individual behaviour has gained more interest. Institutions and institutional evolution have also become an important subject to the analysis of market coordination and social interaction.¹

The economic interpretation of institutions distinguishes them from the term organization. Institutions are commonly defined as “sets of rules that allow a plurality of persons to coordinate their behaviour and to routinely solve typical problems that arise in social interaction” (*Vanberg* 2001b, p. 24)², whereas organizations are “groups of individuals bound by some common purpose to achieve objectives” (*North* 1990, p. 5). The latter, too, provide a structure for human interaction through their internal governance structures (organisational rules or routines). However, organisations³ perform as agents in the competitive market process and, therefore, belong to the players and not to the rules. In economic terms, the European Central Bank or the Federal Trade Commission are organizations, for example, whereas the Maastricht Treaty or the antitrust laws (e.g. Sherman Act, Clayton Act) are institutions. According to *Lachmann* (1963, pp. 66) one can distinguish between *external* and *internal* institutions. The first constitute a framework of laws and traditional or moral rules – external to the market sphere – in which individual economic action takes place, whereas the latter are implemented within the market sphere as for example standardized contracts or organizational rules. Institutions may be *formal* (i.e. codified; such as constitutions of states and companies, written law, etc.) and connected to explicit public enforcement or *informal* (i.e. non-codified; such as moral codes of behaviour, tradition, manners and customs, rules of zeitgeist, etc.) and enforced through social sanctions.⁴ Additionally, one distinguishes *designed institutions* that are purposefully created and intentionally implemented by authorized human agents (governments, parliaments, religious leaders, etc.) from *undesigned institutions* that emerge spontaneously (as a result of human action but not of human design, *Hayek*

¹ See e.g. *Coase* (1984), *Langlois* (1986a), *North* (1990, 1994), and *Vanberg* (1994).

² For similar definitions see e.g. *North* (1990, 1994) and *Dopfer* (1994). According to *Veblen* (1919, p. 239) institutions are “settled habits of thought common to the generality of men.”

³ From a strictly individualistic point of view one would have to speak of the entrepreneurs or of other representative agents (managers, chairmen, delegates, etc.) that act instead of the organization itself. However, organizations as large companies, for instance, often constitute legal entities and corporate bodies.

⁴ See *North* (1990).

1967b) and evolve self-organisationally over time.⁵ Finally, from a normative point of view one can identify *functional*, *afunctional* and *dysfunctional* institutions (Mueller 2000). This corresponds to the adequacy of institutions to solve the problems they are created for. In economic terms, efficiency represents a possible scale, although, concerning competitive market processes, concepts of adaptive efficiency have to be implemented instead of neoclassical allocative efficiency.

The economic effects of institutions are largely connected to individual behaviour. Institutions reduce transaction costs and thereby facilitate market transactions. Moreover, institutions facilitate social interaction itself, since they restrict the individual agents concerning their dispositions to behave. Hereby, expectations about the behaviour of other individuals become more secure and rational systematic economic behaviour is promoted. “It is on this very ground that institutions play their main role: they contribute to solving the decision problem by making life simpler for the individuals.” (Screpanti 1995, p. 67). Institutions lead to regularities in human behaviour and thus serve to coordinate the economic interaction of the individuals. They guide individual behaviour (without determining it) and thereby order the market process.⁶ Otherwise, the latter would be an irregular and sheer accidental process (Field 1979, p. 53).

2.2. Rational Individual Behaviour and Cognitive Rules

Economists that model individual behaviour guided by rules do not always refer to the kind of rules described above (institutions). Instead, rules internal to the individual mind are seen as an important element of human reasoning, learning, and decision-making. (Widely compatible) Approaches to individual behaviour guided by such *cognitive rules* can be found in most sciences that deal – in one way or the other – with human behaviour, for example cognitive science (Johnson-Laird 1983, Johnson-Laird and Shafir 1994, Smith, Shafir and Osherson 1994, Hayek 1952), socio-biology (Mayr 1988, 1992), social and political sciences (Mayntz and Scharpf 1995, Mayntz 2000), methodology (Popper)⁷, or cognitive psychology and contemporary neurobiology⁸. Recently, this kind of rule-based behaviour has gained increasing attention in economics⁹ and the insight that a modern scientific foundation of individualism would improve economic theory has become widespread. From the perspective of individualism one consequently has to consider that behavioural “knowledge becomes a general problem of human perception.” (Streit 1997, p. 38).¹⁰

⁵ See e.g. Langlois (1992) and Horwitz (1993).

⁶ See e.g. Boland (1979), Heiner (1983), Ebeling (1986), Langlois (1986a, 1986b), Hodgson (1988), North (1990), Horwitz (1993), Dulbecco and Dutraive (1997), and Budzinski (2000, pp. 139 – 151).

⁷ See Vanberg (2001b) for detailed references.

⁸ See Rizzello (2000) and Rizzello and Turvani (2000) for respective references.

⁹ See among many others Hayek (1969), North (1990, 1994), Selten (1991, 2000), Vanberg (1993, 2001b), Denzau and North (1994), Langlois (1998), Rizzello (1999), Mueller (2000), and Budzinski (2000).

¹⁰ See for a similar line of argumentation Rizzello (2000, p. 139).

The consensus among the different approaches is that individual agents develop *cognitive theories*¹¹ which consist of hypotheses about causes-consequences-relations in the real world. These cognitive theories are internal to the individual mind and differ among individuals due to the constructive character of the human brain and the interpretative character of human perception.¹² Nevertheless, communication as well as social and cultural interaction lead partly and incompletely to a compatibility of the cognitive theories of individuals belonging to the same social context (*Rieschel* 2000). The cognitive theories are partly conscious and partly subconscious and can be characterized as subjective and fallible hypotheses about the real world. Each one is connected to a rule of action that symbolises the most promising disposition to behave according to the prevailing cognitive theory. These conscious and subconscious cognitive rules guide individual behaviour as a response to perceived contexts of action, for example, in market competition. If an individual agent finds himself in a situation in which he has to act, he constructs a context of action through a cognitive interpretation process. This perception and interpretation process is limited (or bounded) by the capabilities of his brain. The subjective and distorted construction of the situation now becomes classified, i.e., the individual looks – consciously but more often subconsciously¹³ – for a category of problems derived from his individual past experience which is similar to the perceived one. If the current situation fits into an existing class of problems¹⁴, the cognitive rule connected to this kind of contexts of action is carried out. Since each situation is (historically) unique – and therefore contains some features not entailed in any other situation – the process of classification leads inevitably to a loss of information. If the context of action is correctly classified as a routine situation, this loss is small enough to not cause massive and perceivable negative consequences of the action carried out. Due to the subjective and interpretative character of human cognition, the individually constructed context or situation will always differ quantitatively (incomplete information) and qualitatively (distorted information) from the objective one (*Budzinski* 2000, pp. 99, 116). Thus, the expectations of the agent about the consequences of his behaviour may – according to the adequacy of both his cognitive theories and the subjective sorting process to match the real situation – be confirmed or disappointed, especially the latter leading to a process of learning. Through this learning process the agents improve their cognitive theories and their individual competences to classify. However, as situations

¹¹ These cognitive theories are also called mental models, cognitive programs, mental conjectures, cognitive paradigms, mental schemes, modules, etc. Although there are certainly differences in detail among those approaches, the general picture of human individual behaviour they entail seems rather uniform. For economic purposes the similarities are more important than some differences in detail since the economic consequences, or in other words, the consequences on economic behaviour of individual agents rely on the general picture – at least in the current state of economic research.

¹² Humans cannot perceive the real world directly but only through a process of interpretation. The data that is perceived through the different organs of perception (eyes, ears, nose, etc. – according to modern string-theory all of them registering waves of different frequencies) has to be interpreted on the background of the subjective world view of the individual, that has been moulded by his individual and unique past experiences, to generate and constitute information and knowledge. Thus, each human brain constructs a subjective “reality” on the basis of the interpreted data.

¹³ “[T]he sorting process takes place at the ‘subcognitive’ level, and it operates faster and more efficiently than if explicit calculation were involved.” (*Langlois* 1998, p. 67).

change due to an ever-changing environment (including the evolving behaviour of interacting agents), new mismatches will occur in the course of time.

If individual behaviour is governed by cognitive rules, one may wonder what this implies for the economic paradigm of rational behaviour. The answer depends on what is meant by rational behaviour. If rationality means that the actions of an individual agent are in accordance with his opinions, or, in other words, the individual consistency of cognitive theory and rule with the chosen disposition to act, rule-following behaviour is subjectively rational. Only if rationality is denoted as a choice of the objectively optimal solution does following potentially faulty cognitive rules appear incompatible with this notion of (objective) rationality.¹⁵ Following a notion of subjective rationality, rule-following behaviour becomes rational in routine situations (Vanberg 1993, Langlois 1998). In these situations, the renunciation of a calculation of (potential) yields and costs – each time the routine situation occurs – facilitates economic behaviour and leaves cognitive capacities free for more important things (Loasby 2000). Since agents have to deal with scarce cognitive resources in a complex competitive environment, it proves rational to minimize the cognitive efforts spent on routine decision cases in which singular case-by-case decisions would probably yield very similar results – but to far higher costs (Lane et al. 1996, Priddat 1996).¹⁶ Usually, rule-following in routine contexts works as a subconscious cognitive process, wherefore it is called *genuine rule-following behaviour*, and is preferred by rational individual agents (Vanberg 1994, pp. 12, pp. 25). Its significance for economics covers among other things decisions of consumers – concerning the demand of everyday goods – and of producers – concerning their standard demand of components. Extensions of this approach may, for example, serve to explain, why producers keep faith to their component firms even in the presence of objectively more profitable offers.

Genuine rule-following behaviour is, in fact, not the only kind of behaviour performed by subjectively rational agents. If one situation cannot be categorised because the cognitively constructed context of action is new to the mind of the individual agent, the respective agents have to perform a singular-case-decision. This also occurs if the following of a cognitive rule connected to a context which has been, up to now, classified as a routine situation brings about undesirable consequences, e.g. a sustainable loss of (individual) competitiveness. The agent must then decide whether his process of classification has been faulty (i.e., he has misclassified a new problem situation as a routine one) or whether his cognitive rule has become inadequate. In such problem situations the agents have to react consciously and develop a new mode of behaviour (Screpanti 1995, Langlois 1998). This is where (subjectively) rational calculations of costs and yields of potential dispositions to behave become advantageous and dominate

¹⁴ The individual agent believes the chosen cognitive theory can “explain“ the problem situation he faces.

¹⁵ See Machlup (1983) for an evaluative discussion of these different notions of rationality.

¹⁶ “What makes human behaviour effective is the inexplicit or tacit character of human rule following: people follow rules unconsciously, in a skillful or expert fashion; and people actually perform less well when they deliberately try to follow explicit rules (let alone when they try consciously to optimize).” (Langlois 1998, p. 65).

the individual behaviour. To achieve satisfying results, individual agents have to spend cognitive resources in problem situations and since cognitive resources are scarce, agents will rationally save them for problem situations.¹⁷

When facing a problem situation, individual agents may react in two different ways: they will consciously choose another existing cognitive rule to match the problem better, or they will create a new cognitive theory and behave according to a previously non-existing cognitive rule. The first case can be characterized as *derivative rule-following behaviour*¹⁸ and represents a more conservative mode of reaction. The creation of a new cognitive rule instead, describes an innovative mode of reaction and does not belong to rule-following behaviour in a narrow sense. It, nevertheless, may become rule-following behaviour if it is performed in similar future situations continuously but in the moment of its first appearance, it represents a behavioural innovation unpredictable for interacting agents.¹⁹ Moreover, creativity and innovation constitute breakthroughs through existing cognitive theories and rules, whereby the latter have to be unlearned or even erased to allow for the creation of new ones (Dopfer 1994).

2.3. Interpersonal and Intrapersonal Rules – An Overview on Some Similarities and Differences

Both institutions and cognitive rules guide individual behaviour and although they share some similarities, the rule-character of both kinds of rules differs in some substantial aspects. Therefore, and for the insights that the interrelation of both types of rules offers, a differentiation becomes both necessary and scientifically fruitful. The most obvious difference concerns the number of agents involved: While the cognitive rules belong exclusively (subjectively) to one single person, institutions are shared (intersubjectively) among different individual agents. To clarify which type of rules is being discussed, one could term cognitive rules as *intrapersonal rules*, whereas institutions could be named *interpersonal rules* (Budzinski 2000, pp. 150 – 151). Definitions that recognize the existence of different kinds of rules could read as follows (Budzinski 2000, p. 141): *Institutions are generally known systems of interpersonal rules which order repetitive interactions of individual actors and are followed by a majority of them.* Thus, one could define *cognitive theories as systems of intrapersonal rules which are mental representations that individual agents create to interpret the world and to produce expectations about social (economic) interaction.* In a very plain sense, intrapersonal rules are inside the individual minds whereas interpersonal rules are external to the minds of the individual agents.

¹⁷ “[T]hinking consciously about one’s performance is the mark of a novice. (...) Only when the situation presents new elements – *problematic situations* – does the agent have to deliberate (...)” (Langlois 1998, p. 67 and p. 71).

¹⁸ On genuine rule-following behaviour, derivative rule-following behaviour, and (subjective) rational choice see Budzinski (2000, pp. 131 – 139).

¹⁹ This effect is important because thereby innovation can be explained endogenously in market process theory and the never-ending character of competitive market processes (in the sense that they do not achieve a final equilibrium) including the permanence of the coordination task becomes well-founded.

In the next two subsections, I briefly discuss two examples of phenomena that, on the face of it, characterize both interpersonal and intrapersonal rules. However, exercising a more detailed analysis, substantial differences occur. Thus, the following analysis remains at the level of a comparison of the two types of rules. Thereafter, section 3 deals with the more interesting effects of the interdependency of the evolution of both types of rules.

2.3.1. Persistence and Path-Dependency

Both intrapersonal and interpersonal rules face a strong path-dependency and are characterized by a strong persistence. Thus, both types of rules sometimes survive over substantial periods of time although they have become inefficient and dysfunctional. However, this phenomenological similarity is based on different mechanisms that enable the prevailing rules to withstand the changing environment and persist even as inefficient solutions. Of course, there is institutional change (social or collective learning) and individual learning (to improve cognitive theories and rules), but these processes are imperfect and restricted, and, therefore, may lead often but not necessarily to (more) efficient solutions.

Cognitive theories and rules evolve as a consequence of the individual experience of undesirable results. If subjectively rational individual expectations are disappointed, the individual agent gains incentives to change his intrapersonal rules to improve his economic performance in competition. Yet, this process of learning is restricted and sometimes cognitive theories and rules persist although experience hints to their incorrectness. This persistence of intrapersonal rules is incorporated in the cognitive approach itself. The perception of experience is as selective and distorted as the perception of the problem situation itself. Information that serves the existing cognitive theories and rules is easily accepted, whereas information that points to their inappropriateness is rejected, denied, or denoted. The simplest way to deal with evidence that does not conform to one's own expectations "is to decide that the facts are wrong" (Loasby 1993, p. 209). It belongs to the human cognitive mechanisms – as well as rule-following behaviour itself – to prefer confirming over disappointing information. For example, distorting observations are far more often "explained" by situational circumstances and special features than confirming ones.²⁰ This is reinforced by the phenomenon that individual agents prefer to search for compatible information and to ignore others (in the sense of avoiding paths of search that would probably lead to problematic evidence). The principal subjectivity and rule-guided character of perception implies a

²⁰ "We commonly observe people refusing to learn or to change, even when the personal consequences of this refusal are negative – for example, the common tendency of managers to refuse to adapt to changes in the competitive environment in the absence of a major organizational crisis. Even scholars, whose business is the creation of new theories and knowledge, commonly react negatively (and sometimes with much personal anger) to those new theories and evidence. (...) They become wedded to the theories in their brains in ways which make them systematically worse off. And to make these challenges more difficult to deal with, the biological structure of the brain generally makes the individual blind to his or her own behavior." (Jensen 1994, p. 5). "People select external data, in a tacit way, by following previous experience (...)" (Rizzello and Turvani 2001, p. 13).

strong persistence of the once constructed cognitive theories and rules, thereby restricting individual learning through error-elimination.

Institutions serve – as discussed in section 2.1. – to coordinate and order economic interaction. They guide individual behaviour by facilitating the decision situation and serve as points of orientation in a complex environment. To fulfil this task, institutions have to consist of some minimum persistence. Instantaneously and permanently changing rules could not serve as interpersonal guidance and would bare their economic and social functions. Thus, efficient institutions necessarily entail persistence as long as they serve as problem solving devices.²¹ More interesting for the purpose of this paper is the question why sometimes inefficient institutions also persist. Actually, the interrelation of interpersonal and intrapersonal rules provides one solution (see section 3.2.), therefore, I will only briefly address two additional ones here.

The first aspect concerns rent-seeking behaviour. Institutions (at least partly) represent past allocations of (political, economic and social) power (*Veblen* 1898, 1919, *Hodgson* 1988). Due to the fact that the creation of formal institutions through the political process entails considerable latitude for influence by specific pressure groups, real world institutions will sometimes protect the economic interests of some (powerful) agents against the power- and profit-eroding effects of competition. Since parts of the institutional framework discriminate against less powerful agents, the more powerful agents will try to preserve the institutions from change although they are inefficient and dysfunctional to the majority of agents.²² According to *Olson* (1965) lobbyism of small groups to the debit of the majority and rent-seeking behaviour (instead of competitive profit-seeking behaviour) is connected to the homogeneity and organization of interest groups and becomes quite common in market economies in the course of time. He calls the resulting emergence and persistence of (inefficient and dysfunctional) institutions *institutional sclerosis*.

The second aspect concerns the individual choice between competing (and often informal) institutions and considers that individual agents have to bear costs if they switch from one institution to a competing one (e.g. *Mummert* 1999). Path-dependency in institutional evolution results – among other things – out of the effect that an institution becomes more efficient the higher the percentage of interacting agents is who also follow that institution. One may discuss this aspect in terms of institutional network

²¹ Since the (economic) environment evolves, formerly efficient institutions may become inefficient over time and have to adapt to the changing circumstances. While the character of institutions as an ordering principle requires some stability, the workability of institutions in an ever-changing environment calls for some flexibility. Thus, a conflict between persistence and flexibility of institutions results: “Insufficiently flexible institutions will be unable to adapt to new purposes for which they might be useful, while overly flexible institutions will be unable to provide the stability necessary to allow the formation of reasonably accurate expectations. Successful social institutions strike a balance between too little and too much flexibility.” (*Horwitz* 1993, p. 574). For an evolutionary approach to solve this dilemma see *Budzinski* (2000).

²² On the inefficiency of rent-seeking behaviour and discriminating institutions see *Eucken* (1952), *Streit* (1988) and *Vanberg* (2000, 2001a).

externalities. Therefore, pioneers of institutional change often cannot expect (immediate) individual profits but losses and thus hesitate to change institutions. Only if a critical number of agents is willing to switch to another institution and these agents know each other and are able to cooperate, will it become (subjectively) individually rational to do so.

2.3.2. Rules and Knowledge

Both types of rules incorporate knowledge that is relevant for individual economic action. Yet, intrapersonal and interpersonal rules do not consist of the same kind of knowledge. Institutions incorporate social knowledge that facilitates economic transaction and serves – together with the signals of the price system – to coordinate the divergent individual plans of suppliers and demanders. Thus, they may be described as “interpersonal stores of coordinative knowledge” (*Langlois 1986b*, p. 237). Institutional knowledge differs substantially from the knowledge entailed in cognitive rules. The latter incorporates individual knowledge – with cognitive theories about institutions as a part of it – and belongs exclusively to the individual. It includes the individual agent’s repertoire of dispositions to behave as well as his potential to innovate and to create new modes of behaviour. Individual knowledge is not available to other agents whereas institutional knowledge is common to most agents. Thus, in some way, social knowledge is entailed in individual knowledge. As I will argue in section 3.1., in a complex environment it becomes a necessary condition for rational economic behaviour to occur, that the individual knowledge covers social knowledge incorporated in institutions only as a black box without knowing and understanding both reason and exact function of the guiding interpersonal rules.²³

Individual and social knowledge together constitute a corridor between security (predictability) and insecurity (unpredictability) that drives the competitive market process. Institutions prevent markets from being purely accidental processes by making the behaviour of interacting individual agents to some extent predictable whereas the cognitive theories of the individuals sometimes produce surprising (to the other agents) behaviour. In problem situations, agents choose alternative dispositions to behave from their existing repertoire or create new²⁴ modes of behaviour. In both cases the behaviour of the agent reacting to a problem situation is theoretically unpredictable for the interacting agents since the individual agent himself does not know what to do in a problem situation unless he finds himself in it and he cannot know in advance which innovation he will create in such a situation unless he is forced to do so by market circumstances that devalue his former cognitive-rule-guided disposition to behave (*Wegner 1997*). Therefore, competitive market processes are neither sheer accidental nor determined nor in stationary state but represent an everlasting evolutionary process.

²³ The difference of knowledge incorporated in institutions and economic orders on the one side and the one available to individuals on the other side is discussed by *Hayek* (1937,1945,1973,1975).

²⁴ “New” in the sense of formerly non-existing, even to the mind of the individual himself.

The knowledge incorporated both in interpersonal and intrapersonal rules is improved and adapted to the changing environment through processes of individual and social or collective learning. Although both kinds of learning generally (but not necessarily) enhance and improve knowledge, they do not lead to constant and inevitable improvement of the rules. Next to the persistence of inefficient and dysfunctional rules discussed above (section 2.3.1.) the learning process is restricted because of the situational character of knowledge. In competitive market processes the environment of economic interaction changes over time and – individual and collective – knowledge that has been adequate and has represented an improvement in some past situations will probably be inadequate in future, when the context of action has slightly or massively changed. All knowledge incorporated in (both interpersonal and intrapersonal) rules is situational and becomes obsolete in the course of time. This natural devaluation of knowledge takes place at very different speeds and generally – but probably not without exceptions – it is slower concerning collective knowledge than concerning individual knowledge.²⁵

However, even concerning situational knowledge, the evolution of rules does not necessarily – although maybe usually – lead to (situational) improvements. On the level of intrapersonal rules the quality of the process of individual learning has to be examined. If individual agents perceive the inappropriateness of their behaviour and intend to change their cognitive theories and rules to improve them, an interpretative process will start. An action carried out by an agent will usually not be based on a single and trivial cognitive rule. Consider a cognitive theory and its corresponding rule which consist of different hypotheses. Thus, the agent has tested a complex bundle of hypotheses in market competition and tries then to identify which elements of his cognitive theory have caused the (subjectively experienced) inappropriate behaviour. As this task has to be carried out with the subjective and constructive cognition, it may lead the agent to eliminate the “wrong error” and even deteriorate the appropriateness of his cognitive theories. The task of identifying the parts of his cognitive theories responsible for his experienced failure is complicated by the fact that tacit and subconscious knowledge is involved. Additionally, the perception of success and failure may be distorted, too, since it largely depends on what the agent subjectively and according to his cognitive theories considered to be a satisfying outcome of his own behaviour. The individual agent may have overestimated the possible success he could objectively achieve in a specific situation and, consequently, he changes his behaviour (“he learns”) although he has performed the theoretical objectively best mode of behaviour. Though, in this case, he deteriorates his performance through learning he acts perfectly subjectively rational. As a consequence for economic interaction on competitive markets, one cannot postulate that rational individual agents necessarily improve their economic behaviour according to price signals unless a stable equilibrium is reached. Since situational improvements of cognitive theories and rules are usually achieved, competitive market processes may

²⁵ The rate of evolutionary change is higher in market competition itself than in the framework of market competition – although globalisation, for example, speeds up the evolution of the latter.

generally drive in the direction of evolving equilibria²⁶. However, since the competitive environment keeps evolving and since failures in individual and collective learning processes occur, these equilibria will probably never be reached. The competitive individual interaction endogenously produces innovation, wherefore the process sometimes will even lead away from equilibrium – and that does not necessarily mean that coordination is abandoned.

On the level of interpersonal rules the elements limiting the quality of the process of collective learning differ from the ones of the process of individual learning. With interpersonal rules, one especially has to address designed institutions²⁷ which doubtlessly influence competitive market interaction significantly in highly developed economies. The deliberate creation of institutions entails discriminating interests by influential agents. They may drive and force (political, legal, moral, etc.) authorities to design institutions that improve the economic position of specific powerful agents exclusively and, thereby, aggravate the quality of the general coordinative knowledge incorporated in the respective institutions. An additional problem arises concerning the knowledge available to institution-setting authorities. In fact, the designing of institutions often is a manifestation of former undesigned institutions (*Hayek 1967b*) and, therefore, represents coordinative knowledge. Still, the act of codifying and formalisation requires additional knowledge that extends the black-box-character of institutions. As authorized agents are subjected to the same cognitive restrictions as any other human agent, the process of formalisation of informal institutional knowledge represents again an interpretative process and distortionary institutions may result.

Both discriminating interests and imperfect knowledge lead public agents to implement partly distortionary institutions and, thereby, inhibit the efficiency and adequateness of purposeful institutional evolution. As a consequence, some streams of economic research have argued to reduce purposeful institutional change to a minimum and leave institutional evolution to the market forces.²⁸ However, there remains a necessity to purposefully design institutions. The first reason is that modern societies do not jump off any blank situation. Instead, institutional evolution develops an existing institutional framework that has been designed by humans in the past and, therefore, represents past purposes, protectionist interests, and imperfections. To declare this discriminating and distortionary status quo as the social optimum²⁹ means to perpetuate and to justify subsequently the past institutional distortions. The renunciation of designed institutional

²⁶ One may wonder whether it still makes sense to speak in terms of equilibrium. Austrian market process theory and German ordoliberalism, e.g., argue that an analysis in terms of order and constitution is more fruitful. For a deeper analysis see generally *Budzinski (2000)* and specifically on Austrian Economics *Vaughn (1992)*.

²⁷ Designed institutions do not consist of formal institutions only. Informal institutions can be – at least partly – designed, too, for example, through the influence of religious and moral leaders. Internal institutions can also be designed. Examples include the rules designed and enforced by the Chambers of Commerce. What impedes collective learning concerning undesigned institutions is discussed in the section on cognitive restrictions to institutional competition.

²⁸ Exposed advocates are the representatives of the Chicago School. But also some – but for sure not all – members of Austrian Economics and Neoclassical Economics argue along similar lines.

²⁹ This is the logical consequence of rejecting any further purposeful institutional intervention.

arrangements provides no escape because the undesigned institutional arrangement and even the pre-institutional situation also protect the economic interests of past influential agents and discriminate against less powerful ones. However, competitive markets cannot exist without specific (designed or undesigned) institutional arrangements: “If one views the world as consisting of self interested agents unconstrained by rules or norms, or norm-like phenomena, there exists no explanation for why the world does not degenerate into a Hobbesian war of all against all.” (*Field* 1984, p. 685).³⁰ If one starts with an imperfect and distortionary institutional framework, purposeful institutional change, although itself an imperfect and restricted process, may improve the institutional framework – but, of course, there is no guarantee. To declare the impossibility of an efficiency enhancing purposeful institutional reform, however, would mean “to deny the possibility that rational persons recognize the ‘rent-seeking-trap’ and engage in concerted effort to escape.” (*Buchanan and Vanberg* 1994, p. 171). The second reason points to the imperfection and rent-seeking-potential of spontaneous institutional evolution. Here, the interdependence of cognitive theories and institutions leads to restrictions of the evolutionary process (see section 3.5.).

³⁰ “[I]n a complex society, anything approaching a free market could only exist if it enjoyed the protection of laws, and therefore of the state. Thus the term ‘free market’ should always be placed in inverted commas, since it was always bound, or limited, by a legal framework and made possible only by this framework.” (*Popper* 1997, p. 312). See also *Dulbecco and Dutraive* (1997), *Vanberg* (1999) and *Loasby* (2000).

3. On the Interrelation of Interpersonal and Intrapersonal Rules

After the brief description and comparison of interpersonal and intrapersonal rules provided in the last chapter, the following one deals with the interrelation between the two types of rules and the insights that this analysis offers. Firstly, the meaning of institutions for the formation and evolution of cognitive theories is discussed (section 3.1.). Secondly, two kinds of interrelationship between interpersonal and intrapersonal rules – harmony and conflict – are analysed and a brief outlook on the economic implications is provided (sections 3.2. and 3.3.). Afterwards, the central coordination device of markets, competition, is considered. Section 3.4. deals with the meaning of competition for the interrelation of institutions and cognitive theories and section 3.5. analyses briefly some implications on the notion of institutional competition. The latter is discussed in economics both in terms of spontaneous institutional evolution and in terms of globalisation of markets and systems or orders competition. Both competitive processes are shaped and restricted by the influence of cognitive rules. Thereafter, chapter 4 provides an economic application of the subject stressed in this paper. More precisely, it deals with a problem of economic policy – both in theory and in practice – namely the analysis of institutional reform.

3.1. Institutions and Cognitive Limitations

As described in section 2.1. institutions restrict individual behaviour and by excluding specific modes of behaviour (that are not in accordance with the effective institutional arrangements) they facilitate subjective-rational behaviour, economic (competitive) interaction, and market transaction. However, this restrictive meaning of institutions on individual behaviour does not cover their entire relevance for the formation and evolution of cognitive theories and rules. Due to principal cognitive limitations, the existence of an institutional framework serve as a *necessary* condition for the performance of rational purposeful individual action.

By limiting the possible modes of behaviour that could probably occur in economic interaction, institutions reduce the complexity of the environment, or, in other words, the context of action the individual has to behave in. Thereby the institutional framework orders the context of interaction and enables individual agents to develop cognitive theories and to establish expectations about the outcomes and consequences of their behavioural dispositions.³¹ Only the existence of interpersonal rules leads to individual representations of a given context of interaction that are to some degree compatible (though not identical) and, therefore, make the process of action and response to some degree predictable and expectable. Without some minimum structure (external to the mind), individual agents would – due to principal cognitive restrictions – simply not be able to categorize problem situations and to perform intentional economic behaviour. Contingency becomes a necessary condition for individual choice since an evaluation of

³¹ See among others *Langlois* (1986b), *Priddat* (1996), *Dulbecco* and *Dutraive* (1997) and *Budzinski* (2000).

potential dispositions to behave cannot be performed with limited cognitive capabilities if the repertoire of these dispositions is not contingent. In this way, the restriction of individual dispositions to behave – that the prevailing institutional arrangements enforce – only enables the individual agents to act.

Altogether, institutions play a fundamental role concerning the shaping of intrapersonal rules. The individual cognitive theories of causes-consequences-relations (causality) of economic phenomena are largely influenced by the economic institutions (*Knight 2000*). The latter provide the framework which serves as the base of the formation of cognitive theories and rules. The individual cognitive representation of institutional arrangements itself constitutes an interpretative process and may lead to different representations of the same institution among different individuals. However, communication and the (cultural) path-dependency of cognitive theories reduce the differences and allow for some minimum compatibility among individual agents that face the same context of economic interaction (*Rieschel 2000*). Yet, the cognitive representation of institutions works along two different lines and to distinguish them becomes important for institutional evolution (see sections 3.2. and 3.3.). Institutions can on the one hand be cognitively represented as simple facts with black-box-character. They then affect the individual cognitive theories as data. On the other hand, interpersonal rules can be cognitively valued as expressing “true” or “right” knowledge about causes-consequences-relations in the real world. In this case, they develop deep influence on the cognitive theories and represent not only data that must not be ignored to perform successfully, but become an integral part of the intrapersonal rules.³²

The meaning of institutions for cognitive theories and rules extends the exclusion of specific modes of individual behaviour (*restrictive function*). Through the reduction of complexity institutions enable the formation of individual cognitive theories and rules (*enabling function*). After all, the structure and order provided by the institutional framework becomes a necessary condition for the performance of intentional individual behaviour and thereby broadens the individual repertoire of dispositions to behave (*expansive function*). Altogether, interpersonal rules enhance the competence of the individual agents to behave adequately in social and economic interaction (*Budzinski 2000*, p. 149).³³

3.2. Rule-Harmony and Institutional Persistence

If individual behaviour is guided by two different types of rules – intrapersonal and interpersonal ones – the degree of congruence of both kinds of rules becomes an important aspect. Whenever intrapersonal and interpersonal rules at least partly refer to the same context of action, two principal possibilities of their interrelation appear: they either incorporate compatible individual and collective knowledge and therefore stand

³² One may say their adequacy and trueness becomes the status of a belief or an ideology for the individual. See additionally *Denzau and North (1994)* on the meaning of ideologies for mental models.

³³ The individual *competence* consists of the *contingency* plus the individual ability to perceive and adequately interpret the environmental and competitive signals (*resonance ability*).

in harmony, or the represented collective knowledge is incompatible with the respective individual knowledge and rule-conflict results. Both kinds of interrelation produce different consequences on rule-following individual behaviour on the one hand, and on the performance and stability of institutions on the other hand.

Harmony between intrapersonal and interpersonal rules means that the individually perceived institutions stand in accordance with the cognitive theories and rules. Or, to be more precise, the cognitive representation of the relevant institutions harmonizes with the existing cognitive theories and rules. In the case of rule-harmony the institutional arrangements that frame a specific context of action are believed by the individual agent to incorporate “true” or “right” knowledge. This is rather obvious if the institutions fit into the existing causes-consequences-patterns of the individual agent and thereby confirm his cognitive hypotheses about the world. But even if the institutions do not fit into the existing intrapersonal rules, rule-harmony can emerge, since the individual agent might think the institutional knowledge to be superior to his own individual knowledge. This may result of non-satisfying experienced results of his cognitive rules recently. Therefore, he adjusts his cognitive theories and rules to the interpersonal rules.

Rule-harmony leads to an integration of the respective institutions into the cognitive theories, and the collective black-box-knowledge becomes part of the (subjective and fallible) individual knowledge. With it important consequences for the character of the respective institutions result: if institutions become an integral part of the cognitive theories of causes-consequences-patterns, they will develop their own *raison d'être* and their own morality, largely independent of the original reason or problem situation that once justified their emergence. The individual evaluation of black-box-knowledge incorporated in specific institutions as representing “right” or “true” knowledge leads to a normative justification of the respective institutions in the minds of the individuals. Even if these institutions become (objectively) senseless (afunctional) – e.g. due to the fact that the collective problem that once required their existence and reasoned their necessity has vanished – or inefficient (dysfunctional) in economic terms over the course of time, the individual agents will probably insist on their persistence. Moreover, individual agents who defend such dysfunctional institutional arrangements behave subjectively rational since according to their cognitive theories they belong to the “right” institutional framework (symbolizing “right” collective knowledge about causality). Thus, harmony between interpersonal and intrapersonal rules provides an additional approach to explain institutional persistence, especially in cases in which the persistence cannot be justified in terms of economic efficiency and transaction costs.

The enforcement of interpersonal rules that harmonize with the intrapersonal rules and, therefore, become integrated into the subjective world view of the individual agents does not present any problem at first glance since institution-following behaviour emerges without the menace of being publicly or privately sanctioned. Yet, to conclude that many real-world enforcement mechanisms are unnecessary misses the problem that the violation of a few agents might be enough to disturb the workability of the respective institution. And since rule-harmony depends on the individual process of institu-

tion-representation – with inter-individual differing cognitive theories – a society-wide rule-harmony without individual exception becomes rather improbable and, therefore, enforcement issues remain significant.

The implications of harmony between intrapersonal and interpersonal rules serve to explain the persistence of specific modes of behaviour although they are excluded by – formal or informal – institutions. Consider, for example, that many Indians keep following the institutional arrangement of the caste system, although it has been prohibited by the government. The fact that this institutional arrangement is believed to be normatively correct by many Indian agents (rule-harmony) leads to the phenomenon that the abolition of the formal institution becomes contradicted by the emergence and persistence of an informal institutional arrangement that further guides individual behaviour. The appearing conflict between formal and informal institutions in this case is based on rule-harmony between the institutional arrangement of the caste system and the individual cognitive theories and rules³⁴, this preventing an effective change of the institutional framework and causing the failure of political agents to implement effective alternative (formal) institutions. Another example provides the emergence and persistence of illegal markets in centrally-planned economies like the Soviet-Union or the GDR in the last century, although both formal and informal institutions (principles of socialist societies) attempted to exclude this mode of behaviour. The institutional arrangement of market-trading fit better into the cognitive theories of some agents than the informal and formal interpersonal rules of society and state. The latter conflicted with the cognitive theories and rules of these individual agents, what leads to an analysis of rule-conflict in the following section.

3.3. Rule-Conflict and Institutional Change

Conflict between intrapersonal and interpersonal rules means that the collective knowledge incorporated in specific institutions is incompatible with the cognitive theories and rules according to the subjective view of an individual agent. The individual perceives the institution, but does not integrate it into his own cognitive model, because he does not believe the institution to be “right” from the point of view of his subjective causality-theories. One could say that he believes the institution to incorporate incorrect knowledge.

Nevertheless, the institutional arrangements, which the individual agent does not want to integrate into his cognitive theories, do exist and therefore cannot be ignored by the agent, at least not, if they are enforced effectively through public or social sanctions.

³⁴ This provides a deeper explanation than to conclude that informal institutions generally dominate formal institutions (in this case the deviating informal institutional arrangement only emerged as a substitute for the abolished formal one – because of rule-harmony between the dominating cognitive theories and the to-be-reformed institutional arrangement). Interplay and interrelation of formal and informal institutions are not analysed in this paper (see *Mummert* 1999 on this subject), but if – as discussed above – institutions including formal ones influence the evolution of the cognitive models of the individuals (see section 3.1.), it becomes obvious that moral and ethical rules at least sometimes will adjust, too.

Thus, the respective individual cognitively represents the – to his view – dysfunctional institution as pure data without any (positive) normative implication. In dependence of the importance of the subjectively dysfunctional institutional arrangement for the agent, he accepts it as a (misguiding) fact – but would not defend it in case of institutional change – or engages in effort to change the respective rules. Rule-violation may be one consequence. However, the agent may still follow the interpersonal rule because of effective – public or social – enforcement.

With regards to formal institutions, rule-conflict requires enforcement through legal sanctions. However, the more individual agents construct a conflict of a specific institution with their cognitive theories and rules, the more difficult the enforcement becomes and the probability of institutional failure rises. Numerous individual agents will then engage in political effort (elections, demonstrations, influence on public opinion through mass media, etc.) to initiate institutional change.

Informal institutions may also stand in conflict with intrapersonal rules. Here again institutions are enforced through effective sanction mechanisms – yet, in this case, the negative consequences of rule-violation do not include legal sanctions. Instead, social ostracism and refusal to (economic) interaction may occur and, indeed, be as effective as legal sanctions. Again, compliance will fade if some critical number of agents violate against the informal institution and then enforcement will fail. Consider for example a society in which it is prohibited for moral reasons to headhunt employees. Violation is effectively socially sanctioned by consumers and cooperative business agents (component firms, commercial customers, etc.). However, if the number of rule-violating agents exceeds the tolerable renunciation of the consumers and the alternatives for cooperative business agents to sell or buy their commercial needs, the sanction mechanism will fail and the informal institution will be abandoned or, at least, change substantially. Altogether, informal institutions appear to be more sensitive to rule-conflict (than formal ones) because their enforcement mechanisms are more susceptible to mass violation.

Coming back to the example of the socialist societies of the last century, rule-conflict provides an additional approach to explain the initiation and process of transformation.³⁵ The principles of the socialist society were effectively enforced by many formal and informal institutions. Although people had to behave according to these principles, or, in other words, had to perform institution-following behaviour, many individual agents did not integrate these institutions into their cognitive theories but only mentally represented them as (effective) data. To internalise the socialist institutions was not necessary as long the respective agents showed compliance in their observable behaviour. However, the potential pressure towards institutional change grew with the number of individual agents that only followed the socialist institutional arrangement because of sanction mechanisms but not because of their cognitive beliefs. The prevailing conflict or discrepancy of intrapersonal and interpersonal rules could then –

³⁵ See for the following *Mayntz* (2000).

under convenient external circumstances – accumulate to “unexpected (and unpredictable) social discontinuities, as for instance exemplified by the break-down of seemingly stable socialist regimes.” (Mayntz 2000, p. 184).

3.4. The Role of Competition

After discussing two principal interrelations between interpersonal and intrapersonal rules, one key concept of economics has to be considered – the meaning of competition for the interplay of individual behaviour, guided internally by cognitive theories and rules, and the institutional framework of economic interaction. In economics, different theories of competition have been developed starting with *Smith's* (1776) notion of dynamic competition and including such different approaches like *perfect* and *monopolistic competition* (neoclassical price theory), *workable competition* (Clark 1940), the *Chicago School of Antitrust Analysis* (Bork 1978, Posner 1979), *contestable markets* (Baumol 1982), etc. For the purpose of this paper, the theory of competition provided by Austrian Economics serves best to explain the connection of competition, institutions and subjective-rational behaviour. Especially *Hayek's* (1948, 1968) notion of *competition as a discovery procedure* is addressed here.³⁶ According to this approach, the competitive market process can be understood as an evolutionary process in which individual knowledge is generated and disseminated. In perfect accordance with the concept of perception- and cognition-based individual behaviour presented in section 2.1., individual agents in economic contexts of action are not assumed to have perfect economic knowledge. Instead, the relevant economic facts (preferences, goods, technologies, etc.) are not known by the individuals in advance but are discovered through competitive interaction. Each individual agent knows only about his own circumstances and possibilities and can only build subjective (and therefore fallible) expectations about the opportunities of interacting agents. Only through the process of interaction in competition does the individual knowledge of interacting individual agents become combined. Thereby, the individual plans become coordinated as the agents revise their individual plans according to their experiences out of competitive interaction with the other agents.

In an extension of this approach, *Kerber* (1997) developed his concept of *competition as a knowledge-creating test of hypotheses*.³⁷ The modes of behaviour performed by individual agents symbolize hypotheses of successful opportunities in economic interaction. This may e.g. be hypotheses of consumer preferences which are carried out by firms through new products or new marketing techniques, etc. In addition, new technologies or new forms of organization (etc.) may be seen as hypotheses of more efficient ways of production. Consumers-behaviour expresses hypotheses of the individual utility of newly bought products. The individual knowledge incorporated in these hypotheses is subjective and based on the interpretative process of perception and cognition. Therefore, the hypotheses are fallible. By acting in competition according to their individual

³⁶ For modern Austrian adaptations and developments see *Lachmann* (1986) and *Kirzner* (1973, 1992, 1997).

³⁷ See also *Vanberg* and *Kerber* (1994) for a short description.

hypotheses, the agents test them on reality and the reaction of the interacting agents confirm or disappoint the subjective expectations. This leads to mutual learning and coordination is improved by the generation of situatively more adequate knowledge.³⁸ Thus, one can see competitive economic interaction as a process of experimentation that leads to trial-and-error-learning.

The compatibility of the notion of competition as a process of knowledge-generating tests of hypotheses – or, in other words, as a process of experimentation with mutual learning – with the analysis of interpersonal and intrapersonal rules provided in this paper is evident. On the basis of their cognitive theories, individual agents behave according to cognitive rules which embody hypotheses about the real world. In competition, the agents experience a feedback that confirms or rejects their intrapersonal rules. This feedback – the result of action and reaction of competitively interacting agents – causes the restricted process of individual learning as discussed in section 2.3. that generates new hypotheses – or, more often, reinforces the prevailing cognitive theories and rules – that, again, have to be tested in competition. Thus, competition can be called a *medium of interaction* (Budzinski 2000, pp. 170) between individual agents.

Along with analysing the meaning of competition for interacting agents, the subject of this paper especially points to the role of competition concerning the interrelation of intrapersonal and interpersonal rules. Once again, one may speak of competition as a medium of interaction, or, better yet, a medium of interrelation. Although the different types of rules do not compete directly as they do not interact (that would imply a personification of rules that is not intended in this paper), it is via the competitive interaction of individual agents that (economic) cognitive rules and (economic) institutions are interrelated. The institutional arrangements of an economy constitute a framework for competition. This framework, which can be called the competitive order (according to German ordoliberalism, e.g. *Eucken* (1952)), consists of a system of incentives (North 1994, p. 4) for the behavioural dispositions of the individual agents. If the emission of CO₂, for instance, is burdened with an ecological tax (level of interpersonal rules), modes of behaviour that avoid CO₂-emissions in the process of production gain increasing profits and become more successful in competition (level of intrapersonal rules). The enabling function of institutions (discussed in section 3.1.) is supplemented by an *incentive function* of institutions: through competition institutional arrangements serve as additional³⁹ evaluators of behavioural hypotheses. They constitute the system of incentives that is decisive for the question which of the individually performed modes of behaviour generates which outcome and profit.

Competition contributes to reveal whether intrapersonal rules stand in conflict or in harmony with interpersonal rules. Due to their principally restricted cognitive abilities,

³⁸ Both the ever-changing environment and the distorting human perception and cognition as well as the principally unpredictable creative abilities of individual agents (see chapter 2) lead to the permanent maintenance of the necessity to coordinate. The problem of coordination is never solved in competitive market processes (otherwise the process would be finished), however, the coordinative forces prevent a purely accidental process and constitute the emergence of order. See *Budzinski* (2000) for more details.

³⁹ Additional to the evaluation by the reactions of competitively interacting agents.

individual agents cognitively represent perceived institutional arrangements in a distortionary way. Thus, they test their institutional interpretation via their competitive behaviour and (incompletely) learn about its appropriateness. With evolving interpretations of the meaning of interpersonal rules, individual agents improve to identify rule-conflicts and adjust their cognitive theories or change the kind of representation (integration versus acceptance as non-ignorable data) instead.

When taking the role of competition into account, one has to refuse the notion (provided by *Rizzello* 2000, p. 142) that persistent cognitive rules (reproducing routine behaviour) generally consolidate the institutional framework whereas changing cognitive rules (producing innovative behaviour) lead to institutional evolution. Instead, the incentive function of institutions implies that sometimes innovative changes of the performed modes of individual behaviour might be necessary to stabilize the institutional framework. It rather depends on the kind of change of the intrapersonal rules if the respective institutional arrangement is consolidated or challenged:

- If the evolution of the intrapersonal rules is conformal to the incentive system provided by the institutional framework (*rule-harmony*), the latter will be consolidated.
- If the evolution of the intrapersonal rules is inconformal to the framework of interpersonal rules (*rule-conflict*), the respective institutional arrangements will be challenged.
- If the interpersonal rules evolve, (routine) persistence of cognitive theories and rules may produce *rule-conflict* and thus challenge the stability of the new institutional arrangement.
- If the evolution of the interpersonal rules is confirmed by a respective evolution of the intrapersonal rules, *rule-harmony* will occur and the new institutional arrangements will consolidate.

3.5. Cognitive Restrictions to Institutional Competition

A different type of competition is addressed if institutional competition is considered. In economic literature, institutional competition often serves to describe and explain the spontaneous emergence and evolution of formal and especially of informal institutions (*Hayek* 1967a, 1967b, *Horwitz* 1993, *Loasby* 1993). As “ordinary” competition in goods markets serves to select more efficient solutions and to supersede more inefficient ones, institutional competition is believed to produce efficient and functional institutional arrangements. However, since interpersonal rules owe their functionality largely to the fact that all or at least most agents follow them, competing institutions rarely emerge in real-world economies. Thus, as a consequence, even rational individual agents can normally not choose between different alternative institutional arrangements, and if they believe an institution to be dysfunctional they often cannot simply abandon it – both

because of enforcement and because of path-dependency.⁴⁰ In case of rule-conflict, individual agents have to rely on the so-called *voice-option* to obtain institutional change. In democracies, especially elections (majority principle) but also lobbyistic (rent-seeking) activities and public opinion (demonstrations, mass media, etc.) represent elements of the voice-option. The loser of the election- and rent-seeking game have to accept following individually disadvantageous interpersonal rules. Discriminating and dysfunctional institutional arrangements may consequentially result.

One solution is sometimes seen in the chance to implement institutional competition through the process of globalisation. The voice-option becomes supplemented by the so-called *exit-option*: the loser of the election- and rent-seeking game are no longer forced to live under the inefficient institutional framework but can leave (exit) the respective jurisdiction and choose the one that offers the individually most efficient institutional arrangements. Thus, the suppliers of institutional solutions – the jurisdictions – have to adjust their institutional arrangements to attract mobile individual agents and their potential of factors of production (labour and capital). Thereby, a process of competitive selection (*jurisdictional competition*)⁴¹ will be implemented and – hopefully – eliminate dysfunctional and inefficient institutional solutions (Vihanto 1992, Vanberg and Kerber 1994, Vanberg 2000).

Throughout political and scientific discussion, many doubts concerning the effectiveness of jurisdictional competition have been raised.⁴² The interrelation of intrapersonal and interpersonal rules points to some additional cognitive restrictions and limitations of the process of jurisdictional competition. As discussed above, individuals have to subjectively interpret institutions via their constructive cognitive mechanisms. Therefore, individual agents will, at best, choose the institutional arrangement that subjectively rationally provides the most adequate solution, which naturally need not be the objectively most functional one. Furthermore, the process of choice between competing institutional offers is inhibited by cognitive path-dependencies: if the domestic institutional arrangement fits well into the cognitive theories of an individual agent, he frequently will refuse to search for alternative solutions. Nevertheless, some of the foreign institutional offers may serve his individual interests objectively better, but, for cognitive reasons, the less efficient domestic solution may persist. Additionally – as discussed in section 2.3. – changes in the cognitive theories are subjected to restrictions, too.

Another cognitive limitation of jurisdictional competition arises if competition is addressed as a knowledge-generating process of experimentation (see section 3.3.).

⁴⁰ The disincentives for pioneers of institutional change contribute massively to the phenomenon of path-dependency and persistence of institutional arrangements, see section 2.3.

⁴¹ Additionally the terms *systems competition*, *orders competition* and *regulatory competition* are used in literature.

⁴² For instance, among others, a run-to-the-bottom (concerning social, ecological, or antitrust regulations) is feared (Sinn 1990, 1997), the question of the institutional framework of institutional competition is discussed (Vanberg and Kerber 1994), and the probability of new discriminating institutions due to

Different to “ordinary” competition, it becomes rather improbable for individual agents to test their hypotheses about the subjective utility of different institutional arrangements offered by different jurisdictions. Due to high costs of changing jurisdictions and their institutional offers, learning has instead to rely on observation of the institutional performance of foreign jurisdictions. However, learning through observation entails additional risks of failure (additional to the principal imperfection of mutual learning through experimentation itself, see section 3.3.). Specific institutions in foreign jurisdictions that have been identified as being superior to domestic ones might not work the same way at home because of different cultural dispositions, distortionary interdependencies to prevailing domestic institutions, territorial effects, etc. Changing the jurisdiction for institutional reasons requires the consideration of advantages and disadvantages of foreign institutional frameworks. This poses a difficult cognitive exercise since the institutional offers consist of a complex bundle of institutional arrangements with complex interrelations. Therefore, the probability that subjective rational individual agents migrate to the most efficient institutional arrangements is not too high and scope for the persistence of dysfunctional institutional solutions remains.

Cognitive limitations also occur on the supply-side. Signals of exit and entry have to be interpreted by the politicians of the respective jurisdictions. The individual decision to leave or to enter a jurisdiction does not automatically reveal which part of the institutional framework has been responsible for the individual choice. To adjust the institutional arrangements according to the needs of the mobile individual agents requires a perfect interpretation by politicians of the complex individual decisions which, however, is restricted and limited for cognitive reasons and, therefore, seems rather improbable.

principal differences in the mobility of different groups of agents and factors of production is addressed (*Budzinski 1999*).

4. The Problem of Institutional Reform – An Economic Application

In many highly-developed market economies, especially in Western Europe, several institutional reforms, or better, the needs for such reforms, are discussed intensely. Examples that address mainly economic concerns include labour markets, social security systems, environmental policies concerning global climate change (ecotax-reforms, systems of voluntary agreements, etc.), budgetary systems, agricultural commodities markets, and many more. Whereas in many cases the need and urgency of institutional reforms is known for a rather long time and is widely accepted among experts, the realisation of projects of institutional reform most often comes off quite slow. Economic theory provides some important approaches to deal with this phenomenon by analysing, for example, deficiencies in the political and administrative decision processes and lobbyism (*Eucken* 1952, *Olson* 1965), individual-specific uncertainty asymmetries about losers and gainers (*Fernandez and Rodrik* 1991), etc.⁴³ However, little attention is paid to the influence of intrapersonal rules and especially to the interrelation of intrapersonal and interpersonal rules on the limits and scopes of institutional reform processes. The following analysis does not aim to be exhaustive on this topic – due to scarcity of time and space – but outlines some important insights that may help to further develop additional theoretical content on the problem of institutional reform. Since the prevailing economic approaches tend to emphasize the limits (*Eggertsson* 1998), the additional findings of the cognitive-institutional approach include a deeper exploration of the scopes for institutional reform in imperfect economic and political environments.

The analysis of the interrelation of intrapersonal and interpersonal rules in sections 3.2. and 3.3. leads to the importance of rule-harmony and rule-conflict for institutional change. Rule-harmony stabilizes specific institutional arrangements because of the normative justification these institutions have become in the minds of the individual agents – thereby bringing about the consequence of strong status-quo-lobbyism and institutional persistence. In contrast to this, rule-conflict facilitates the implementation and enforcement of institutional reform and sometimes even causes pressure for reform via extensive rule-violation or massive engagement in voice- and exit-options. This provides additional explanations to the problem why reforms that (from the economic perspective) enhance welfare sometimes are demanded by the public and sometimes are inhibited. Especially, it becomes explainable why, in some cases, discriminating institutions favoured by specific small interest groups experience tacit support by the majority (although, objectively, it is to their disadvantage). This obviously can be the case if those discriminating institutions harmonize with the dominating cognitive theories.

For the remaining scopes for institutional reform, the focus is on the question when (under which conditions) purposeful institutional change leads to the desired effects. Here, the reaction of the individual agents to political institutional reforms becomes sensitive for the success of the respective reform. If some critical mass of individual

⁴³ For an overview see *Rodrik* (1996) and *Eggertsson* (1998).

agents integrates the reformed institutional arrangement and adjusts their cognitive theories and rules (rule-harmony), the agents will probably produce target-conformal⁴⁴ modes of behaviour. Successful implementation and enforcement of institutional reform then becomes realizable. If, instead, rule-conflict dominates, the probability of institutional failure rises because of inhibition or prevention of the institutional reform or because of target-inconformal behaviour that contradicts the goals of the reform. Even if implementation can be exercised due to strong sanction mechanisms, the effectiveness of the new institutional arrangement will remain comparatively low whereas the enforcement costs will increase. Depending on the kind of individual cognitive representation of the institutional reform, efficient, inefficient and impracticable reform processes can be distinguished:

- Efficient reform processes – low costs of implementation and enforcement – occur if the new institutions become integrated into the (evolving) cognitive theories.
- (Potentially) Inefficient reform processes – high costs of implementation and enforcement – result if the new institutions are mainly represented as pure data but accepted because of the credible threat to be sanctioned (with prohibitive dimensions).
- Reform processes become impracticable if the majority of agents violates against the new institutional arrangements because the resulting rule-conflict is too important to comply with the enforcement mechanisms.

One may conclude that politicians ought to orientate their decisions on the prevailing cognitive models to achieve rule-harmony and, thereby, successfully reform the existing institutional arrangements. This would tend to lead to the lessons of (objectively-) rational expectations macroeconomics of the *Lucas-type*⁴⁵ (although from a slightly different perspective). However, the view that institutional reforms should follow the evolution of cognitive theories has to be rejected for two main reasons. As discussed in section 2, cognitive theories and rules incorporate imperfect and fallible knowledge. Therefore, a generalisation of these intrapersonal rules need not lead to efficient institutional arrangements. This is a mere theoretical aspect since intrapersonal rules are truly individual and subjective and, thus, differ substantially among different individual agents. Despite the common cultural context, there does not exist a homogeneity of cognitive models and, therefore, no generalisation is available (*Hayek 1937, 1945*). Thus, with subjective rationality, no general inefficiency of systematic institutional policy can be derived. Instead, purposeful institutional reforms may raise institutional efficiency and functionality if they contribute to improving the individual cognitive

⁴⁴ Target-conformal means that the changes in individual behaviour occurring in consequence of the reformed institutional arrangement serve the targets and intentions of the reformers. This extends to two dimensions: first, the agents do not engage in effort to prevent or to cancel the reform, and second, the newly performed behaviours lead to fulfilment of the political goals. (Once again I shall remark that I only intend to point at additional insights following from the interrelation of intrapersonal and inter-personal rules. Therefore, I neither discuss the quality of politico-economic targets and intentions, nor the principal shortcomings of administrative decision and implementation processes.)

⁴⁵ See *Eggertsson (1998)* on this point.

theories and rules.⁴⁶ The second reason refers to the fact that politicians and other authorized agents do not dispose of adequate knowledge about the cognitive theories and rules because these differ inter-individually and the politicians themselves have to interpret the observed behaviour of the agents to draw conclusions about rule-conflict and rule-harmony. Due to the principal human cognitive limitations, this subjective process of interpretation is imperfect and fallible.

To enhance the probability of successful institutional reforms – with regards to the process of implementation and the target-conformity of the new individual behaviours – two possible strategies can be identified. The first aims to intentionally influence the mode of cognitive representations of a specific institutional reform and the second focuses on the kind of intervention undertaken by reformers. I will sketch both strategies briefly in the following to show which direction the discussion moves into.

If individual cognitive theories and rules affect the consequences of actual economic policy and, therefore, substantial institutional reforms require an adaptation of new models through an integration of the new institutional arrangements into the existing intrapersonal rules, then the cognitive theories and rules become an *intermediate target* of economic policy (Eggertsson 1998). Politicians must be concerned about the kind of interpretation and representation of the new institutions by the individual agents. However, the individual cognitive models are not subject to direct control by politicians and other authorized agents through political intervention (Eggertsson 1999). In the same way, it will be impossible to forecast exactly how the reformed institutional arrangements will affect and change the cognitive theories and rules. This does not imply that being sensitive to the importance of individual processes of interpretation and representation of institutional reform – or, in other words, being sensitive about rule-conflict and rule-harmony – would not improve institutional policy (through a major emphasis on communication, for instance). However, it does point out the imperfectness and incompleteness of regulatory knowledge and, thus, leads to some limits of intervention, and, thereby, reveals the remaining range of institutional policy.

Imperfect regulatory knowledge indicates that not every policy target in the sense of a specific institutional design is achievable in competitive market economies. Agents of institutional reform have to induce individual target-conformal behaviour, otherwise they will not manage to implement functional and sustainable new (reformed) institutional arrangements. To achieve an acceptable probability of success, politicians could concentrate on the devaluation of specific, identifiably inconformal modes of individual behaviour and leave alternative (target-conformal) ones open to the competitive market process as a discovery procedure (Wegner 1997). If the reformed institutional arrangement attempts to predetermine specific modes of behaviour, the probability of rule-conflict rises because innovative modes of reaction by individual agents almost automatically break the predetermined path. This is due to the fact that the reforming agents

⁴⁶ It appears unnecessary to emphasize that purposeful institutional reforms need not and do not always improve institutional efficiency. However, the influence of the institutional framework on cognitive rules and, thus, on individual behaviour offers scope for efficiency-enhancing institutional reforms.

cannot predict innovative individual reactions adequately since the latter are only cognitively created when the agent actually faces the problem situation. And since the individual agents do not know themselves which new mode of behaviour they will create if their routine one becomes devaluated through institutional reform, no one outside their minds can even theoretically dispose over respective knowledge in advance (*Wegner* 1997). Thus, target-conformal behaviour becomes more probable if the reformed institutional arrangement limits itself to devaluate or exclude specific inconformal modes of behaviour and leaves the creation of new ones that are characterized as politically target-conformal and economically efficient to the process of competition. There, individual agents are able to test new hypotheses which represent their subjective interpretation of the new institutional framework and generate (situative) knowledge about its effects. This (although imperfect) process of individual learning promotes rule-harmony by allowing the agents to individually adapt their cognitive theories and rules in an innovative way.

Nevertheless, there is no guarantee for efficiency-enhancing and successfully implemented and enforced institutional reforms. Along with the deficiencies of political and administrative decision-making and implementation processes which are left aside in this paper, institutional reforms include a principal risk of failure since the innovative reaction of the individual agents need not be target-conformal in every case (*Wegner* 1997). Instead, agents may innovate to evade the targeted effects of institutional reform and thus engage in rule-conflict. Tax-evasion offers a prime example. If political agents react by implementing additional interventions, the competitive market process becomes more and more restricted and the individual liberty to create innovative modes of behaviour deteriorates. Along with the dynamics of competition, economic efficiency decreases and, thereby, political success is missed permanently. Instead of implementing new interventions, politicians must take into account that they perhaps have induced an impracticable institutional reform and, therefore, have to redefine policy targets. The previous ones may simply not be achievable in competitive market economies, or, respectively, only to the debit of superior targets like welfare and economic efficiency.

Altogether, the range of institutional policy is a limited one. Interventions into competitive market processes are more probably successful if the desired target-conformal modes of behaviour are not prescribed and predetermined by the intervening authorities but left to the innovation forces of the competitive interaction of the individual agents. Nevertheless, political success depends on the cognitive representation of the institutional change by the individual agents. Post-reform rule-harmony and rule-conflict are decisive whether individual agents predominantly create and perform conformal or inconformal modes of behaviour. The theory of economic policy (and, consequently, practical economic policy) may profit from evolutionary institutional analysis by deriving principles of political interventions into competitive market processes that enhance the probability to induce predominantly target-conformal reactions. Further research on this subject is necessary to approach this task. Some provisional impli-

cations can nevertheless be outlined from the analysis in this paper: one principle of institutional policy may be called the *anticipatability* of purposeful institutional change. This means that the individual agents should know about institutional reform and its targeted effects in advance and should not be surprised. Anticipatability facilitates the integration of the new institutional framework into the individual cognitive theories and rules and, thereby, promotes their adjustment. This supports after-reform rule-harmony and, thus, helps to induce a target-conformal evolution of individual behaviours. Another principle of institutional policy consists of the *openness* of political targets. Institutional interventions should save the individual liberty to innovate and to create new modes of behaviour. In other words, intervening authorities have to avoid what *Hayek* (1975) calls “the pretence of knowledge” and limit themselves to exclude undesirable modes of behaviour instead of designing and prescribing specific favoured ones. In a world with imperfect knowledge and subjective and constructive cognition, competitive market processes are the only device to create (relatively) efficient solutions to economic problems. The task of institutional policy is the shaping of the institutional framework to induce the creation of target-conformal modes of behaviour through competitive interaction. This represents both limit and scope of purposeful institutional reforms. Additional principles of institutional policy – one may think of *non-discriminating institutions*, for instance – have to be derived through further analysis. First approaches to derive general principles for economic policy from an institutional and evolutionary perspective have been recently developed (*Wegner* 1997, *Budzinski* 2000, pp. 223 – 257, 2001, *Pelikan* and *Wegner* 2001).

5. Conclusion

The discussion in the last chapter provides just a brief outline of additional insights and policy implications that are offered by an analysis of the interrelation between interpersonal and intrapersonal rules. It, thereby, serves to illustrate the importance and usefulness of this approach. Further discussion and analysis is necessary to provide more detailed theoretical explanation and policy advice for economic problems.

However, even (new) institutional and evolutionary economics have not yet deeply analysed the important consequences of the interrelation of interpersonal and intrapersonal rules. The subject is rarely addressed and the differentiation and the interrelation of the two kinds of rules are actually rather unclear in the discussion. Notably, *Hayek* has inquired into a similar though – in my opinion – not identical subject some thirty years ago.

Hayek (1967a) analyses the interplay between rules of individual conduct and the social order of actions. He provides important reasons for a distinction between these aspects (pp. 68 – 69) and refers largely to the influence of the evolution of systems of rules of individual conduct on the evolution of the social order. Yet, his distinction between *rules of individual conduct* and *social order of actions* does not equal the differentiation of *interpersonal* and *intrapersonal rules* provided in this paper. *Hayek's* (1967a, pp. 66) rules of individual conduct entail any rule which governs the behaviour of the individual members of a group or society (whereby the individuals are seen as the elements of a corresponding order). This includes both interpersonal and intrapersonal rules. In contrast, the social order of actions describes the pattern of actions which result from individual interaction. In non-accordance with many other economic connotations of order (*Eucken* 1952, *Lachmann* 1963, 1986, *Hodgson* 1988, *North* 1990, *Vanberg* 1994, *Budzinski* 2000), *Hayek's* (1967a, pp. 66, 70) social order of actions represents a complex (non-trivial) totality or entity of all performed individual actions with the latter being guided by rules of individual conduct and external circumstances (contexts of action). This social pattern of (inter-) actions does, therefore, not describe any *system of rules* but a *system of behaviours* (influenced – among other things – by different kinds of rules).⁴⁷ Thus, neither interpersonal nor intrapersonal rules are directly addressed.

The differentiation of interpersonal and intrapersonal rules serves to clarify the economic debate on the interdependency of rules and individual behaviour. This discussion often lacks the consciousness that different implications occur whether rule-following individual behaviour applies to institutions as collective rules or to cognitive models as individual rules, for example concerning the incorporated knowledge or the nature of persistence and change of rules and behaviour. Above all the analysis of the interrelation of the two types of rules offers fruitful theoretical and political insights that still

⁴⁷ It remains discussable whether this notion of order stands in perfect accordance with other analyses of *Hayek*, for instance concerning *order* and *catallaxy* (e.g. *Hayek* 1973) or his *sensory order* (*Hayek* 1952) which is to a large extent compatible to the notion of cognitive theories and rules presented in this paper.

are not explored much in economics. The important dimensions to be considered are rule-harmony that stabilizes institutional arrangements and rule-conflict that induces pressure to persistent institutions. In this context, competition can be seen as a medium of interaction that allows individual agents to learn both about the behaviour of interacting agents and the nature and effects of the institutional framework.

Altogether, the institutional dynamics are cognitively framed by the kind of representation of the institutional arrangements in the cognitive models of the individuals. Thus, institutional policy has to consider the interrelation of intrapersonal and interpersonal rules to achieve its targets with a suitable probability. This is exemplified with institutional reforms as an object of institutional policy. Along with other influential factors, institutional reforms are inhibited if harmony between the old institutional arrangement and the prevailing cognitive theories and rules dominates, and encouraged if rule-conflict prevails. The topic of institutional competition in the process of globalisation offers another example of the wide range of economic applications of the theoretical considerations provided in this paper. The derivation of general principles to institutional policy according to these insights can currently be no more but sketched out and, therefore, represents an important subject to further research.

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