

Institutions, Institutional Change, and Cognition - The Case of Insurance

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Abstract:

The paper contributes to the theory of institutional emergence and change, taking an evolutionary perspective. It starts out from a ‘real world’ example, the emergence of insurance. The characteristics of the three main lines of development are conveyed by ‘stylized facts’ of the history of marine, fire, and life insurance. By way of game theoretic structuring the essential strategic situations two underlying institutional formation problems can be identified, namely the problem of control and sanctioning and a frequency dependent participation problem. The concepts are then combined with more detailed insights into the nature and role of cognition in perpetually overcoming these two basic problems anew. It can be shown that world view and values as biasing elements in perception are crucial to the understanding of gradual changes in the system of institutional rules.

Keywords: Institutional Change, Evolutionary Economics, Game Theoretic Approach, Cognition, History of Insurance

JEL-classifications: O1, C7, N2

1. Introduction

Institutional emergence and change so far has been seen mostly in terms of allocative gains and has been less connected to distributive effects. Increasing efficiency and reducing transaction costs have been connected with uniform gains for all participants. The outstanding exception is Knight’s “Institutions and Social Conflict” (1992). But nonetheless there is still no comprehensive theory available to cover the long term development of ‘real world’ institutions such as insurance on a contractual basis with its different conditions and lines of history. On the one hand North (1981) in his famous book on “Structure and Change in

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Economic History” focused on the development of property rights but in a broad and in the end optimum oriented way. Starting out from an entrepreneur-like governor he mainly scrutinized her way of behaviour according to changing incentives to form new structures of property rights. Thus, the change of institutions appears to be a bit too centralized, and a more differentiated view on changing motives and bargaining power of the other parties involved in the process is largely left out. Although North (1989) mentions the need to become precise about the conditions of cooperative solutions in complex exchange relationships by way of game theory, he does not explore this line of research further. On the other hand there are rather abstract game theoretic accounts of institution formation like Schotter (1981), Sugden (1986) or Axelrod (1984). Their analyses are centred upon a core of strategic relations between agents as the ultimate basis of institutional rule formation. But these analyses are only very loosely tied to real world examples of institutional development, and none of them takes a close look on historical incidents. Until now, there is a gap to be filled between concrete historical and abstract game theoretic approaches, although steps have been taken by Greif (1994) or Bates/Greif/Levi et al. (1998) to fill it. They still tell, however, individual stories of history and use different frameworks of analysis.

Furthermore, both approaches rely heavily on the model of rational economic agents being well informed utility maximizers as far as possible. The role of human cognition, however, and of changing interpretations of the world and therefore changing solutions to the basic institutional cooperation problems through time seem to be put aside. Cognition plays a major part in the emergence and change of institutions - holding for all agents equally. One step to incorporate cognition in some way into a theory of institutional change is taken by North (1981) and Denzau and North (1994) by way of designing a theory of ‘ideology’ which is building on individuals’ subjective, and therefore distinct, but also shared perceptions of the world. Unfortunately this theory still leads to an inherently optimizing account of ideologies economizing on institutional sanctioning. Also Knight (1997) acknowledges the need for putting the relationship between cognition and rationality on the research agenda, but still does not attempt to develop a more detailed concept covering these relationships.

To sum up, one has to deal with three major problems in a general theory of institutions, the first being to describe exactly the strategic situation and the resulting formation problems of the (historical) institution under consideration. The second problem concerns the various mechanisms of the dynamics of institutional change taking distributional

conflicts over systematically resulting gains in wealth particularly into account, and the third deals with the role of cognition in this change process. To explore these problems in a history based manner one has to take ‘stylized facts’ of the institution under consideration first. In this case it is insurance on a contractual basis with its three main lines of development in marine insurance, fire insurance, and life insurance. This example was chosen because it forms a very important basis for modern economy, but is scarcely referred to in the literature on institutions. In addition, insurance is not a ‘primary’ institution on the constitutional level of society but rather a ‘secondary’ one on the levels of law, mutual contracts and sanctioning procedures below, and this is also an area of analysis whose interrelations are not yet looked into to full scale.

Therefore, the next section of the paper deals with the ‘stylized facts’ about insurance history. After that the paper is sectioned according to the three main problems of a general theory of institutions mentioned before. It concludes with a short summary and outlook.

2. ‘Stylized Facts’ of Institutional Change: the History of Insurance

Attempts to ‘insure’ against or rather compensate for the vicissitudes of life are as old as human social groups. New in the modern form of insurance are a contractual basis for compensation in the case of damage and its strict assessment. When considering the uniform concept of our days for all branches of contractual insurance one is to wonder that it is not the product of one single path of development, but one of several quite different lines, centred in Europe. These are represented in marine, fire, and life insurance, still being the three main branches of insurance.²

Insurance can be classified according to damages to objects or persons and according to its origin, namely its base on profit and commerce or on mutuality. Accordingly marine insurance is object and profit based, fire insurance is again object but mutuality based, and life insurance is a personal injury insurance with origin in both profit and mutuality. This classification may be helpful in the later analysis of institutional problems.

² A survey of the history of insurance is given by Koch (1978). More detailed accounts are e.g. Perdikas (1966) on marine insurance, Büchner (1976) and Ebel (1978) on fire insurance, and Schöpfer (1976) on assurance.

2.1 Marine insurance

The first real contract of marine insurance was concluded in 1347 in Genua, and after that it took only about fifty years, until the end of the 14th century, until this form of insurance policy was firmly settled as a common practice. The original development took place since the 12th century, starting out from the 'foenus nauticum' - a maritime loan known since Antiquity and continued during the Middle Ages. The loan was lent to traders by a single businessman or a small group of them to finance long distance sea trips for trade. Only when reaching the destination safe and sound the loan had to be paid back including often immense amounts of interest up to 40%. A kind of 'simulated' sea loan was the immediate forerunner of marine insurance. There the agreed sum was not paid out in advance by the lender but would only be paid in the event of a claim. Otherwise the borrower had to pay the interest, a special annulment clause for the compensation coming into force. Monetary conditions during the time of origin were very good, since there was enough capital to lend due to the profitable long distance trade starting at the Mediterranean region. Compensation was due according to agreed sums, and the risk was balanced internally by the insurance broker by way of prudent calculation.³ Impulses for development were given by the before mentioned profitable long distance trade and also by the canon ban of interest by means of circumvention. International trade interconnections furthered a unified and standardized jurisdiction which itself supported the development of marine insurance policies.

2.2 Fire insurance

For fire insurance the development took a bit longer, in fact some hundred years from 1591, the date of the first contract in Hamburg, until the end of the 17th century, when the first fire insurance company was founded there after the great fire in 1676.⁴ This branch of insurance has come out of guilds and co-operative systems of Northern Europe dating from the 9th century. But these systems of mutual help only compensated in kind, and there was no right to it either. As to the first insurance contract, as it is called, it included only 100 participants.

³ Prudent premium and risk calculation by each broker is still crucial for the success of Lloyd's insurance market where often great single risks without many precedents are insured. This fact is shown by Lloyd's actual crisis. (See: Handelsblatt No. 73, 12-4-2000. Titus Kroder "Schiffbruch bei Lloyd's of London")

⁴ The first commercial insurance was established in England at about the same time, in 1666.

Costs of compensating damages were split equally afterwards between the members who had no damage, but the payments naturally did not compensate for the loss. Also in fire insurance the best conditions for development were fulfilled in a profitable branch of trade, namely brewing industry, from where the first contract originated. Impulses came also from the insurance market in Hamburg that made familiar with policies of marine insurance. Another impulse for founding insurance companies was the 'Brandbettel', a certified sovereign permission for begging after a fire catastrophe, which got out of control and became rife in Germany especially after the Thirty Years War. But only after making fire insurance compulsory by sovereign interference its full dissemination and coverage could be achieved.

2.3 Life insurance

Within life insurance there was no unified line of development but different attempts at initiating projects, single contracts here and there, or ancient forms of mutual help. The oldest contract for a life annuity dates back to 1308. Often these contracts were made between wealthy people and cloisters or towns giving away a sum of money or some land and getting a lifelong annuity for it. Because of lacking actuarial theory the annuity was a matter of negotiation, though.⁵ The same held true for special contracts betting on the life of somebody else, e.g. the life of an English king, which became very popular especially in prospering England during 17th century. The first such contract dates back to 1583 and covered only one year. Then there were since 16th century single projects by 'Projektmachern' as they were called, mostly merchants and businessmen, who propagated some kind of 'insurance' through compulsory saving and more besides. But all these were only occasional single occurrences and no fundament for lasting enterprises. For the most part such projects were rejected by the rulers for religious reasons anyway. Yet another very old line of development were miners' guilds, 'Bruderladen', and their, if meagre, support of the sick and invalid and their families, guilds emerging in 9th to 12th century. The same limited conditions held true for death benefit funds or the support systems of other guilds. The last predecessor of life insurance to mention are 'Tontinen', named after their Italian initiator Tonti. They were designed to finance government and spread from France over whole Western Europe in 17th and 18th century. The principle was that up to 400 members, split into age-groups, made a deposit at the beginning,

⁵ See Schwebler (1988), p. 649.

and the survivors of the different age-groups got an accordingly increasing annuity. The increasing annuity, for its part, had quite the character of a lottery rather than that of an insurance. At the beginning, lacking capital and only few members, but most of all the lack of sound calculation bases, made it difficult to achieve full support or to pay regular annuities and to enter into long-term contracts anyway. Only the development of calculation of compound interest, of probability calculus, and of 'death panels', all during 17th and 18th century, made profitable life assurance on a long-term basis possible. Also, the relaxation of religious reservation⁶ as well as propagation and popularization of the idea of insurance contributed to the dissipation of life insurance. The first and partly still existing real assurance companies on a mathematical basis were founded in the second half of 18th century in England.⁷

In conclusion I venture to say that it is the prospect and prosperity of the branch of industry in a differentiated economy that led to the respective formation of insurance therein (F1: prosperity). Another main insight is that it were always single and in part distinguishable persons who contributed to or developed concepts for insuring against different damages and losses (F2: innovators). But they had to rely on other technical advances in related fields of science, technology and law (F3: technical advances). Furthermore, as it seems there had to be a more general social acceptance of the idea of insurance for the broader success of the technique itself (F4: social acceptance). It consists in a common 'world view' corresponding to the scientific understanding of the world's functioning and in the resulting common (often religious) 'values' of what is 'good' and 'bad'. This relates to the fact that the institution of insurance was always embedded in the already existing system of institutions for sanctioning deviations as well as for external, sovereign propagation (F5: embeddedness). These insights lead directly to the following game theoretic analysis of the strategic structures of insurance formation.

3. Two Strategic Problems of Institution Formation Situations

For analysing emergence and change of institutions one has to bear in mind that an institution

⁶ These were e.g. the belief in just divine punishment or the ban to put a value on a human life.

⁷ 'Friendly Societies' on a mutual basis emerged already in 17th century England, though.

is a system of rules governing exchange relationships and coordinating people's expectations therein as well as facilitating cooperation.⁸ I would like to emphasize that insurance is looked upon here as institutional (contractual) rules and neither as a good nor as an organization or firm, which are both other interpretations of the same subject and thereby have different foci.

As it is, there are always two important and distinct problems to be solved, not yet being conveyed together in the literature on institutional change. In a first step these two problems are analysed. They can be examined with simple game theoretic instruments, just to show the strategic implications of the structure of exchange relationships between agents giving rise to the need and formation of institutional rules.⁹ Therefore, if one imagines the extensive form game Γ of the initial insurance situation for both kinds of insurance - mutual and profit based - the two problems can be associated with the two stages of the game.

There is firstly the stage of conclusion of contract and secondly the stage of conclusion of compensation. In the first stage the participants $n=i+j$, 'insured' i and 'insurer' j , can decide whether to enter into the contract (V) or not ($\neg V$). In the second stage the 'insured' first decides upon giving true (E) or false ($\neg E$) information about the damage or loss, and then the 'insurer' has the choice between compensating (H) or not ($\neg H$), but without knowing the other participant's decision. The second stage is only to be executed after a move of 'nature' z resulting with a certain probability $p_i \in p = \{p_\emptyset, p_i\}$ in a loss or none.¹⁰ At the end payoffs $\Pi_k(s_i, s_j)$ with $k=i, j$ result.

3.1 Problem of control and sanctioning

The first problem, which I name the problem of control and sanctioning, occurs in the second stage of the game and is related to F3 (technical advances) and F5 (embeddedness). It can be

⁸ Additionally, measures and means of sanctioning are required; otherwise one would speak of a self-policing convention (Schotter (1981)).

⁹ A more detailed analysis will be given in a different paper, dealing also with the implications of structural differences of insurance being based on profit and on mutuality, which are left out here. But the core results remain the same.

¹⁰ Note that this description is disregarding the fact that in the case of mutual insurance both agents can come to be at the receiving end, just as the name is suggesting, so that there is really $p = \{p_\emptyset, p_i, p_j, p_{i,j}\}$. In effect i and j can change roles as 'insurer' and 'insured' according to damages, and in the case of damages for both i and j there can be no compensation at all. Notwithstanding, the core problem of true statement of the damage remains the same regardless of the modes of compensation in mutual or profit based insurance, as will be shown.

depicted for both forms of insurance, i.e. based on profit and on mutuality respectively, in matrix form as follows in figures 3.1 and 3.2.

It should be mentioned that I only considered the object based forms of insurance, because life insurance as personal insurance had to cope with the same problems, and although the modes of compensation were so very different for each line of its development they can be assigned to either of the other forms of insurance. Having differing initial assets of e_k for profit based insurance and rather similar assets of e for mutual insurance respectively, the damage amounts to d , being only d_f if caused deliberately or if stated falsely as a bigger amount than the damage really was. Both are acts of moral hazard and well known in insurance theory. Compensation is granted up to the amount of C , possibly not covering the damages fully. This was especially the case with mutual insurance. The premium is c ,¹¹ and there is an additional gain (loss) of c_f to the compensating party, if the damage is reported falsely and compensation is not granted (granted).

Figure 3.1. Payoffs for problem of control and sanctioning in case of insurance based on profit (marine insurance).

i \ j		H	-H
		E	e_i+c-C $e_i-c-d+C$
-E	$e_i+c-C-c_f$ e_i-c-d_f+C	e_i+c e_i-c-d_f	

with $e_k \geq d > d_f > c, c_f$ $k=i,j$

Another difference between the two games lies in the way compensation affects the compensating party. While in mutual insurance every participating individual only has to pay her premium even in case of a damage, in the profit based contract the insurer always bears the losses of the insured having to balance them on his/her own with gains from other insurance contracts.

¹¹ Please note that also the forerunners of premium insurance had to deal with the problem of control and sanctioning in the same way, since mainly the premium c has to be eliminated and replaced respectively. Also the

Figure 3.2. Payoffs for problem of control and sanctioning in case of insurance on mutual basis (fire insurance).

		j	
		H	−H
i	E	$e-c-d+C$ $e-c$	$e-c-d$ $e-c+C_f$
	−E	$e-c-d_f+C$ $e-c-c_f$	$e-c-d_f$ $e-c$

with $e \geq d \geq C \geq d_f > c, c_f$

In the final analysis, the two matrices differ only in some components of the payoffs but not in the solution of the game itself, indicated in bold letters. As can be easily observed the action pair (−E;−H) dominates every other and consists only of defective actions or rather strategies. Thus, in order to overcome the first obstacle in the development of institutions, the problem of governing defective behaviour, there have to be means of control and sanctioning. The problem can be overcome by introducing a third stage into the game where both agents can decide whether to control the other's action by involving a third party in the process of control and sanctioning. But this is done at the risk that the control party makes a wrong decision and the losing party has to bear a penalty mistakenly. The equilibrium solution, nonetheless, shifts away from the originally defective outcome, because defective behaviour becomes more costly. The control and sanctioning can be organized internally in the group by way of a court of arbitration or it can involve an external force like state courts of justice.

3. Participation problem

The second hindrance of institution formation concerns a participation problem according to frequency dependency effects that might be underlying the institution under consideration. It refers to F1 (prosperity) together with F4 (social acceptance) with F3 (technical advances) being of importance for solutions. This problem has to be looked at from a different angle. It

composition of compensation C changes. But this does not change the game structure itself.

comprises the strategic situation solely between the potentially insured i and i' , who have both to decide whether to take part (V) or not ($\neg V$), and arises from a frequency dependency phenomenon.¹² The strategic situations are depicted in figures 3.3 a) and 3.4 a), while the propagation processes are shown in figures 3.3 b) and 3.4 b).

The payoffs here do not differ from those above but in two respects. Firstly, a higher premium of c' is to be paid when not all potential participants are willing to join the insurance. Secondly, a supplementary government help of r for uninsured victims existed historically in the case of mutual insurance. The propagation function $f(V)$ is derived from the payoff differences between the strategies V and $\neg V$ for i and i' . It determines the individual probability of adopting V and depends on the relative frequency $F(V) \in [0; 1]$ of V in the population of players. In fact, the choice of strategy is initially biased towards $\neg V$, since we have to start from an initial situation without any insurance at all. In other words, it has to be determined if the new strategy V is better for an individual player than the old $\neg V$, assuming the other players are still holding on to $\neg V$. Only this primary advantage being the case there is a chance to shift the 'old' regime of $\neg V$ to the 'new' of V .

The general propagation function is:

$$f(V) = \begin{cases} \min[\pi_k(V; \neg V) - \pi_k(\neg V; \neg V) + F(V) \cdot \langle \pi_k(V; V) - \pi_k(\neg V; V) \\ - \langle \pi_k(V; \neg V) - \pi_k(\neg V; \neg V) \rangle; 1] \text{ as long as } f(V) > 0; & \text{with } k=i, i' \\ 0 \text{ otherwise} \end{cases}$$

The propagation function f_E for profit based insurance is:

$$f_E(V) = 1, \text{ because } f_E(V) = -c' + d + (c' - c) \cdot F(V) > 1 \text{ for } F(V) \in [0; 1],$$

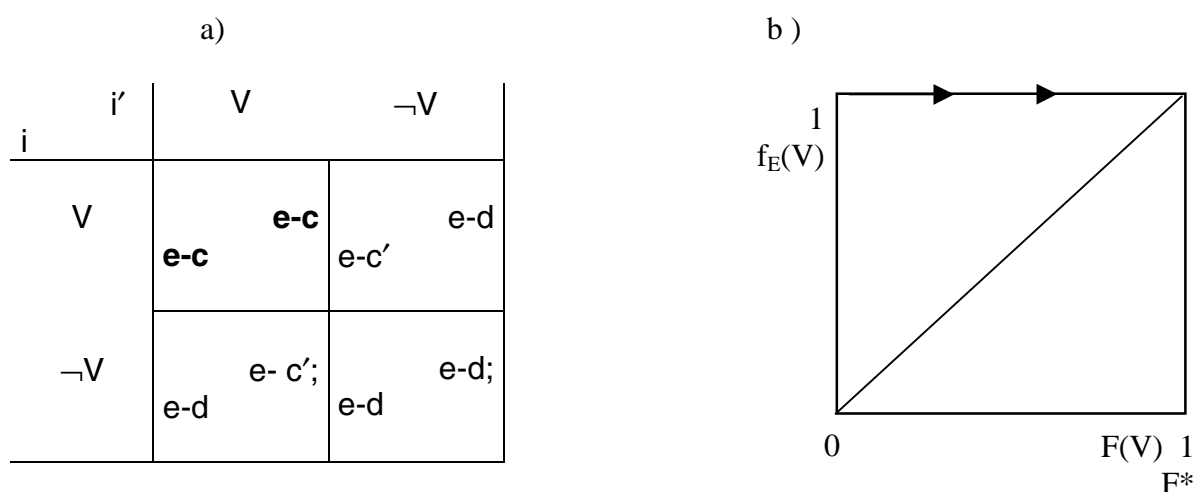
For mutual insurance the propagation function f_G is:

$$f_G(V) = -c' + d + (c' - c - r) \cdot F(V) \leq 1 \text{ for } F(V) \in [0; 1].$$

¹² The modelling of this part of the two institutional formation problems I owe to Witt (1989).

Using these equations¹³ the propagation process can be shown graphically. The dissipation equilibria result from the intersection of $f(V)$ with the 45°-line representing situations in which the prevailing relative frequency $F(V)$ is just maintained by the individual decision, hence being propagation equilibria F^* . Stability can be tested by $dF/dt = f(V) - F(V)$ assuming for convenience that the composition of population changes continuously over time.

Figure 3.3. 2×2-matrix and propagation graph for profit based insurance



with $e \geq d > c' > c$

Source: Witt (1989), p. 164, with modified payoffs

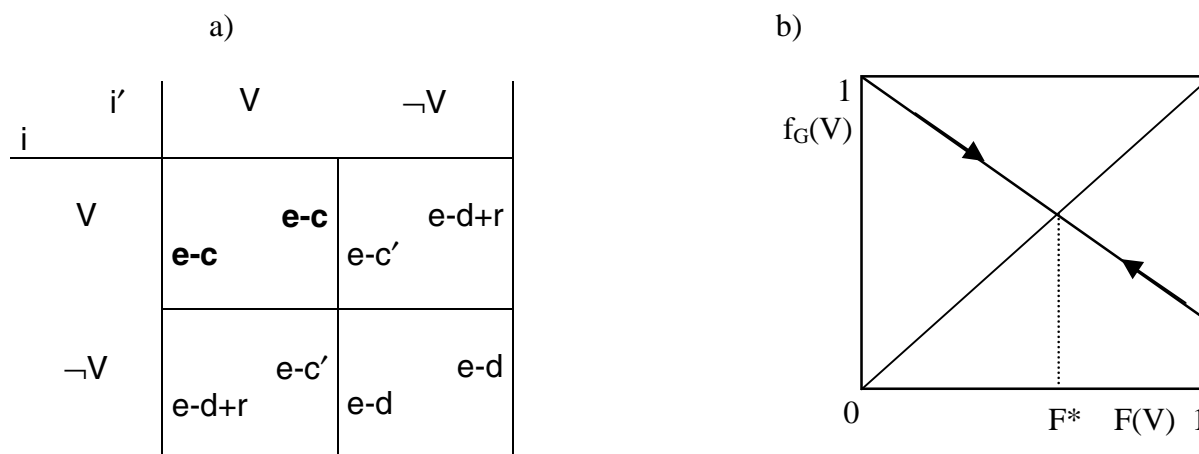
For profit based insurance the strategy pair (V;V) is dominant for both players so that in the propagation process a stable equilibrium results at $F^*=1$. The payoff structure identifies the game as convergence game. For mutual insurance on the other hand there exists as well a stable equilibrium, but at $F^* = (d-c')/(1-(c'-c-r)) < 1$, if $1+c+r > d$ while $c < d-r$, guaranteeing that the numerator is still smaller than the denominator. Although the strategy pair (V;V) is identified as the dominant solution at first sight, there is no complete dissipation of it in the process. This is so, because in this game the payoff structure contains elements of a chicken game or rather the game of providing public goods preventing V from gaining full acceptance.

Thus, the dissipation of V as a new strategy ultimately depends on its advantages compared to the old status quo. These can be enhanced e.g. by external (sovereign)

¹³ Please note that the outcome depends upon the adequate specification of the payoffs in numerical form, i.e. transformation of the monetary payoffs into simple and small (utility?) numbers, as is also noted in Witt (1989), p. 165.

intervention making insurance compulsory. Two other possibilities lie in the change of payoffs or the perception of them. One is an indirect change by way of promoting the idea of insurance by 'diffusion agents', e.g. through pioneering business men. The other is direct changes in payoffs, e.g. through advances in actuarial theory and other relating techniques.

Figure 3.4. 2x2-matrix and propagation graph for mutual insurance



with $e \geq d > c' > c$,
 $c' \geq d-r$ and $c < d-r$,
 $r > c'-c$

Source: Witt (1989), p. 165, with modified payoffs

The above analysis has shown the two problems of institution formation for the case of insurance in a simple game theoretic way, namely the problem of control and sanctioning and the problem of participation. It could also be shown that to solve them an exogenous variation of the payoffs or even the game structure is necessary. From this can be inferred that there are always changes in the strategic situations being caused by exogenous influences or by the agents themselves to increase their individual gains. But *which* institutional rules actually come into being and *how* they are formed is a matter of different perspective and shall be examined in the next section.

4. Distribution Based Evolutionary Mechanisms for Institutional Change

In a second step, after having expounded the two basic problems of institutions, which are in the essence of timeless and unchanging substance, the perspective is shifted to the ever changing (evolutionary) historical bases of institutional emergence and change, where the concepts of cognition and other psychological factors become more important than they are in the previous perspective. Taking an evolutionary perspective the process of institutional change is mediated by several strands of developments, part of them being 'external' in the first place and part of them being explicitly 'internal' to the agents' mental processes.

But to develop a corresponding set of mechanisms, one first of all has to set the institution, e.g. of (contractual) insurance, into the broader context of an institutional hierarchy. To my mind institutions can be classified into three types, the first and most basic being a core of property rights in the sense of special rights to action and of disposal, e.g. actual contractual rules of insurance.¹⁴ To be effective institutions have to be controlled and sanctioned by a relating system of rules - and by the respective organizations they comprise, e.g. insurance associations or the courts. Then there is the range of comprehensive formal (legal) and informal (moral) rules encircling the institutional rules of insurance under consideration.¹⁵ A subset of them define political institutions of change processes. All of these rights and rules effect systematic distributional consequences for the different actors.

4.1 Perception of institutional outcome and bargaining power in status quo

With the above classification at hand one can turn to the mechanisms of institutional formation and change that are portrayed in figure 4.1.¹⁶ Starting point is the status quo of actions and institutional rules leading to dissatisfaction with or even a conflict over the resulting systematic distributional outcomes. The potential sources of dissatisfaction and conflict can be illustrated taking the example of an (insurance) contract. Since a contract means the new assignment of rights (e.g. rights to premiums and compensation respectively), on the one hand it might be that this assignment is not in accordance with the most preferred

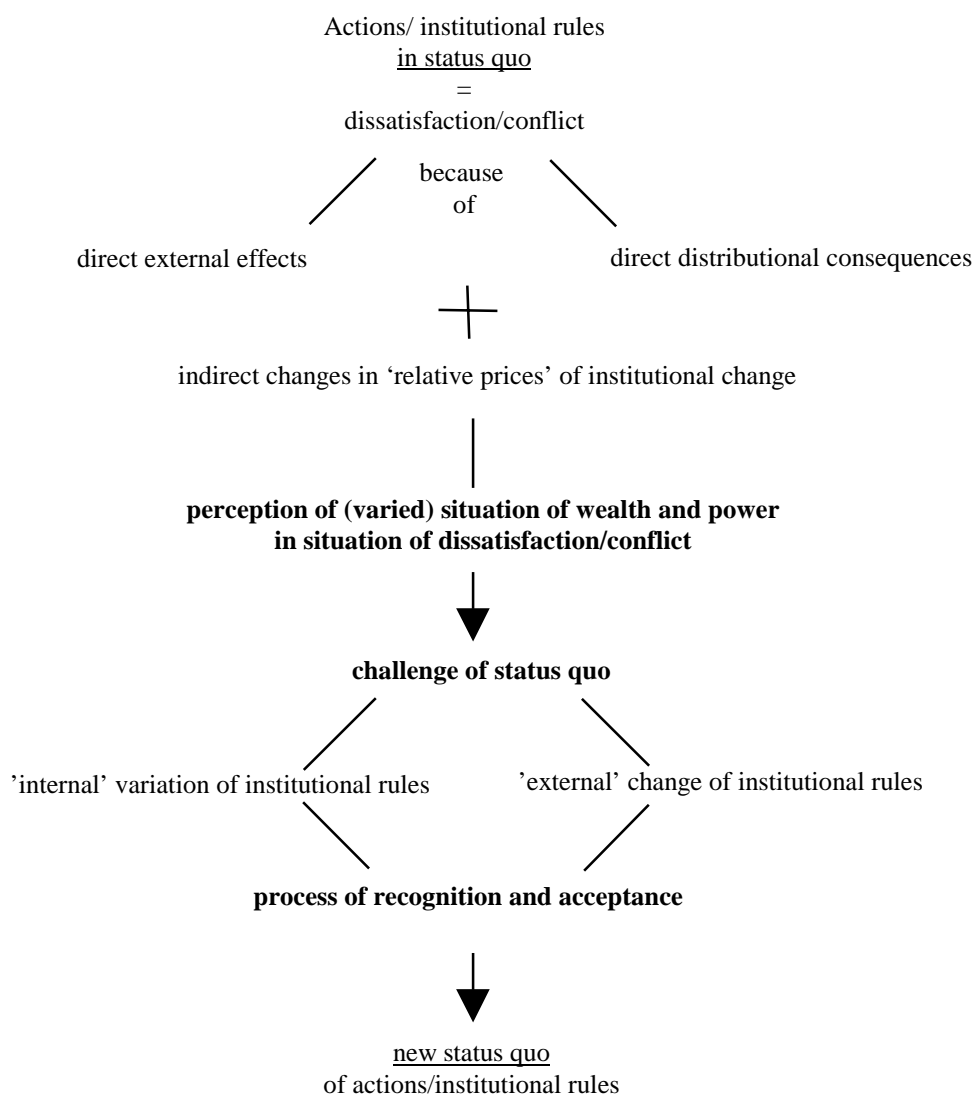
¹⁴ This view is warranted if one sees property rights - as Pejovich (1990), p. 65, does - as relations, and institutions do concern and define exchange relationships between people.

¹⁵ Note that even when analysing moral or constitutional rules, these being themselves high in the hierarchy, they are still embedded in another set of rules.

¹⁶ I owe many of the insights having led to this picture to Knight (1992).

solution of part of the players, who could not decide otherwise because of lack of alternatives (e.g. actuarial theory) or bargaining power (e.g. ‘insuring’ vs. ‘insured’ party) to change the options. On the other hand there can be external changes that turn an originally preferred outcome into an inferior solution (e.g. premiums instead of splitting the compensation costs or granting a loan).

Figure 4.1. Mechanisms of institutional formation and change



The status quo can be modelled using the basic game theoretic instruments of defining players, strategy spaces, and payoffs, which is essentially what I did in the last section.

Consequently, when modelling the initial strategic situation one has to decide upon various possibilities of how distributional dissatisfaction and conflict came about in the first place. Firstly, conflict may be generated by direct external effects affecting some party of the actors not having had any strategic relation before or by direct distributional consequences of already existing institutional rules. Secondly, conflict might arise because of indirect changes in 'relative prices' of institutional change. These have to be examined a bit closer. First of all, 'relative prices' are nothing else but opportunity costs, a universal category for economic decision making against the background of scarcity. 'Relative prices' of institutional change are then defined by opportunity costs of existing institutions relative to costs of their alteration. Alteration costs arise from the dynamics of the relevant situational factors working in the background. Situational factors include informal social norms, the formal legal system, and the political process as the broader framework of shaping the costs of institutional change (F5: embeddedness). These costs differ for each group seeking change, i.e. they are defined through the economic situation of each group or rather their economic influence in society giving them their bargaining strength (F1: prosperity). Furthermore, scientific as well as organizational and technological innovations influence the individuals' wealth situations and profit chances thereby influencing the conditions for institutional change (F3: technical advances).

It should be noted here that the perception of circumstances and possibilities plays a major role at this stage already. Only if the varied relation of wealth and power is indeed perceived in a situation of distributional dissatisfaction or conflict, then the actors take steps to alter the situation in their favour. Individuals' 'world views' and 'values' contribute for the most part to how the world and one's own situation is interpreted. Thus, a change in people's world views and values is likely to support change in other areas. Since innovations are the expression of individual curiosity and imagination, also the generation and diffusion of innovations depends to a great extent on the processes of human cognition. The role of cognition in the process of variation and selection of institutional rules will be explored further in the remaining last main section.

4.2 Challenge of status quo

Awareness of new bargaining power in the situation of institutional dissatisfaction or conflict

leads to the challenge of the status quo by the respective single or groups of actors (F2: single persons).¹⁷ The old system of rules can be challenged either by ‘internal’ variation of single institutional rules in the system or it can be challenged by ‘external’ change of institutional rules requiring also an external actor as an agent of promotion and change (F5: embeddedness). It has to be added that the old system is also challenged internally simply by deviation from given rules and that sometimes informal rules are only to be consolidated in the external process of formal rule enactment. ‘Internal’ changes are mostly generated ‘spontaneously’, meaning that this is a decentralized process of individual behaviour leading in the same direction of change and creating an overall process of change by some unconsciously coordinated behaviour. This internal process can lead to changes of informal or formal, written, rules. In contrast, ‘external’ variation concerns always formal rules of the legal system and invokes the political process of legal change, which is biased in favour of more influential groups. Likewise the formation of coalitions and interest groups becomes relevant calling for coordination of action and being essentially a problem of ‘critical mass’. But mobilization and coalition formation in bargaining is a subject whose detailed modelling is not to be pursued here. The crucial empirical question is when there is enough to win or lose for a single individual, i.e. enough pressure to join a coalition instead of trying to free ride. Ideologies and socially shared perceptions may help to overcome the problem, thus pointing again towards the role of cognition in institutional change. Accordingly appropriate models of coalition formation have to be developed and fitted into the scheme, yet this being beyond the scope of this paper. As to the empirical question of choice of internal versus external change, if available, its answer depends on the trade-off between distributive advantages of new externally installed rules and transaction costs of organizing change compared to the advantages of internal change with its lower transaction costs.

4.3 Process of recognition and acceptance

After the change of rules the process of recognition and acceptance gradually changes former expectations of institutional outcomes into new expectations (F4: social acceptance). Again, this is a matter of perception. Some ideas of fairness and justice are invoked here determining

¹⁷ This view is also consistent with Choi (1999), who developed an explanation in a similar vein for endogenous innovative entrepreneurial change.

acceptance and dissemination of new rules oriented at the old status quo, because new rules tend to be followed or supported only if they seem to further one's own interests and economic situation. Otherwise they are opposed, dependent on bargaining power. Thus, rules of fairness and justice can be said to be conservative favouring the old status quo. The process of recognition and acceptance results in a new status quo of actions to be taken in the new system of institutional rules with characteristic distributional consequences eventually leading to new conflicts. It remains to be mentioned that because of the possibility of small external - but especially internal - changes in the whole system of rules of an institution the emergence of 'new institutions' cannot be as unambiguously defined as is hoped for.

As has been shown, the perception of payoff changes and new alternatives as part of human cognition is crucial to every single mechanism relating to institutional formation and change. Thus, one gets to new modes of behaviour as being one of the major drives in institutional change. The motives for institutional change are quite clear, namely - once being recognized as such - the distributional effects of all rules being in existence. But also the basic impact of such substantial cognitive factors as 'worldview' and 'values' of a period on the formation of new alternatives in people's minds becomes evident. One can also say – seen from the opposite angle - that the agents' interpretations of reality change over time and not only during the agents' own lifetime. But *why* and *how* do they change? To answer this question one has to go into further detail of cognitive processes in order to get down to the basics of processes of attention, to the formation of 'mental models' and 'subjective theories' to interpret the world, and to cognitive creation of new alternatives in this way.

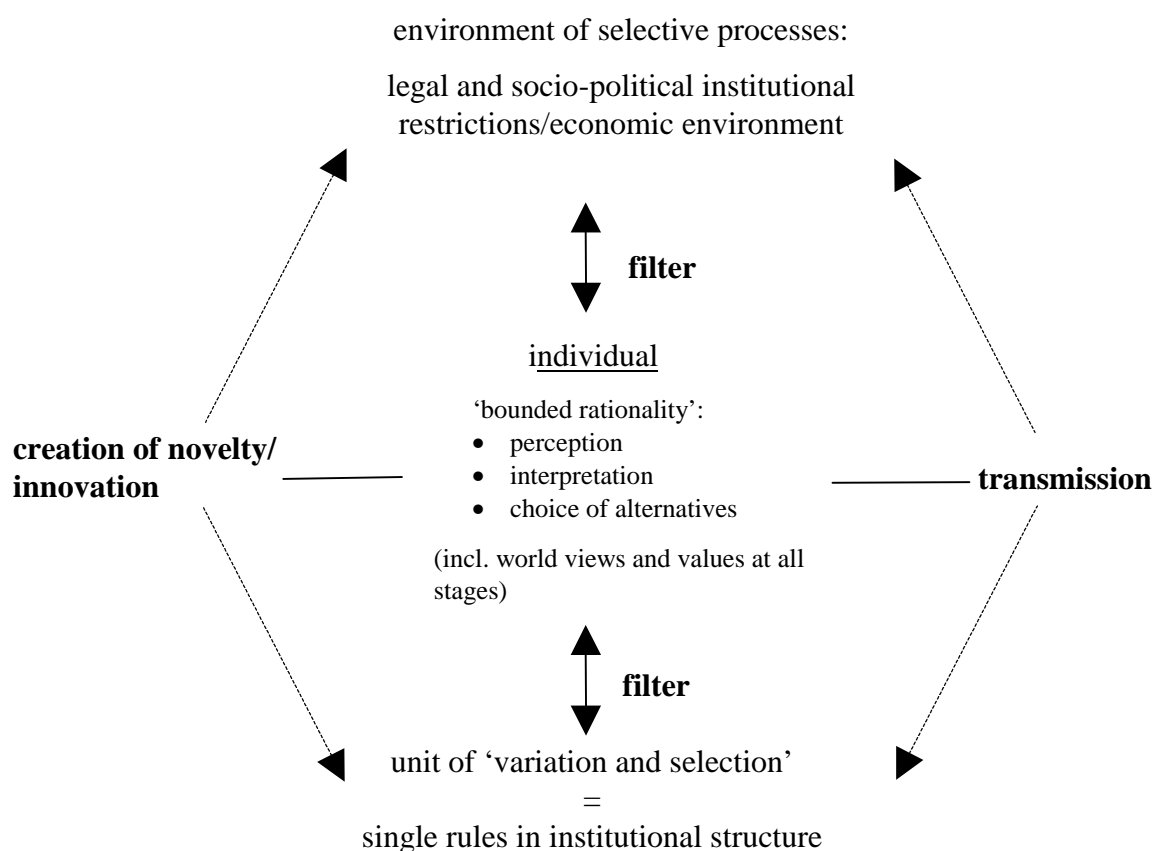
5. Worldview and Values in a Cognitive Approach to Institutional Change

The line of reasoning concerning the basic cognitive factors of institutional change is elaborated on and tied to the underlying evolutionary view of change in this section. Figure 5.1 visualizes the basic interrelations.

First thing to do is to define the unit of 'variation and selection'. In the framework of social sciences it has to be understood in a much broader sense than in evolutionary biology, since social rules do not age and die like living organisms. Neither do more abstract systems

like social systems of rules have any clear cut boundaries.¹⁸ In my perspective the ultimate unit of change is the single rule in the institutional structure; in the case of insurance it is every single clause of the insurance contract as well as every single rule of morals and legal proceedings concerning control and sanctioning. Political rules of change are also broadly related to the institutional complex of insurance as the unit of selection, but rather as restrictive environment.

Figure 5.1. Heuristic components of evolutionary cognition based institutional change



¹⁸ The difficulty of finding an appropriate unit of selection manifests itself in the discussion of individual versus group selection in biology. Notwithstanding, the ultimate unit of change are the genes in biology as are single rules in the social sciences, which seems to be quite save a presumption and does not intend any analogy to evolutionary biology.

5.1 Human cognition and novelty

‘Variation’, ‘selection’ and transmission of the institutional unit is mediated by the individuals as ‘supporters’ or ‘carriers’ of the rules.¹⁹ So, their cognitive capacities and their perception and interpretation of the world are at the core of an evolutionary view of change. A corresponding cognitive model contains 1. processes of selective attention and perception, 2. structuring and interpretation of the individual’s view of reality in ‘subjective theories’ and ‘mental models’, and 3. intended rationality in decision making.²⁰

The first hurdle for outside information in the form of complex stimuli is to pass the stage of selective attention to stimuli. It might e.g. be that some special rule of the insurance contract is not really observed until it becomes relevant in the event of a claim. Attention processes depend upon key stimuli that are in turn correlated with intensity and frequency of signals, with already known patterns via association, and with earlier experiences having caused some preference or aversion.²¹ Fundamental attitudes as such being associated with basic emotional reactions also form world views and values that ‘frame’ and channel perception and simplify the interpretation of a situation in general.²² In this way there is some social influence in framing perception. But in a broader sense there is also another meaning of ‘framing’, concerning the perceptive shaping of a situation in terms of intentions and objectives.²³ This means that a situation also has to be associated with an appropriate meaning according to its primary goal which is intended to concentrate on. In short, ‘framing’ also means perception according to (somewhat active) intentions and not only according to (more passive) attitudes.²⁴ For contractual insurance this could be, in the event of damage, the primary goal to claim compensation, but only of some moderate form as was the strategy of choice before, for instance in a situation of reciprocity. This kind of primary intention might in turn be influenced by some value to be fair or a world view that sees damage as the rightful divine punishment for sins. It might thus be revealing some underlying attitudes. Possibly

¹⁹ This is a different view from that of North (1981), who looks at last at the success of groups and nations and not at the success of institutions themselves.

²⁰ See Meier and Durrer (1992) and also Hesse (1990, 1998) for the canon of the three elements of cognition and action.

²¹ See Witt (1995), pp. 13ff, for the main points of selective attention. See Tversky (1996) on basic conditions and mechanisms of the framing of situations.

²² Unfortunately it has not yet become clear to me how attitudes are developed in the first place.

²³ See Esser (1990) for ‘frames’ as pre-selected goals resulting from processes of institutionalization.

²⁴ This might also be an expression of ‘local’ or ‘selective’ preferences depending on the situation. But the problem of instable or even systematically changing preferences is not to be pursued here.

resulting perceptive conflicts between attitudes and intentions may well lead to their mutual alteration but have to be disregarded in this short analysis.

Given the somewhat channelled perception of a situation or a problem, when it comes to interpretation ‘cognitive creativity’ produces continually new cognition and knowledge about the environment and about alternatives of action.²⁵ ‘Cognitive creation’ may be the result of incorrect interpretation and of ‘spontaneous’ recombination of sensual perceptions through associative processes. But still continuous minor creation is different from greater creative achievements with inventive character though it may lead to such novelty in the end. The point to be stressed here is that not every individual, though capable of cognitive creation, is capable of producing novelty in the genuine sense of major discoveries and inventions. Therefore most innovations are small and almost imperceptible reforms. The creative process is part of the formation of ‘mental models’ and ‘subjective theories’ about the functioning or meaning of a particular context.²⁶ They can be interpreted as structured sets of cause-effect related hypotheses with more or less complicated constructions. Major updating of the theories and models via feedback mechanisms means a quite demanding version of learning.²⁷ Such models and theories are the building blocks of the generation of alternatives of action.

The next step of the cognitive model of action can be assigned to the first form of selection, namely the more or less conscious decision making of the actors according to intended but bounded rational procedures.

5.2 Levels and processes of selective filters

The creative processes described above create a set of alternatives of action, expressed in terms of mental models that evaluate the consequences of action, from which some alternative has to be chosen. The crucial point here is that such a decision can only be made with regard to some subjective ordering of ‘preferences’. These preference as such may be varied by different levels of satisfaction depending on former successful outcomes. They may also be

²⁵ For this concept see Hesse (1990).

²⁶ An account of ‘mental models’ and their significance is already given in Arthur (1992).

²⁷ The above form of associative learning (cognitive models) seems to be the most relevant in updating mental models. Less demanding forms of learning are routine-based (observational imitation, trial and error) and least demanding is non-cognitive learning (operant conditioning). See Brenner (1999) for categorization of the three and also in the context of learning of preferences. See Bandura (1986) for social influences and individual learning and also Denzau and North (1994) for social influences on the development of ‘shared mental models’.

varied by the afore mentioned world views and values, shaping preferences and being themselves formed by socialization and upbringing. In this way communication in the respective spheres of life may have an 'agenda setting' effect on preferences.²⁸ Consequently world views and values belong to the social sphere as much as they belong to the individual's process of cognition. At this point I would like to stress that world views seem to be more elementary than the resulting values, because, for example, knowledge of the world's functioning influences elementary religious beliefs and the rules of conduct springing from them. Therefore values are a function of world views, and world views are a function of technical and scientific standards. Generally spoken, individual selection takes place considering allocative and distributive effects for a measure - mediated by values such as fairness and justice.

The other form of selection takes place via the environment. It consists on the one hand of legal, political, and social institutional factors restricting the feasible range of alternatives to be chosen in the first place and also eliminating institutional rules by way of co-evolutionary forces based on institutional interrelations and human learning. Here the institutional hierarchy and the different respective levels of filter processes have to be kept in mind. On the other hand selection depends basically on the broader economic environment of scarcity. The notion of scarcity is variable as well and changes in essence according to technological standards. A critical assumption, in order to draw conclusions for the direction of change, has to be the slower change of the environment of the institutional rule under consideration in relation to the change of the rule itself. The relevant environment determines kind and intensity of competition indispensable for any selective forces. Nevertheless, competition in the social sphere is weaker than in the 'natural' sphere of primary biological selection. The overall selective outcome is composed of the effects the actors have expected to gain and of the effects which have resulted from environmental filter processes and their interrelations. These last effects could be much different from the originally expected. Environmental selection (in conjunction with primary individual selection) might after all be oriented at some allocative measure. Institutional success might therefore be judged in terms of the dissemination of institutional rules over one or all existing societies contributing to their survival.

²⁸ Social influences on cognitive processes are further dealt with in Witt (1995).

5.3 Reproduction and Imitation of institutional rules

Last but not least reproduction has to be mentioned as the preservation and transmission of institutional rules. Patterns of institutional rules, which have been proven worthwhile and successful so far, are transmitted informally by custom, e.g. gestures of goodwill in insurance, and formally by codified law and other written norms, e.g. insurance contracts or law. At the heart of institutional reproduction is individual learning and imitation as they are integral part of the cognitive model of actors. Institutional rules that are regarded as successful are mainly spread through imitation, e.g. via standardization of insurance contracts, whereas if learning is more directly oriented by trial and error, then variation is at work, which is also true for incorrect adoption of institutional rules.

The following insights can be gained from the above analysis. Firstly, individual actors are the central subjects of processes of institutional development. Secondly, these actors have motives for intentional change of rules, the motives concerning their own wealth positions. Thirdly, change occurs in a given framework of environmental conditions, and it has unintended side effects. The process of change takes place on different levels and reacts via feedback mechanisms upon the intentionally changed rules. Fourthly, the actors' cognitive processes determine variation and innovation, transmission and imitation, and selection via filtering of institutional rules on both individual and social levels. World views and values influence the cognitive processes at all stages from perception to interpretation and choice.

6. Summary

The paper contributes to the theory of institutional emergence and change and is taking an evolutionary perspective. It rests on 'stylized facts' of the history of insurance and its three main lines of development, namely marine insurance, fire insurance, and life insurance. It tries to combine more rigorously the concepts of two underlying institutional formation problems with more detailed insights into the nature and role of cognition in perpetually overcoming these problems anew. By way of game theoretic structuring the essential strategic situations the two basic problems are identified. One is the problem of control and sanctioning and the

other a frequency dependent problem of participation. They are to be overcome mainly by external means of changing the game structure and/or the payoffs. It has also been shown that 'world views' and 'values' as biasing factors in perception are crucial to the understanding of gradual changes in the system of institutional rules. Thus, 'old' institutional rules are always challenged by 'new' sights of them, incorporating the distributional motives for change.

Combining these concepts leads to a more complete theory of institutions with regard to 'real world' historical cases. If the model and the underlying theory still lack some rigour this is due to still lacking insights into the complex interrelations of institutional systems and their environment and due to lacking mathematical tools to formalize single but nonetheless complex parts of such a theory. Thus, formulating a rigorous theory in this area is still open for further research. But it will be grounded on a natural scientific behavioural model including human cognition.

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