The Theory of Institutional Change Revisited: The Institutional Dichotomy, Its Dynamic, and Policy Implications in a More Formal Analysis

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Draft

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Abstract: The original institutionalist *theory of institutional change* as elaborated by Paul D. Bush (1987) in the traditions of Veblen, Ayres and J.F. Foster (called here the *VAFB-paradigm*), provides a most important theoretical and empirical device for critical institutional analysis, with its clarification of the *value base* and of *different forms* and *dynamics of value-behavior patterns*. Bush's paper was certainly one of the most important ones in Institutionalism. The Theory of Institutional Change pushed Institutionalism to a certain limit by elaborating its *logical relations and systems* that have been underexplored for so long.

Coming from different 'galaxies', established *formal approaches* and methods, such as system dynamics, econometrics, network analysis, graph theory, or game theory—in fact, often applied only bluntly in the mainstream—have been interpreted, developed and applied by institutional and evolutionary economists in an evolutionary-institutionalist perspective in recent decades. However, a *theoretical and methodological gap* somehow still existed until recently that those practicing institutionalists had to deal with.

This gap seems to become closed in different areas (such as the Theory of Institutional Change or the *Social Fabric Matrix Approach*) currently. This paper tries to demonstrate that careful proper interpretations allow, in a 'dialectical' process, to *bridge* the remaining gap and reveal surprising *equivalences and complementarities* with resulting synergies for the future. The example here is the mutual approximation of the VAFB-paradigm and *evolutionary-institutionally interpreted game theory*, called the *EIGT-paradigm* here.

Should such bridge-building be corroborated in the near future, Institutionalism would be enabled to *cut across traditional and long lasting boundaries* with respect to *deeper both empirical and logical analysis*. This might turn out to be a historical project of the extension of Institutionalism's reach.

The particular *asymmetry of the logics* of instrumental vs. ceremonial warrants explains a general *dominance of the ceremonial*. The forms of change of institutional value-behavior structures derived are (1) (reinforced) '*ceremonial encapsulation*', (2) *regressive institutional change* and (3) *progressive institutional change*. In the cases (2) and (3), the degree of ceremonial dominance will have to increase (decrease) and the system's 'permissiveness' to decrease (increase).

The conceptualization of *institutions*, the *asymmetric* schematization of value-behavior-structures, the *reason for ceremonial dominance*, and the *possibility of progressive institutional change* will be reconsidered and compared in this paper using a *game-theoretic perspective*, with its *basically instrumental* comprehension of institutions and with the *ceremonial* warrant comprehensible only as a *degeneration of the instrumental*. We refer to a most simple *social dilemma* interaction structure and a supergame solution. Surprising *equivalences* and *complementarities* emerge, with potentials of cross-fertilization.

An initially instrumental institution is considered to develop (in fact degenerate), together with (1) the emergence, or reproduction, of *status and power differentials in hierarchical systems*, and (2) the striving for easy, smooth, and cheap decision-making, or *'economies of scale' of decision-making*, first into a still *instrumental norm* and eventually into a *ceremonial* or *abstract norm*. The latter takes place, when original *conditions have changed* but the *institutional structure will not properly adapt* because of the two *motives of status gain and economies of scale* of institutionalized decision-making. In a game-theoretical perspective, *ceremonial dominance* and *ceremonial encapsulation* preventing a new progressive institutional change would translate into an *insufficient new collective action capacity*, due to (1) *habituation*, (2) an *insufficient incentive structure* and (3) a *neglect of the common future*.

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The conclusion of the critical *role of policy* to initiate, accelerate, and stabilize progressive institutional change is shared in the original institutionalist and the game-theoretic perspectives as well. A well-defined *institutional policy* approach, inferable in some detail from the game-theoretic logic, may initiate a *lock-out* of ceremonial encapsulation, through a change of the *incentive structure* and an increase of the importance and awareness of interdependence and a *common future*. The public agent must be capable of '*meritorizing*' the private-interaction outcomes through a *negotiated, participatory social process*. Thus, the public agent would interact with the interaction system of the private agents in a well-defined way, i.e., 'institutional policy' as a *double interactive policy*. In all, large potentials for cross-fertilization of institutionalism and game theory.

Introduction

The dynamics of social institutions between instrumental and ceremonial warrant is an original-institutionalist core theme. Thorstein Veblen and two of his finest exponents, Clarence E. Ayres and his student, J. Fagg Foster, explored the dynamics of institutions between the instrumental and ceremonial. The evolutionary-institutionalist 'state of the art' that had emerged this way was reviewed and clearly restated by Foster's students Marc R. Tool and Paul D. Bush, and further developed into a theoretical scheme of institutional forms and dynamics by P.D. Bush in the 1980s. The latter model had a great impact on institutionalist thinking on the process and variants of institutional change, and still has a great potential for modern evolutionary-institutional economics in general (see, e.g., O'Hara 1997[1]; Fayazmanesh, Tool (eds.) 1998. We will illustrate this through a reconsideration and comparison using a game-theoretic perspective.

Characteristic of the *institutionalist* theory of institutional change are

1. the conception of an *institution* as a *value-behavior-structure*, i.e., patterns of behaviors correlated by values;

2. the *instrumental*, *ceremonial*, and '*dialectical*' significance of such correlated patterns of *behavior*;

3. the *asymmetric logic* and asymmetric operational principles of instrumental and ceremonial valuation;

4. a *scheme of specific value-behavior-structures* resulting from those different significances of behaviors and from that asymmetry;

5. the conception of *degrees of ceremonial dominance* in (or its reverse, the *instrumental permissiveness* of) a system's institutional structure, as derived from that asymmetry;

6. the definition of a partitioned *institutional space*, where typically a real-world institutional structure (or an economic system) is in the state of *ceremonial encapsulation*;

7. resulting *forms of institutional change*, i.e., *changes of the degree of ceremonial dominance*, where typically there will be either an *ongoing* (enforced) *ceremonial encapsulation* (staying in the same sector of the institutional space, i.e., *no change* of degree), or *regressive or progressive institutional change* (increasing or decreasing degrees of ceremonial dominance);

8. the consideration that *progressive* institutional change will not automatically occur but will require *discretionary public-policy support*, possible only in a *pragmatist culture* of a *participatory and negotiated democratic process*.

[1] To our knowledge, O'Hara 1997 was the only earlier attempt at both further analyzing the logic and applying (to economic systems) the institutionalist theory of institutional change. See also O'Hara, Tool 1998, 16-18, for a further logical clarification in terms of axiomatization and the development of a system of theorems. This paper considers itself somewhat in that tradition.

The *game-theoretic perspective* on institutions, on the other hand, is different, at first sight, beginning with the fact that *institutions* can be explained only in an *instrumental* sense, i.e., as a *solution* of a complex decision problem, typically a *social dilemma* structure. This also illustrates that the perspective is one of *institutional emergence*.

Nevertheless, *surprising similarities, equivalences, and complementarities* between both perspectives turn out to exist so that a *comparison*, 'translation', and cross-fertilization appear feasible. For instance, while the game-theoretic perspective may benefit from the *value sensitivity* of institutionalism, the institutionalist analysis, in turn, may profit from some *deeper logical analysis* feasible through a game-theoretic conceptualization, e.g., a more specific explanation of the *emergence of the ceremonial*, and of *policy design*.

This paper aims at

1. illustrating the *game-theoretic* perspective on *institutions* with a most simple game-theoretic formalism;

2. *comparing* and 'translating' back and forth the two conceptions of *institutions*, of the *asymmetry* of the two value systems, and of *ceremonial dominance*, thus indicating some surprising degree of *equivalence* between the two approaches;

3. adding a simple explanation from the game-theoretic perspective of *why ceremonial values emerge* (and then dominate) *at all*, out of an ideal instrumental world;

4. demonstrating that institutionalist and 'institutional-game-theoretic' perspectives *share the policy conclusion* that discretionary policy support is required to initiate, accelerate, and stabilize progressive institutional change, and that the game-theoretically inspired conception of *interactive/institutional policy* may add some specific policy instruments.

In the first section, we explain and compare the two conceptions of institutions. Section 2 discusses institutions as value-behavior structures and introduces the 'ceremonial' and the 'instrumental'. The third section analyzes the asymmetry of this value structure, resulting asymmetric institutional structures, and in particular ceremonial dominance, each in both perspectives. Section 4 explains the process and forms of institutional change, particularly ceremonial encapsulation, and regressive/progressive institutional change. Section 5 explains the emergence of the ceremonial as a degeneration of the instrumental. Section 6 introduces and discusses the converging policy implications in both perspectives. Section 7 concludes.

1) The Two Conceptions of an 'Institution' Compared

1.1) *A Most Simple Game-Theoretic Formalism to Derive an 'Instrumental' Definition*

The simplest formal illustration of the game-theoretic institutional perspective is the static '*single-shot*' solution of a *prisoners' dilemma* (PD). We have explained and elaborated elsewhere at length on the practical everyday *relevance* of the PD structure, the full

evolutionary 'process story' required for substantial explanation, a formal model of emergence (most effectively at certain 'meso' 'platform' sizes), and computer simulations of some core elements of that model (see, e.g., Elsner, Heinrich 2009, 2011, with relevant literature given there).

The 'single-shot' just provides a logical condition for the superiority of cooperation, solving the dilemma problem, over defection. Assume a simple PD 2x2 normal-form matrix:

a, a	d, b
b, d	c, c

with $b > a > c > d$, and $a > (d + b)/2$. As is well-known, the payoffs P in a '*supergame*' (SG) for the cooperative *tit-for-tat* (*TFT*)[2] player always encountering another *TFT* player, and for a defection (*ALL D*) player encountering a *TFT* player, with δ being the common *discount factor*, are

$$P_{TFT/TFT} = a + \delta a + \delta^2 a + ...$$

$$= \frac{a}{1 - \delta}$$

and

$$P_{ALL\ D/TFT} = b + \delta c + \delta^2 c + ...$$

$$= \frac{c}{1 - \delta} + b - c,$$

resp. In an evolutionary perspective, cooperation pays (and may be successful in a population) if

$$P_{TFT/TFT} > P_{ALL\ D/TFT},$$

$$\rightarrow \delta >! (b - a) / (b - c),$$

as popularized for instance by Axelrod (1984/2006).

According to this inequality, cooperation may become logically possible. But in fact it will have to emerge in a complex evolutionary process, as a new Nash equilibrium in the PD SG, different from the individualistic, hyper-rational, myopic 'one-shot' Nash equilibrium (NE) of a conventional game-theoretic perspective.

The critical factors here are the given quantitative dilemma-prone *incentive structure*, i.e., the quantitative strength or weakness of the collective-good problem involved, a, b and c, relative to the common *discount factor* (δ), which can also be interpreted in a SG as the '*probability to meet the same interaction partner again next interaction*', i.e., the importance of the *common*

[2] TFT always starts cooperatively (once or twice) and thereafter does what the other one has done the previous interaction.

future. Cooperation will come to be the superior strategy the easier (even in a population dominated by defection) the smaller the 'opportunity costs of common cooperation' ($b - a$) in relation to the 'opportunity costs of common defection' ($b - c$), and the larger the importance of the future (δ).

With some PD incentive structure given, the social terms, i.e., short- or long-run perspective, become crucial: If society, and agents with each other, have a *sufficiently long-run perspective of common futurity* (a large δ), given a sufficient *awareness of their common interdependence*, they will be able to solve the problem of overcoming the dilemma by overcoming their short-run dominant individualistic incentive to defect. If, however, their common future does not count high, formally a small δ, the condition above will not hold [δ will be $< (b-a)/(b-c)$]. They will remain in the short-run individualistic NE of common defection, the social dilemma.

[Note: In an *evolutionary game-theoretic* perspective this would reflect the question whether a cooperative culture could be *evolutionarily stable*, i.e., could invade a defective population, and not being invaded (above a certain population share) by a defective culture. Axelrod (1984/2006) has argued with some superior (more long-run) *commitment* of cooperators. Long-run calculation may transform the PD into a less cumbersome coordination game, depending on the δ. 'Meeting again' may also have to do with the level of *mobility*, i.e., the probabilities of staying in or leaving the interaction 'arena', the size of a relevant social or spatial *neighborhood*, and other things. For the institutionalist tradition, the importance of futurity was extensively elaborated by *John R. Commons* (1934)].

We will not delve here into the manifold complex formal and theoretical aspects of an elaborated model and also will not explain all assumptions, elements, and implications of a full 'process story' required. Here, just some *core aspects* suffice:

First, again, considering the solution above as a sequence or *process*, the institutional solution can *not* come about through narrowly rational agents, i.e., short-run maximizers. We cannot explain a process or mechanism to achieve the superior ('Pareto-superior') result with such 'hyper-rational' behavior. This would, even in a SG process, only be capable of generating a series of *one-shot* NEs (common defection, where the inequality would not hold). Thus, even in a game-theoretic perspective, an institution can only emerge through some *habituation*, where agents *learn to habitually abstain from* striving from their *short-run maximum*. Thus, they would partly determine 'their' δs themselves. The institution will thus have to be a '*semi-conscious*' phenomenon -- and may remain in that semi-conscious state as long as expectations of conformity with it are met, supported by the conditions of a favorable numerical result of the inequality above (i.e., the payoff-superiority of common cooperation) and by mutually enforced cooperation. Therefore, institutional emergence is conditional on a learned *broader and long-run rationality*, overcoming the dominant short-run incentive to defect. That broader and long-run rationality will have to be habitually applied. [In contrast, the institution may be abandoned through a more or less *deliberate* consideration when a new ('rational') single-shot calculation (after some condition has changed) no longer justifies conformity with the old institution, i.e., when some 'change', 'surprise', 'disappointment', 'frustration', or 'becoming exploited' by others may have occurred.]

Second, introducing *some stochastic aspect* into individual behavior, the institution can emerge only on the basis of the *individual motivations* (1) to *escape repeated frustration* from common defection (from individualistically aspiring b and commonly receiving only c), and

(2) to *learn* and to increase knowledge, and particularly to explore what a different behavior, namely common cooperation, may bring about (*idle curiosity* as Veblen would have put it), or to find a way to improve one's economic situation, resp. (to gain common *a*'s rather than *c*'s), a case for Veblen's *instinct of workmanship*. That is, the payoffs for common cooperation may not even be known ('incomplete information' in game theory) but may get explored by searching and experimenting agents. The institution thus may emerge just out of an agent's vision that there is more to be gained than repeated frustration. Agents who then make contributions to cooperation thus need to be *imaginative*, explorative, *innovative*, and creative. Therefore, *broader agency capacities* would need to be carefully defined for an evolutionary process, particularly for the game-theoretic perspective.

Third, the agent who then starts to search and experiment with different behavior will have to contribute repeatedly to the change of the others' expectations in favor of cooperation. The process, thus, is *cumulative* in the sense that all agents must *repeatedly* and interactively (*sequentially*) contribute (or, alternatively, will have to cumulatively punish each other).

Fourth, these agents also have to be *risk-taking* and *not too envious*. The first to send a signal for a potential better common future will have to take the risk of being exploited, at least once (thus, better to offer cooperation twice in a row—tit-for-2-tat—before returning to defection). He also will never be able to compensate for this, as compared to the other, if common cooperation should start in response to his first cooperative action. This agent thus needs to be mainly focused on *his own* net gain which he has to compare only with *his* payoff under continued common defection. Compared to this, he clearly will be better off over time.

Fifth, with agents starting to learn, search, and experiment, and individual *behaviors* thus becoming (stochastically) *diversified* (in our two-strategies world, this usually means starting cooperation from previous defection), we finally introduce a *population perspective* (a population with many agents, with initially unknown portions of defectors and cooperators). Agents then can no longer exactly tell the strategy of any particular other agent whom they (perhaps randomly) will be matched with next interaction (rather than meeting exactly the same again next interaction to sanction him for earlier cooperative or defective behavior, as in the simple single shot above). Behavior thus is considered somewhat random, and agents will have to *experience* the 'true' strategy shares in the population. The 'pure' expectation 'to meet the same again', δ, of the single shot above will be replaced by the expected '*probability to meet a cooperative agent next interaction*', i.e., what we call '*contingent trust*' δ_k (the no. of cooperators k over population size n).

Sixth, while agents will have to experience such 'contingent trust', they will *have to know about as many agents* as possible. Thus, even more capabilities of agents may have to be considered. Instances and model components of such *enhanced agency* assumptions will be *memory*, *monitoring*, building *reputation* and transmitting it in reputation chains, and some active *partner selection* based on the knowledge generated by these mechanisms, i.e., some '*preferential matching*', for instance, according to some social and/or geographical *neighborhood* topology.

In total, this indicates that in a (evolutionary) game-theoretic perspective the *institution* is as complex a thing as, and connected to an evolutionary process as complex as, in the institutionalist perspective, although there basically remains some 'rational' calculation at the core of the game-theoretic perspective. ('Rational calculation', however, may easily loose any

guiding potential for individual agents in a complex evolutionary process.[3]) However, the institution emerging so far is conceived of only as *an instrumental device to solve a defined complex decision structure* that could not be solved other than through *habituated*, i.e., institutionalized behavior with a learned broader rationality ('recognized interdependence') and a more long-run perspective of agents. The instrumental perspective of the game-theoretic conception of institutions is embedded in the theoretical and methodological perspective of *institutional emergence*.

Against this background, a proper game-theoretic definition of an institution may be given as follows:

> An *institution* is a *habitual* social rule for the decision/behavior of individual agents for (infinitely, or indefinitely) *recurrent* and *multipersonal* (i.e., directly interdependent and thus genuinely social) situations (repeated direct interactions, supergames), with social *coordination problems* involved (particularly collective-good problems, *social dilemmas*), that has gained, through a process of social learning, a general approval so that it can *inform* the agents about *mutual* (and mutually consistent) *expectations* of behavior and about the fact that with unilateral deviation from the rule (i.e., unilateral defection) other agents also will deviate in the future so that eventually all will be *worse-off with mutual defection* than with rule-conforming behavior (an *endogenous sanction* mechanism).[4]

Now, despite this instrumental starting point, also the one-shot Nash solution of *mutual defection* in the *lower right* of the matrix, given in the individualistic, myopic, and hyper-rational perspective, can of course be considered a 'culture'. Repeated defection as an *individualistic culture*, however, can, in the game-theoretic perspective, be conceived of only in the sense of a more simple *social rule*, which does *not need the endogenous sanction* mechanism nor a *habituation* to make people adhere to it. In a recurrent one-shot perspective, agents would *just spontaneously follow repeatedly and schematically their individualistic, short-run, hyper-rational 'best answer' and 'dominant strategy'* by mutually defecting. We call this a social rule rather than an institution. A social rule is what individualistic agents follow spontaneously, *in their very short-run individualistic interest*, given the same behavior of others. This *coordination* is a 'negative' one in a PD (common defection) but may also reflect a 'positive' coordination in a so called *coordination game*. Note that, hyper-rational individuals do not need to overcome a complex problem here in order to establish *defection as their behavioral (social) rule*. A social rule applies whenever it is in the interest of an individual to behave that way when the other one behaves that way too, even in a short-run 'one-shot' perspective. Social rules also apply to any simple coordination game where it is *in everyone's interest just to be coordinated* (see basic traffic rules as the usual prototype). In the PD SG, *common defection* thus may easily be *established as a social rule*. If I (have to) assume that the other one defects, I am (hyper-rationally) forced to defect myself. However, other than in a coordination game, there will be no problem solved in a PD through this way of 'coordination'.[5]

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[3] Just to note that in complex models, evolutionary process with replication and an ever-changing social environment may easily make prediction (calculation) of relative individual success impossible and hence proper rational individual decision infeasible. Even if proper regarding the past, any 'rational' decision may turn out to be wrong under the new environment of the next generation.

[4] This game-theoretic definition of an *instrumental* institution, referring to a *PD problem* structure, where the solution requires *habituation*, a *sacrifice* of the short-run maximum, and hence an *endogenous sanction* mechanism, was basically developed first by Schotter (1981).

[5] Note also that on this basis, the solution of a dilemma is specifically called '*cooperation*', while the solution of a coordination game is called just '*coordination*'—and while the umbrella term for both would be also

In other words, there appears an *obvious asymmetry* between the 'culture' of instrumental problem-solving through cooperation *motivated* by the striving for *problem solving* and the 'culture' of defection motivated by *individualist myopic maximization*. The social institution of cooperation is fundamentally more requiring than commonly following just a (individualistic) social rule of defection.

The latter case also includes *unilateral defection*, thus *exploitation* of the other one, if the other one for some reason can be led to stick to cooperation. Therefore, also the *upper right* and *lower left* constellations are included in that individualistic 'culture'. This, in turn, implies that the true *motivation* here is not just individualist myopic maximization, but in fact the *striving for exploitation of the other one* (or to prevent getting exploited oneself)—as the PD payoff structure obviously indicates. Hence, the true motivation, justification, and *normative warrant* here is what Veblen has termed *invidious distinction*, embedded, though, in a short-run maximization behavior. Note that the latter is *impossible without exploitation*. The motivation to defect in any of these cases (unilateral or mutual defection) is to exploit the other one and to *gain differential status* and power—an underlying *ceremonial valuation* (to anticipate the institutionalist argument below).

If all are that clever, general *mutual defection* necessarily follows. But, if an *additional story* about *lasting power and status differentials* in a *hierarchical environment* can be told so that the other agent can be convinced to continue to cooperate, to accept the superior's position and his own inferior position, we may also consider *'cultures' of unequal constellations* (see below *Section 5.2*).

But let us consider first the institutionalist 'story' in more detail now.

1.2) *The Institutionalist Definition – and its Equivalence With the Game-Theoretic Perspective*

Bush (1987) defines an institution as

> 'a set of socially prescribed patterns of correlated behavior' (p. 1076).

While this is consistent with most definitions in the institutionalist tradition, it needs some clarification in relation to our game-theoretically informed definition as a device to 'solve' a specified social dilemma problem.

'Patterns' of Behavior
First, '*patterns* of behavior' can be easily and straightforwardly translated just into 'behavioral *social rules*' in a broad sense, where institutions (= rules 'plus sanctions') are included. The patterns will typically be a structure with a time dimension (*over time*) and an interpersonal or social dimension (*across agents*).

'Prescribed' Patterns -- Instrumental Norms
Second, '*socially prescribed*' stresses the fact that institutions typically appear to the individual agents as *normative* phenomena and prescriptions (be they objectively instrumental or ceremonial), while the *original 'functional' (instrumental) context of their emergence* (as

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coordination. Similarly, we use *social rules* as a general umbrella term for both *institutions* as defined (rules plus sacrifice and sanctions) and specific social rules, where coordination is in everyone's individualistic interest.

illustrated in the game-theoretic perspective above) has often faded away in an individual lifetime or over generations of a population. Correspondingly, Bush stresses the idea of an '(*instrumental*) *norm*': The idea of social prescription would apply, and perhaps particularly so, to

> 'all problem-solving (purposive) behavior. The community at large has a stake in the manner in which its tools and intelligence are brought to bear on its life processes. Those patterns of behavior perceived to be vital to the survival of the community are the most carefully prescribed and carry the heaviest sanctions' (p. 1077).

This '*norm*' is mostly not just a behavioral rule (or institution) conveyed by social conditioning and *enculturation* and not just some semi-conscious habituation, but the explicit feeling of individuals of a socially *required behavior*, whether instrumental or ceremonial. (We will discuss later how we can derive such 'norm'-atization and then even 'ceremonialization' out of a benchmark of an ideal instrumental 'functional' problem-solving behavior—see *Section 5.2*.)

'Correlated' Behavior

Third, the idea of '*correlated*' behavior, in particular, is not that obvious, from a game-theoretic perspective.

- In our 'instrumental' derivation of institutional emergence in a game-theoretic context, behaviors are correlated, first, *between two agents* who 'correlate' their behaviors in face of a problem at hand, be this 'correlated' (mutual) cooperation or (mutual) defection in a PD, the two basic forms of 'coordination' in a PD. Correlation here, therefore, is just some *'coordination' in a broad sense*. In the first instance, it would apply even to a *single action* of each agent, i.e., a one-shot decision (one interaction, a game played just once).

- Furthermore, any such behavior must be correlated also *over time*, as a recurrent, *repetitive*, and thus rule- or institution-based behavior (remember the fact that we argued in a SG, particularly a sequential process). In fact, a rule or institution would be no full-fledged rule/institution (or 'coordinated strategies') if it was not repetitive/recurrent, and thus *correlated with itself* over time.

'Patterns of correlated behavior', thus, also means that institutional behavior

> 'is not random but purposeful', and in this sense 'correlated' (ibid.).

A 'Set' of Patterns of Behavior

Fourth, a 'set' of correlated behavior thus may refer either to a *set of coordinated (pairs of) agents* carrying the rule or institution at one point of time and/or the *set of repetitions* of coordinated behaviors of pairs of agents, i.e., a set of coordinated actions *over time*.

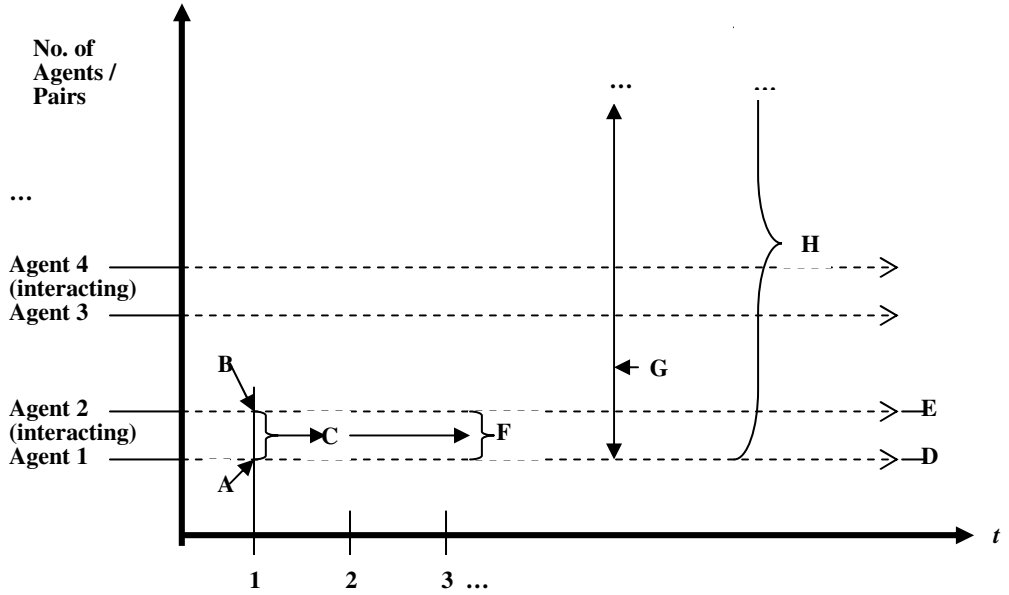
It should have become clear from this that game-theoretic modeling may be of some help to sort the different logical dimensions of 'a set of patterns of correlated behavior'. For an illustration of the mentioned components of the institutionalist definition of an institution, see *Figure 1*.

Figure 1: **Components of the Institutionalist Definition of an Institution as 'Sets of Correlated Behavior'--Illustration.**

Repetition of Interaction / **No. of Agents Involved**	**Once** ('one-shot') ('correlation' just across agents)	**Many Over Time** (recurrent, sequential) ('correlation' cross-sectional & longitudinal)
Two (one pairing)	***Behaviors 'correlated' between two agents***	***A 'pattern' of behaviors 'correlated' between two agents and with themselves over time***
Many Pairs (in a population)	***A 'set' of behaviors 'correlated' within each pair of agents and among pairs*** *(with the no. of elements of the set equal to the no. of pairs)*	***A 'set' of 'patterns' of 'correlated' behavior (within each pair and among pairs) 'correlated' with themselves over time*** *(with the no. of elements of the set equating the no. of pairs).*

For an illustration of the *logic of the components* of a rule or institution, from an individual action to a 'set of patterns of correlated behavior', see *Figure 2*.

Figure 2: **The Logic of a 'Set of Patterns of Correlated Behavior'--Illustration.**



Notes:

A, **B** = a *behavior*, an individual *action* (*one agent*'s action at *one point of time*);
C = *behaviors* (actions) **A** and **B** 'correlated' between (at least) *two agents* (at *one point of time*);
D, **E** = '*patterns*' of behavior (of each *one agent*), each 'correlated' only with itself *over time*;
F = a '*pattern*' of behaviors **C**, 'correlated' with itself *over time* (a *social rule* or *institution*);
G = a '*set*' of 'patterns' of behaviors **C,** 'correlated' among (at least two) *pairs of agents*;
H = a '*set*' of 'patterns' of behaviors **G**, 'correlated' with itself *over time*.

2) Values Correlating Patterns of Behavior: Instrumental or Ceremonial Warrant

Another important aspect, specific of the epistemological sophistication of Institutionalism, which has not been explicitly accounted for in the game-theoretic treatment so far, is *values*. As Bush puts it:

> 'Values function as the "correlators" of behavior within and among patterns of behavior'. [That is] 'two behaviors [..] [are] correlated by a value' (p. 1077).

However, this appears reconcilable as well with a *game-theoretic* perspective as already indicated: Consider again that cooperative behaviors in a *PD* (or coordinated behavior in a coordination game, if a Pareto-superior coordination—out of two coordinations in a 2x2 normal form—exists and is attained or aspired[6]) are correlated through the *instrumental valuation (the motivation, or norm) of problem-solving*, i.e., overcoming the very dilemma. This instrumental motive or basic valuation seems quite obvious: We have to assume that agents are *motivated to cooperate* through a prior value-decision to solve a common and collective problem to improve their situation.

Intended hyper-rational *maximization*, on the other hand, i.e., putting oneself above and trying to exploit the other one, and, thus, either *unilateral or mutual exploitation* (*unilateral or mutual defection*), are justifiable—also in game-theoretic terms—in no other way than through the prior fundamental valuation of *invidious distinction*, i.e., the *striving for superior power and status*, in a word, through what institutionalists since Veblen have called *ceremonial* value. According to ceremonial values, agents are after distinction, differential status and power, rather than problem-solving.

The 'correlating' role of instrumental and ceremonial values now has been most important for the institutionalist argument and scheme of institutional dynamics. While game theory can both learn from this and contribute to its logical analysis, the theory of institutional change has paved a way already through the elaboration of a system of resulting potential forms of value-behavior-structures.

The basic *value-behavior-scheme* (or structure) is

$$B\text{-}V\text{-}B,$$

with *V* for the correlating *value* and *B* for the *behaviors*. *V* 'correlates' behaviors *B*, again among both agents and over time.

Note that there can be different interconnected constellations of values and patterns of behaviors, among agents and/or over time, where

> 'the correlation of [two] behavioral patterns entails a [third] behavioral pattern' (p. 1078),

as illustrated according to Bush's explanation in *Figure 3*.

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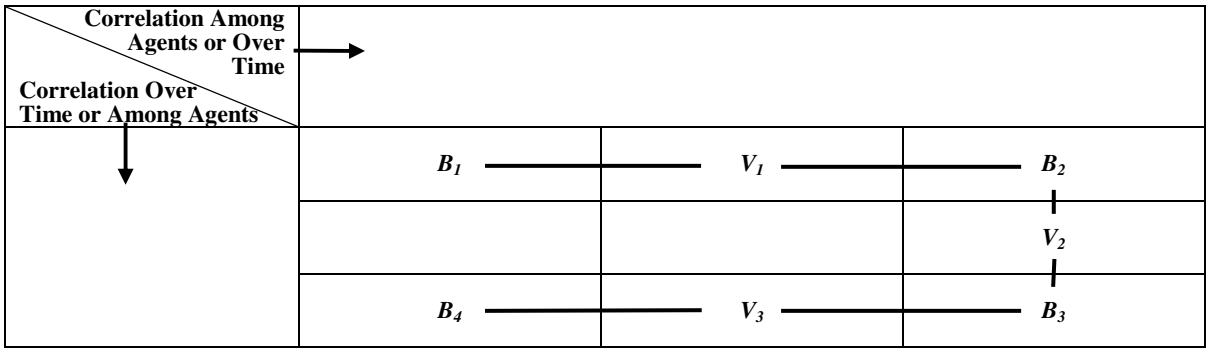
[6] The prototype in modern complexity economics of such a coordination game with two different coordination solutions, a Pareto-inferior and a Pareto-superior one, is W. B. Arthur's model of a random technology choice with two different technologies (superior, inferior)—see Arthur (1989).

Figure 3: **Behaviors Correlated by Values, Among Agents and Over Time--Illustration.**



For instance, while two pairs of '(patterns of) behavior' [of each two agents, (1, 2) and (3, 4)], (B_1, B_2) and (B_3, B_4), may be 'correlated' by instrumental values (V_1, V_3), the (patterns of) behaviors of agents 2 and 3, B_2 and B_3, may be 'correlated' by ceremonial value V_2. Similarly, behaviors might be instrumentally 'correlated' across agents, but ceremonially correlated over time.

Since the relationship between two patterns of behavior is fundamentally characterized by the type of V (instrumental or ceremonial), *institutional change* basically requires a *change of the value* basic to that institutional structure. We will return to this later.

3) The Asymmetry in the Dichotomic Institutional Structure: Ceremonial Dominance and Ceremonial Encapsulation

3.1) *The Asymmetric Value Structure in Both Perspectives*

Again, behavior warranted by ceremonial values is based on invidious distinction, and aspirations of differential status and power. The *logic of ceremonial warrant* of institutionalized patterns of behavior is, as Veblen has already put it, one of

'*sufficient reason*',

which means that ceremonial values refer to just tradition, received authority, some plausibility, suitable myths, etc., and are beyond critical scrutiny or scientific inquiry. The *operative criterion* for such behavior thus is

'*ceremonial adequacy*',

i.e., just *conformity* to the legitimizations of differential power and status without any proof of real efficacy–conformity to the myths is just sufficient (cf. Bush, pp. 1079-80).

Instrumental values, on the other hand, are bound to problem solving, and thus the *logic of instrumental warrant* is that of

'*efficient cause*'

rather than just 'sufficient reason'. The *operative criterion* by which instrumentally warranted behavior is judged, therefore, is that of

'*instrumental efficiency*'

(rather than 'ceremonial adequacy'), i.e., *efficacy*.

Typically, with *new 'technological' knowledge* (in the broadest sense), instrumental behavior, particularly if warranted by instrumental value, will have to be scrutinized and adapted. Proper (instrumental) behavioral adaptation, in turn, will 'require changes in the instrumental values that correlate such behavior' (p. 1080), i.e., change to *reinforce instrumental valuing*.

With this, there also are *two basic types of patterns of behavior* that would consistently and fully relate to the two valuations, i.e., *instrumentally and ceremonially warranted* patterns.

In *game-theoretic* terms, and in the context of a *social dilemma*, we have made the distinction between an *instrumentally warranted institution* and a *ceremonially warranted social rule*[7], reflecting already the above mentioned asymmetry. In particular, *dilemma-solving behavior* is subject to the value criterion of '*efficient cause*' or 'instrumental efficiency', an effort with a learning process attaining the Pareto-superior solution[8], while *defective behavior* in a PD can be considered to be subject to '*sufficient reason*', i.e., just the *belief* and hope that the agent can (and should) gain a maximum in the short run, which he knows he can only attain at the expense of the others. The institutionalist value-asymmetry thus neatly applies to that game-theoretic problem setting so that the game theoretic perspective could be opened up for more institutionalist input.

3.2) *Resulting Institutionalist Value-Behavior Structures*

This has several implications for resulting value-behavior structures:

- First, as said, it is immediately intelligible that there are *two pure types* of *specific value-behavior schemes* that consistently relate to one of the two valuations:

  $$B_c\text{-}V_c\text{-}B_c$$
  and
  $$B_i\text{-}V_i\text{-}B_i\ ,$$

  where *c* and *i* stand for ceremonial and instrumental, resp.

- Second, however, *real-world behavior* typically is '*dialectical*' in the sense that *both ceremonial and instrumental* characteristics are involved.

---

[7] Note that in a 2x2 coordination game with two different coordination equilibria, i.e., two social rules (a superior and an inferior one), both probably would have to be considered instrumentally warranted (at least the superior one).

[8] Note that the use of the *Pareto criterion* (PC) throughout this paper is confined to the simple examples of symmetric payoff matrices with two different potential equilibria. We do not want to argue that the PC in general would lead us far in evolutionary-institutional economics.

> For example, institutionalists from Veblen on have dealt with such 'dialectical' behavior: *Fashion clothing* is both instrumental clothing and ceremonial distinction, and the *professor's teaching* behind the lectern is both instrumental teaching and ceremonial status differentiation between himself and the students. Veblen and Ayres have also investigated the '*ceremonial cleanliness*' of the upper classes, the 'cult of the tub', with its waste of hot water, which has become particularly relevant in recent times of body and beauty cults, ubiquitous hot showers and one-arm water taps that always admix hot water, and water pollution with all kinds of detergents, mostly used in huge abundance, of the ubiquitous 'sanitation' and 'beauty' industries (see also examples and discussion given by Bush, pp. 1081 f.).

This means there are patterns of behavior to be symbolized by B_{ci} (or equivalently, B_{ic}), which are *ambivalent*. Thus, its final significance *depends on the type of value* that correlates them. Hence, the following forms can be added to the list of specific schemes (see Bush, pp. 1082-4):

$$B_{ci}\text{-}V_c\text{-}B_{ci} \text{ and } B_{ci}\text{-}V_i\text{-}B_{ci}$$
and also
$$B_c\text{-}V_c\text{-}B_{ci} \text{ and } B_i\text{-}V_i\text{-}B_{ci}\ .$$

That is, both ceremonial and instrumental values can correlate either two 'dialectical' patterns of behavior or one 'pure' form of their own kind with another 'dialectical' form.

- Third, the asymmetry between instrumental and ceremonial modes of valuation, as mentioned, causes an *asymmetry between the value-behavior-structures* that instrumental or ceremonial values warrant.

  Particularly, the instrumental logic and operational criterion of *efficient cause* and *instrumental efficiency* are *inapplicable to purely ceremonial behavior*:

  > 'Instrumental valuation cannot rationalize purely ceremonial behavior' (p. 1083).

  The ceremonial logic and operational criterion of *sufficient reason* and *ceremonial adequacy*, on the other hand, are less limited: *Any behavior*, including instrumental behavior, may be 'rationalized', absorbed, used, or misused, by ceremonial valuation, since its logic and operational criterion are 'weaker', so to speak, i.e., *less demanding*.

  > For example, think of the massive progress made in the natural, technological, organizational, medical, psychological or social sciences (including, by the way, game theory) through *arms and warfare research*, typically justified by myths like 'our nation is under threat', 'we need to help others who are under threat', 'they don't share our values', 'they are different', etc. Also, you may think of the justification of some reasonable and effective social caring behavior within and through the churches through 'the will of god', or of other socially effective behaviors through 'the national interest', 'the interest of the economy', etc. In fact, there has been generated a rich stock of applied institutionalist research on such issues since Veblen's critical analyses of the typical dominating myths and belief systems.

  In *game-theoretic* terms, we would have to consider again the *exploitation constellations* in the upper right and lower left cells of the 2x2 PD matrix, where

> instrumental (cooperative) behavior of some agents would be *dominated* by others who are motivated by invidious payoff maximization for their own benefit. Thus, we would have to assume that the whole situations then are dominated and characterized by the *ceremonial* valuation. This clearly would go beyond any conventional game-theoretic perspective and would require additional assumptions, theoretical justification, and proper 'story-telling'. Game theory obviously is not well prepared for the conception of *lasting asymmetric behaviors*. But again we refer to such additional story-telling about the *emergence of a dominating ceremonial warrant* out of an instrumentally warranted behavioral solution in *Section 5.2* below.

3.3) *'Ceremonial Encapsulation' in Particular*

In case of such ceremonial enclosure of 'dialectical' or of purely instrumental patterns of behavior, institutionalists are talking of *encapsulation*:

> 'In these instances, instrumental behavior is "encapsulated" within a ceremonially warranted behavioral pattern, thereby incorporating instrumental behavior in a ceremonially prescribed outcome' (p. 1084).

> For instance, *Marx*'s conception of '*moral depreciation*', i.e., premature scrapping of commodities under the pressures of competitive race among firms, would fall into this category of both and concurrent instrumental and ceremonial dimensions of behavior, where commodities may display some instrumentally reduced functioning but in fact will prematurely be put to waste as they no longer function as a vehicle of invidious distinction (e.g., are no longer fashionable or no longer a cutting-edge model of a technology), a more symbolic and signaling action. The case could be symbolized by B_c-V_c-B_{ci} or B_{ci}-V_c-B_{ci} as already introduced, but also by B_c-V_c-B_i and even B_{ci}-V_c-B_i , as introduced below.

The forms of ceremonial encapsulation, thus, are manifold. First, it may occur *with 'pure' behaviors*, where purely instrumental behavior is correlated with purely ceremonial behavior, the first being dominated and encapsulated by ceremonial valuing:

$$B_c\text{-}V_c\text{-}B_i \ .$$

A 'weaker' form (or stronger rather?) correlates purely instrumental behavior with *'dialectical' behavior* (and encapsulates both), i.e., even 'dialectical' and purely instrumental behaviors can be encapsulated to serve a ceremonially prescribed outcome:

$$B_{ci}\text{-}V_c\text{-}B_i \ .$$

Note that these two forms can not have parallels under 'instrumental conditions'. Because of the asymmetry, *instrumental values cannot justify any purely ceremonial behavior*, so no constellations B_i-V_i-B_c and B_{ci}-V_i-B_c are feasible. Similarly, and obviously, no constellation B_c-V_i-B_c is feasible.

But also, B_i-V_c-B_i is *no* possible constellation, as *ceremonial values cannot justify only pure instrumental behaviors*.

See *Figure 4* for an overview of these forms.

Figure 4: **The Forms of Ceremonially and Instrumentally Warranted Patterns of Behavior (Variants of Value-Behavior-Schemes)** (after Bush, p. 1082)**.**

	Ceremonially Warranted Patterns of Behavior	**Instrumentally Warranted Patterns of Behavior**
Only 'Pure' Forms of Behavior of the Same Kind	B_c-V_c-B_c	B_i-V_i-B_i
Only 'Dialectical' Forms of Behavior	B_{ci}-V_c-B_{ci} (involving *ceremonial encapsulation*)	B_{ci}-V_i-B_{ci}
Mixed 'Pure'/'Dialectical' Forms of Behavior	B_c-V_c-B_{ci} (involving *ceremonial encapsulation*)	B_i-V_i-B_{ci}
Other Mixed Forms of Behavior	B_c-V_c-B_i B_{ci}-V_c-B_i (involving *ceremonial encapsulation*)	**./.**

For the *game-theoretic* perspective we would immediately be able to draw an obvious first rough *analogy of some basic cases* for a normal form PD:

B_i-V_i-B_i	B_i-V_c-B_c
B_c-V_c-B_i	B_c-V_c-B_c

The integration of more cases would require additional assumptions and considerations. However, it appears sufficient here to demonstrate that we indeed can translate basic game-theoretic cases into basic institutionalist value-behavior structures.

3.4) *'Ceremonial Dominance' and the 'Permissiveness' of the Institutional Structure*

The asymmetry between the logics of 'ceremonial' and 'instrumental' valuation according to which *ceremonial warrant can encapsulate more forms of behavior*, is consistent with, and in fact stems from, the general comprehension of *institutions* in the *Veblenian* tradition according to which institutions are always and unavoidably *past-bound*, and thus prone to a *ceremonial dominance*, particularly in traditional, hierarchical, and predatory societies.

However, specific cultures and nations, in fact, vary in the '*permissiveness*' of their institutional arrangements (value-behavior-structures) vis-à-vis *new* ('technological') *knowledge* ('increases of the social knowledge fund'). Some few have been *allowing for a ('progressive') change* towards more instrumentally warranted behavioral patterns. Hence that asymmetry and the resulting ceremonial dominance are a 'gradual' phenomenon. An ideal '*index of ceremonial dominance*' (to be formalized yet[9]) would be inversely related to the *degree of permissiveness*: The higher that index, i.e., the greater ceremonial dominance,

[9] However, see O'Hara 1997, 112-16, for a formal operationalization and application of an ICD for the cases under investigation there. We do not need to delve deeper into this here.

the lower the permissiveness of the institutional structure of an economy towards new knowledge and its full instrumental use.

In *game-theoretic* terms, we may think of some *technological or organizational change*, causing a *change of the payoff structure*,

1. e.g., in a coordination game with a Pareto-superior and a Pareto-inferior coordination solution, so that the former superior coordination becomes the inferior one and vice versa,

2. transforming a coordination game into a PD and vice versa,

3. increasing the relative payoffs for common cooperation in a PD so that common defection pays relatively less and cooperation becomes easier feasible in a supergame process, and vice versa (while the PD structure as such is maintained).

Also, we might assume some change in other external conditions so that the *expectations change* (i.e., the discount factor δ) with implications for the *probabilities* with which *instrumentally or ceremonially* warranted behavioral patterns come to prevail in an evolutionary process in a population.

Combining changes in knowledge, payoffs, and expectations (and thus—in the game-theoretic perspective—in the long-run calculations of relative benefits and costs of different strategies) with the *valuing* aspect we may say that the more 'permissive' the value structure in games undergoing such changes would be, e.g., the more the agents will be after *long-run and inclusive problem solving* ($V_c \rightarrow V_i$), the more a *behavioral change towards a new, adapted, and now proper and superior, solution* would appear feasible in each of these cases.

However, note that, in game theory, as already the simple single-shot solution above reveals, we have to consider that in the usual interpretation the *degree of permissiveness* itself is not only positively related to, but in fact *changes uno actu with the long-run calculations* of the agents based on both the payoff structure and the importance of the common future (δ)—some more 'rational', calculative explanation of the relative weights of the two types of values. Particularly, with *favorable calculative* conditions, agents, in the game-theoretic perspective, will usually be *more inclined towards instrumentally warranted* solutions—if not other aspects that may explain a ceremonial dominance would prevail. The latter will indeed play a role in the specific *argument in favor of dominant ceremonialism* that we will deal with in *Section 5.2*.

4) The Process and Forms of Institutional Change

4.1) *Combinations of Instrumental vs. Ceremonial 'Feasibilities': The 'Institutional Space'*

It follows from the above that *new knowledge*, together with related *instrumental patterns* of behavior, can be either '*encapsulated*' within ceremonially warranted patterns of behavior or '*embedded*' within instrumentally warranted patterns of behavior.

While *new knowledge* basically *supports instrumental valuation* (see our argument above on the support of a proper set of conditions and a 'favorable' calculation for instrumentally warranted solutions), the 'index of ceremonial dominance' eventually is indicative of the degree in which new knowledge is *allowed to be used* in the community's problem-solving process. For instance, under strong ceremonial dominance,

> 'knowledge that cannot be reconciled with the need to justify existing patterns of status, power, and other forms of invidious distinctions would not be intentionally sanctioned' (p. 1091).

The asymmetric structure between ceremonial and instrumental warrant, 'allowance', or '*feasibility*' of behaviors now defines an '*institutional space*' within which we not only can define different *sectors* according to these *value or feasibility constellations*, but furthermore can also illustrate the *motions of institutional change* (Bush, p. 1092; see *Figure 5* below, with the formal *B-V-B* structures added that apply in each case):

(1a) When behavioral patterns are both *instrumentally feasible* (warranted, allowed for) *and ceremonially feasible* (warranted, allowed for), in this way meeting both 'sufficient reason' and 'efficient cause', or 'ceremonial adequacy' and 'instrumental efficiency', we clearly face the *case (and sector) of ceremonial encapsulation* since this implies (because of the asymmetry) a dominant ceremonial warrant. Here then, the institutional structure of an economy allows for benefiting from *instrumental behavior* that at the same time can be *ceremonially justified* and utilized, misused, and, in fact, encapsulated (see *Figure 5*, upper left sector).

(1b) In *dynamic* terms, if an increase in the knowledge fund would *trigger compensatory efforts not to change the value structure*, the system would remain in the upper left sector of both instrumental and ceremonial feasibility under ceremonial warrant, a case of *ongoing and enforced ceremonial encapsulation* (remaining in the upper left sector).

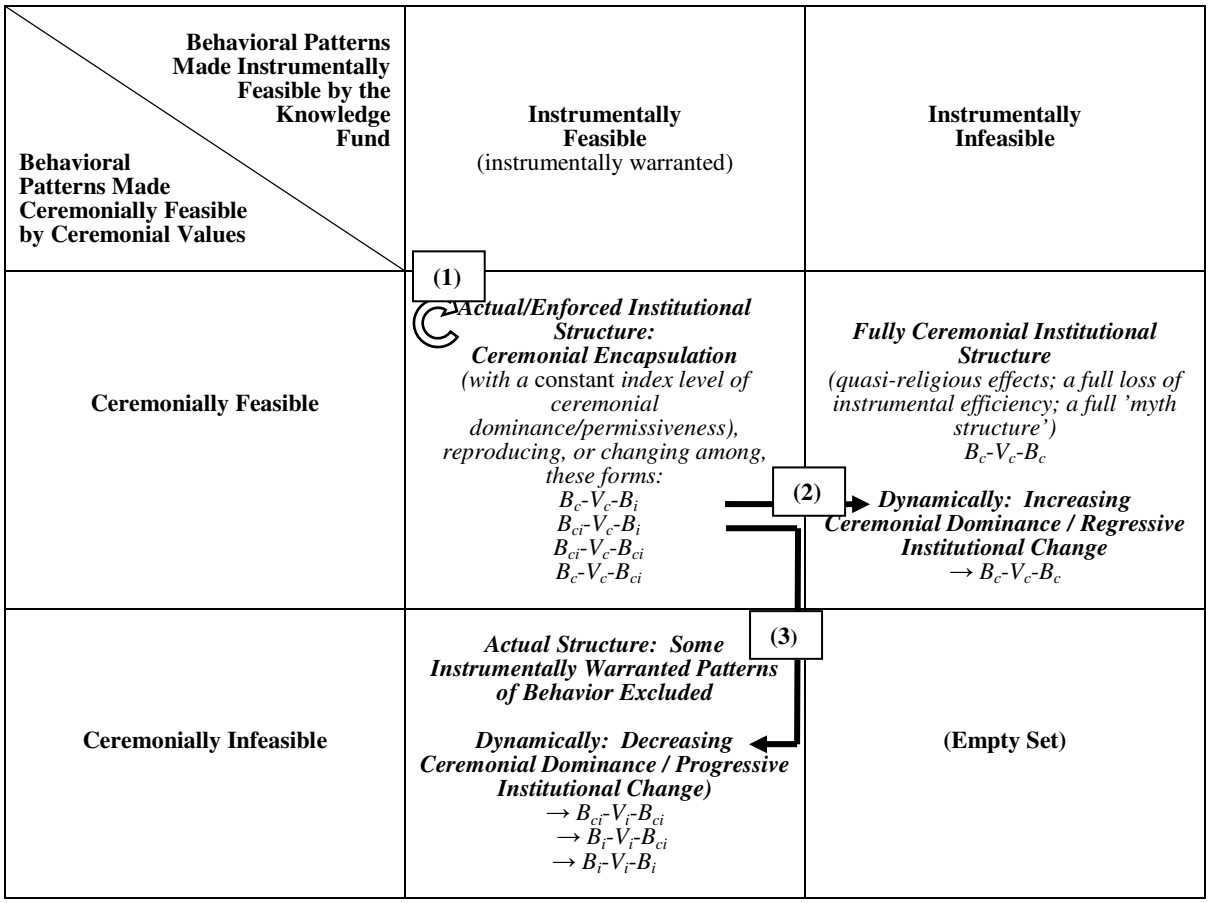
(2a) If behavioral patterns were *instrumentally infeasible* but *ceremonially feasible* under dominant ceremonial valuation (ceremonial warrant), they were *purely ceremonial*, a complete dominance of the 'myth structure', a full 'loss of instrumental efficiency' (p. 1092), with instrumentally warranted patterns completely excluded (upper right sector). We are talking of *quasi-religious effects* here.

(2b) In a *dynamic* perspective, if *ceremonial dominance* would *further increase* and the economy moved from the ceremonial-encapsulation subspace into this sector, excluding more and more instrumental behaviors, this would be indicative of *'regressive' institutional change*, i.e., an *even greater dominance* of ceremonial over instrumental values (and behaviors), of total ideology, myths, and received belief systems over knowledge (moving from the upper left to the upper right sector).

(3a) Finally, those parts of behavioral patterns that are *instrumentally feasible* but *ceremonially infeasible* will normally be *excluded* under ceremonial dominance (lower left sector).

(3b) In a *dynamic* perspective, however, if *ceremonial dominance* could be *reduced* after an increase in the social knowledge fund, this would be indicative of *'progressive' institutional change*, i.e., an increasing weight of instrumental over ceremonial values and with this of instrumental behaviors. Then the economy would move from the upper left into the lower left sector.

Figure 5: **The 'Institutional Space' in the Interface of Instrumental Feasibility (Warrant) and Ceremonial Feasibility (Warrant).**



Note: (1) = Ongoing/enforced Ceremonial Encapsulation (with a constant ceremonial dominance).
(2) = Regressive Institutional Change (increasing ceremonial dominance).
(3) = Progressive Institutional Change (decreasing ceremonial dominance).

4.2) *The Forms of Institutional Change in Particular*

As said, *institutional change* is defined by a *change in (the 'index' of) ceremonial dominance* which in turn only occurs with a *change in the value structure* (Bush, p. 1094), i.e., in the relative dominance of ceremonial or instrumental warrant. And there were three forms of institutional change identified:

(1) Ongoing and *enforced ceremonial encapsulation* will then imply that any increase of the knowledge fund, any *new knowledge*, and thus any potential increase of instrumental patterns of behavior will be *offset*, under a continuing dominance of ceremonial values in the community, by concomitant or *reactive increases in ceremonial 'mythology' and valuation*, and thus ceremonial patterns of behavior are supported and instrumental behavior encapsulated. The *status quo ante* will be *maintained* and reinforced.

In this case the *'index' of ceremonial dominance* and the value structure basically remain *unchanged*.

> As a major example, consider the huge technical progress made in the last decades through the *digital microelectronic technologies*. Now consider, what part of the effective use of the new facilities and equipment is devoted to just ceremonial activities rather than effective potential social problem-solving and related communication, information, and calculation. What part is used, in contrast, to rather divert people from social (and individual) problem-solving, engaging them in just killing time, distracting them from the social problems as well as their individual problems, tending to make them addicted, involving them in 'sex&crime' worlds (virtual or real), promoting global sex&crime industries, money laundering, generating and promoting violence, social isolation, invidious distinctions, but also surveillance and control, and so forth … ? (see, e.g., Adkisson 2004, particularly on ceremonialism with respect to intellectual property rights). One might try to make an empirical estimation of instrumental vs. ceremonial portions in the real use of those technologies.
>
> Also, for instance, consider the newest and most expensive computer acquired by the company for the office desk of the CEO (who rarely works at his desk and makes little use of that computer) rather than for the chief engineer who could make much of it. Also, mostly parking lots close to the main entry of firms are reserved for the most ceremonial, fancy and expensive vehicles of the bosses.
>
> Banks headquarters, public celebrations, business fashion, sitting orders, business rules, ritualized mass media representations of reality, etc. provide endless instances of ceremonially warranted rules that appear as abstract and thus particularly strict norms.
>
> Furthermore, *decentralized* systems based on *net-technologies* and *independent agents nets* in the new economy may be dominated and restricted by big powerful bureaucratic hierarchies of international corporations. They form supplier networks that are hierarchically directed and restricted by the powerful hub of such a global hierarchy, i.e., *hub & spoke networks* that have come to dominate the global spatial organization of industries nowadays. Many power-based contractual nets have turned out, through critical institutional analyses, to be less problem-solving constructions but rather complicated machines to generate windfall profits accruing at the most powerful agents (see, e.g., Hayden and Bolduc 2000).

Ongoing or enforced *ceremonial encapsulation* may occur in two subtypes:

- *Past-binding ceremonial encapsulation*: This is the situation of existing power and status oriented 'predatory' societies that institutionalists since Veblen have always considered typical and where they have seen the general 'past-binding' character of institutions realized, and a *permanent* '*cultural lag*' occurring in the adjustment of the institutional structure in relation to increased knowledge.

  Here, it typically is attempted

> 'to minimize the impact of the technological innovation on existing habits of thought and behavior […] conscious efforts are made to shore up the existing value structure by an elaboration of ceremonial practices designed to minimize the innovation's dislocation of the status quo' (p. 1094).
>
> For example, you may think here of norms and prescriptions trying to restrict the (instrumental) application of new knowledge (and communication over it) or to keep new knowledge from becoming applied by the regular individual or household for their individual problem solving, e.g. the increasing authoritarian regulation of the internet.

This can be considered a more *reactive* and *defensive* type of institutional change.

- *Future-binding ceremonial encapsulation*: Some innovations may 'slip through' and trigger an increased weight of instrumental behavior, since

  > 'Veblen's "instinct of workmanship" appears to manifest itself even under the most trying ceremonial circumstances' (p. 1093).

  This can be considered a more *active* and *offensive* type of institutional change, designed to

  > 'strengthening and extending the control of vested interests over the life of the community' (p. 1095).

  Vested interests here effectively control the future of the community, and change in the existing patterns of valuation and behavior, including the organization of the economy and society, will be avoided.

  > As an instance, you may think here of the fact that in face of an ongoing and increasing *environmental disruption* virtually everything and any *product* will be *advertized* nowadays as '*biological*', '*organic*', '*sustainable*', and '*green*', how disastrous its ecological footprint balance may actually ever be, e.g., from 'organic' *industrial food* that in fact causes obesity, to '*green cars*' that may be more efficient but, in fact, still have considerable, and often even more, climate-changing emissions, often through larger engines, more horse power, and greater maximum speed.
  >
  > You may also think here of the efforts and power of international oligopolistic corporations of the *agrofood* and '*biotech*' industries to collect *genetic information* from all over the world in order to control global agricultural and biological production in the future, and with this hundreds of millions of farmers and trillions of consumers.
  >
  > In fact, many institutionalists like L.F. Junker, F.G. Hayden, and W.M. Dugger have empirically investigated this type of ceremonial encapsulation in the very fields of pathogenic *corporate agricultural and food production* that causes public health to continuously deteriorate (see Bush, pp. 1095 ff.).

(2) *Regressive institutional change*, on the other hand, will displace instrumentally feasible and dialectical behavior, as indicated, i.e., an extreme case where ceremonial practices will not only *dominate* instrumental ones, but *substitute* them and in the end even *imitate instrumental efficiency*. It is the case of *increasing ceremonial dominance*, consistent

with what Veblen had coined '*the triumph of imbecile institutions over life and culture*' (cited by Bush, p. 1101).

> Bush calls this a '*Lysenko*' effect, according to the Russian agrobiologist who elaborated a bogus genetic theory suggesting an extreme version of Lamarckism where genetic change could be man-made, 'managed', in one generation of plants, just through environmental conditioning–thus causing huge damage to the Soviet agro-economy in the 1930s and 1940s.
>
> You may also think of the *quasi-religious* 'theories' of the Nazis and all kinds of simplistic 'Social Darwinisms' about supremacy and inferiority of *races and nations*, where they measured heads and bones to prove their myths.
>
> Similar movements are getting en vogue anew in the current crises in many developed and allegedly worldly, secular, and 'enlightened' countries. You may think of the surge of dangerous *quasi-religious propaganda* and *anti-rationalisms* all over the world, propagating hatred and ignorance against 'the others', particularly against poor, needy, dependents, and migrants, including the alleged inferiority of other religions, races, and nations, of women or of non-believers, e.g., postulating literal readings of the bible, counting generations back to Adam and Eve in the bible's metaphors, accordingly claiming the world to be some 6000 years old, or arrogating '*creationism*' to be seriously taught in schools (on an equal basis with scientific evolutionary theory, for the time being), reserving open totalitarianism for the future.

The *motion* of the institutional structure from forms of ceremonial encapsulation to instrumentally completely infeasible behaviors (regressive institutional change) may occur *gradually* from (either a past-binding or a future-binding form of) ceremonial encapsulation. Again, with regressive institutional change there occurs a *further loss of instrumental efficiency* as (the index of) *ceremonial dominance increases* and the permissiveness towards the application of new knowledge and related instrumental behavior decreases. Knowledge and instrumental behavior will be fully *displaced* in the end by ceremonial behavior under a strong dominance of ceremonial values.

(3) *Progressive institutional change*, on the contrary, will be experienced

> 'when for a given fund of knowledge ceremonial patterns of behavior are displaced by instrumental patterns of behavior' (p. 1101).

It would move the institutional structure into the lower left sector of the institutional space (see *Figure 5* above again), i.e., the ceremonial barriers that have prevented instrumental behavior to be realized (because it was ceremonially infeasible) can be torn down on the occasion of new technological knowledge. Here we would experience a *decreasing (index of) ceremonial dominance*, which can only come about through a displacement of ceremonial values by instrumental values.

> Veblen, for instance, had hoped that the forces of the industrial *machine process*, and the working classes related to it, with its requirement of *rationality* and its *cumulative instrumental knowledge* gained from the 'tools-skill nexus', would eventually bring about progressive institutional change. He had hoped that cumulative causal chains in industrial production would work so that 'knowledge increases in the degree that it is used' (as M. Lower has put it, cited by Bush, p. 1103). Instrumental valuation and applied and experienced instrumental patterns of behavior would then indeed allow for an *acceleration of growth in the knowledge fund*, as has usually been argued in the Veblen-Ayres tradition (see pp. 1102-4).

> However, the ceremonial encapsulation in the late *capitalist culture* proved to be stronger so far. It has developed, for instance, ceremonial *life styles* of affluence that prevents rationality to be fully realized, with the opulent life style of the developed countries of the Northern hemisphere, full of *oversupplies* of food, drugs, entertainment, diversion, events, and mass hysteria, while appropriating and absorbing for this purposes the resources that the rest of the globe provides – and even more than these (in fact, the annual *ecological footprint* of the global North is 3 to 4 times their annual natural capacity).
>
> And, in fact, virtually all relevant *knowledge* on sustainable production, social justice, general trust and happiness, on preventing financial speculation and crises, environmental deterioration and climate crisis, etc. does *already exist*, but it cannot be applied because of a *lack of instrumental collective action capacity*, caused by a ceremonial *encapsulation* of knowledge and instrumental behavior. Similarly, we know virtually everything to effectively deal with most of the big *social and humanitarian problems* of societies and of the current global structures—but the taboos and belief-systems connected to the dominating ceremonial values ('do not touch the wealth of the mega-rich investors'; 'do not touch the "market"'; 'defend your freedoms of the established ways of production, trade, consumption, mobility, leisure, tourism, etc.', 'do not restrict freedom and flexibility', 'push our national interests globally', 'protect "our" resources worldwide', 'kill the enemy', etc.) largely prevent an instrumental turn in the existing patterns of behavior and valuations.
>
> Furthermore, we know much about many *products* that could easily be made *wear-resistant* but with this would be profit- and stock-value deteriorating for large oligopolistic corporations–and thus are *hidden away* in corporate safes, or not researched at all.
>
> Regarding a *normal-form game* perspective, we would argue that while all *know* about the superiority of the *collective-action (cooperative) solution* and the conditions to get there (a game with 'complete information'), the dominant individualistic (ceremonial) incentive still remains to trigger general defection, with an inferior economic performance. In game-theoretic terms, thus, we would of course consider again the critical role of the payoff structure and of the common future (expectations) to explain the *ceremonial dominance*—i.e., their bearing on the degree of problem solving in an economy.

But it has been obvious for institutionalists that progressive institutional change has strong *limits*, in a ceremonially dominated system, particularly in face of an ongoing systemic crisis. This system, despite its crises, still has the power to maintain sufficient diversion for its people and to keep up its particular myths of modernity, flexibility, liberties, effectiveness, the 'systemic relevance' and usefulness of the super- and mega-rich 'investors', also the superiority *per se* of ever more research, ever more high technology, etc. (see also Bush, pp. 1105-6)—in all, probably a case of *'future-binding ceremonial encapsulation' rather than progressive institutional change*.

We will return to progressive institutional change considering the crucial role for *public policy* to initiate, stabilize, and accelerate it.

5) An Additional Explanation on How Ceremonial Dominance May Emerge From an Instrumental Benchmark

5.1) The Different Benchmarks: The Institution as 'Enabler' vs. Ceremonial Dominance

As we have seen, in the *game-theoretic* argument, the institution emerges in a complex evolutionary process from a defined particular *problem-solving* process. It helps individuals to solve complex decision situations that otherwise would not be solvable in a decentralized individualistic economy.

Consistent with this view, it has for long been argued by *institutionalists* that the institution is *not just a restriction* to some ideal (allegedly unrestrained) perfect maximization, as argued by neoclassical economics, and it is *not just flatly past-bound*, conservative, and inadequate, but *in complex situations* also is an '*enabler*' of qualified, coordinated behavior of agents (see, e.g., Neale 1994), an *empowerment* of agents in terms of improving information and making expectations of agents consistent with each other and thus stabilizing them—the *instrumental* dimension of institutions.

On the other hand, as we have seen, some *ceremonial dominance is rooted in the asymmetry* of the logics of ceremonial vs. instrumental warrants, where ceremonial valuation is more 'permeable', i.e., *capable of encapsulating more ways of behavior* than instrumental valuation is capable of embedding.

This very *asymmetry* was reflected, as seen, in the *dominance of defective strategies* in the game-theoretic perspective.

Also, in the *institutionalist* tradition, the ceremonially warranted institution has mostly been the starting point, due to the *historical perspective* of institutionalism, where more or less *predatory societies* and economies have been the received object of realistic and comprehensive economic analysis and theorizing.

But this does not *'genetically' explain* how ceremonial dominance *endogenously emerges*, particularly from a benchmark of an instrumentally warranted institution. Especially in a *game-theoretic* perspective, we would need to show that, and how, initially institutionalized problem-solving cooperation *degenerates* into a ceremonial defection.

Instrumentally warranted institutions can indeed have an *endogenous logic* of their own, some *life cycle* leading them from 'instrumental' (considered here the 'natural state' of mankind) to 'ceremonial', in fact a history of degeneration, from problem-solving cooperation to a behavior that may formally be unchanged but in fact has become inadequate in face of *new conditions*, equivalent to the idea of *(institutional) lock-in* as in the famous QWERTY analysis (David 1985)—where a *new collective-action capability is lacking* for proper progressive institutional change.

Note that this usually will happen in a *hierarchical environment*.

For a normal-form game, think of the case mentioned that new conditions (*new knowledge*, some *technological/organizational progress*, but, in addition, now also an *uneven distribution*

of the gains of cooperative behavior) change the payoff structure in a way to make the former (Pareto-) superior *common-cooperation solution now (Pareto-) inferior* (in a 2x2 PD). We will give a schematic illustration after the story-telling.

5.2) Degeneration of an Instrumentally Warranted Institution

Instrumentally Warranted Cooperation in a Hierarchical Environment
The idea applies when, for instance, a fresh economics M.A. or MBA joins a firm with new ideas and new knowledge, but his suggestions are refused by his superior arguing 'We have always done it like this, we have been successful with this, and we will continue doing it like this.' This would be a symbolic indication of an institution formerly successfully established to solve a certain problem, by which a group became a cooperating one, thus successfully coordinated and highly performing. With the *successfully cooperating group plus hierarchy*, however, the group leaders and higher ranks of the cooperating team have established and tightened their positions, promoted their careers, and perhaps climbed up the hierarchical ladder.

The Career Motive and the Motive of Identity and 'Belongingness'
Differential hierarchical status and power in societies, economies, and organizations that are characterized by received power differences and hierarchies anyway, i.e., the ceremonial value, thus becomes a new, additional motive determining the future of that institution. But also, the very 'ceremonial' may provide identity and 'belongingness' to the lower ranks of the team, which in turn may *relieve their uncertainty* in the turbulent environment they live in. These factors may combine and *transform* themselves *into a situation of unilateral defection and exploitation* where the superior ones increasingly exploit but manage to keep their subordinates cooperating.

Also, *pure habituation* may explain why those receiving less of the common gain stick to the same behavior although the character of the institution has changed. Consider the following illustration in a normal-form matrix:

Starting with the usual PD,

<u>*a,a*</u>	d,b	
b,d	c,c ,	with b>a>c>d,

the payoffs of common cooperation and success may change into

<u>a_1,a_2</u>	d,b
b,d	c,c ,

with either (1) $b>a_1>a_2>c>d$ or even (2) $a_1>b>a_2>c>d$, i.e., the common success with an *increasingly uneven distribution*. Agent 2, the subordinate, may stick to the institutionalized behavior (rather than changing back to defection) by way of *receiving identity* from the 'winning team' or just by way of *habituation*, while agent 1, the superior, in the extreme case (case (2)), even has a short-run (hyper-rational) incentive to stick to it.

The character of the situation then may further change from an instrumental warrant into a full-fledged ceremonial warrant, when (a_1,a_2) changes into an *overtly exploitative* situation,

(b',d'), with a *further aggravated unequal distribution*, when $a_1 \rightarrow$ b' and $a_2 \rightarrow$ d', in the frame of *a new PD*:

$$\begin{array}{lll} & a',a' & d',b' \\ (\underline{a_1,a_2}) \rightarrow (\underline{b',d'}) & & c',c' \text{ ,} \qquad \text{with } a_1=b'>a'>c'>a_2=d'. \end{array}$$

Obviously, *with the very success of institutionalized cooperation* (with an *increase in the social knowledge fund*), *new opportunities of a new common collective action* (cooperation) have emerged—as has a (latent) new incentive for agent 2 to deviate from his cooperative behavior. (In fact, the conventional game-theoretic prediction for the new PD structure would be the common-defection NE, since the exploited would rationally switch back to defection as well in the new game.) If, however, the system will continue to stick to (b',d'), the earlier instrumentally warranted situation will have *fully transformed* itself *into a ceremonially warranted situation*, a situation of a B_c-V_c-B_i type.[10]

Another 'Motive': Institutional Economies of Scale

A *factor supporting* this process of cooperative success (how unevenly distributed ever) may be *transaction cost reduction*, i.e., the economies of scale of the application of that institution, with a learning curve that ensures that sticking to the institution makes the *average transaction costs of the single institutionalized decisions* ever more decrease—the classical case of *routinization* and, in fact, the *cost argument in favor of habituation*.

That senior manager who is referring to, and insisting upon, his past experience in the example above, thus, is of course not totally wrong. He refers to a history of the institution that has been successful. During that history, he and his 'interaction partners' have successfully established the institution as an adequate instrumental device.

But also, as the *game-theoretic* analysis makes obvious, he and the others in that interaction system in fact had to *invest a lot in terms of time, intellectual effort, uncertainty, risk-taking, trial & error, non-invidiousness, getting exploited once*, etc., to make that institution eventually emerging in a long and fragile joint learning process, as indicated. The result was the development of an effective instrumentally warranted institution, habituated by all involved.

And, as everyone who has invested high fixed costs, he and his fellows desire permanently high returns on their investment, by *spreading their initial fixed costs over as many applications as possible* (thus maximizing 'output', i.e., the quantity of applications). And, if possible, they do not wish to invest in a new learning process. They do want their initial high investment to be apportioned among a maximum number of applications of the same institution, i.e., an *endless series of decisions* based on that institution. They want to realize what in economic production and cost theory is termed economies of scale (increasing returns), i.e., the marginal and average cost of any additional decision under that institution thus will be smaller than those of the previous one. The important reason here will be that

[10] There are certainly different ways to capture the ceremonially warranted degenerative situation in some future game-theoretic modeling. For instance, one might also think of a game in which each payoff is a vector with the elements of an instrumental and ceremonial payoff. A weight function ('utility function') may then result in overall ceremonially or instrumentally warranted behavior. Habituation and sticking to an earlier instrumentally warranted institution under now ceremonial warrant may then be modeled by a change of weights. There are many similar approaches in the literature. Proper modeling of instititutionalist theory in this regard must, however, be left to future effort.

coordination, in a learning process, may become *ever more effective* (in a stochastic population perspective: the portion of cooperative actions in all actions will increase) and thus the whole decision process more effective.

A Norm Still Instrumentally Warranted

Now, this situation may still be consistent with the instrumental character of the institution. While the institution may increasingly appear to the individual agents, in the culture of the team, group, or organization at hand, as something external, a *given, exogenous requirement*, desideratum, a postulate, or a norm, it still may be dominantly instrumentally warranted and clearly *relate to the solution of the problem* structure at hand. But tacitly, the motivation to maintain the institution may change from solving the original problem to (1) saving the careers of the leaders and thus extra benefits and *unequal distribution*, and (2) reducing average transaction costs, making their decision-making as easy and smooth as possible, rather than properly solving a defined problem, which may have become a *new problem* in the meantime.

A norm, thus, is not necessarily ceremonially warranted. The instrumentally warranted institution may have become a norm, a general prescription that has perhaps even been codified, with the *connection to the basic problem* perhaps having become somewhat *opaque*, but still may be an adequate behavioral pattern. We term this an *instrumentally warranted norm*.

Note that related behavior may easily be considered 'dialectical' in the institutionalist approach, B_{ci}, as mentioned above.

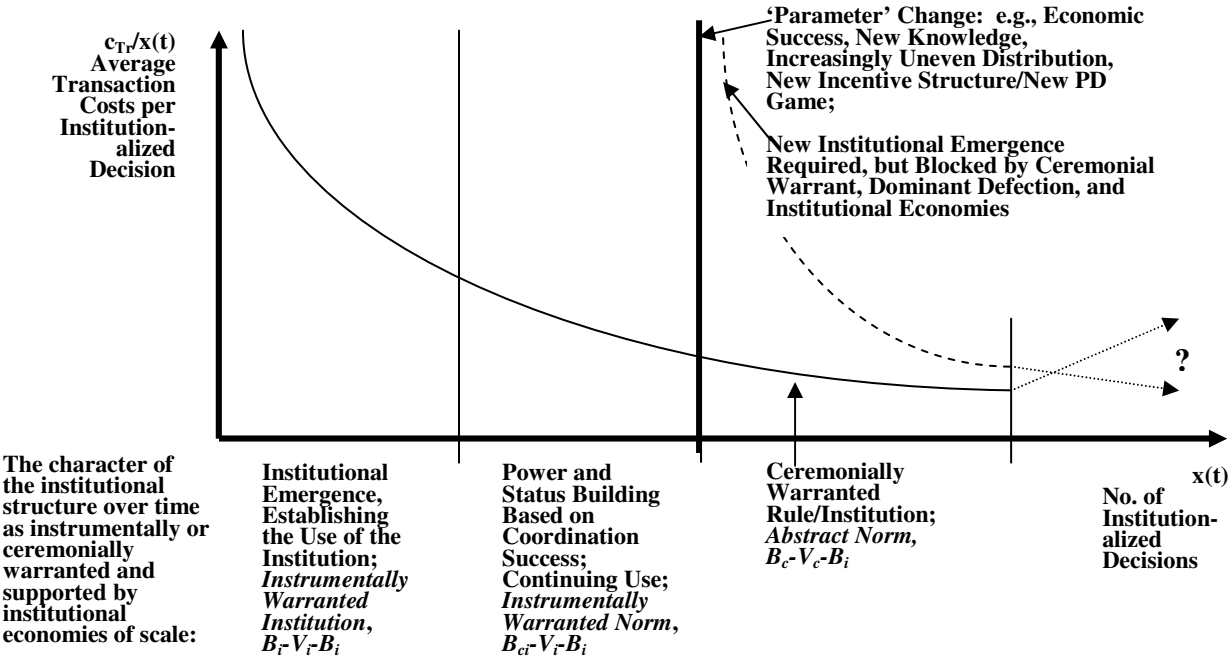
A Ceremonially Warranted Social Rule and Institution—An Abstract Norm

Only when some *'external' conditions change*—in game-theoretic modeling changing expectations and/or payoff structure—the instrumentally warranted norm would turn out to be *disconnected* from both the original and the new problem. And it would become further disconnected as the establishment of a proper new institution will be blocked by the now dominating and obvious motives of differential status and of continuing easy and smooth decision-making. The *formally same behavior* thus now becomes *ceremonially warranted*, and (unilaterally or mutually) *defective* in terms of the payoff structure, while the agents *shift from the upper left in our basic PD matrix to the lower left* (or upper right, and then perhaps even lower left) *of a new PD*, as illustrated. We call this an abstract norm. Note that the '*norm*-ative' dimension primarily will work as an *imposition on the subalterns to stick* to cooperation, the earlier instrumentally warranted institution.

The institutional economies of scale in a complex environment together with the motive of differential status and power in any hierarchy thus explain why socio-economic interaction systems may stick to an (formerly instrumentally warranted) institution (later degenerating into a ceremonially warranted rule for the defecting agent) for longer than instrumentally justified. The institution may eventually become outdated because its prerequisites have changed, it may become '*petrified*', 'sclerotic', 'ossified', outmoded, or locked-in. The ceremonial motivation and valuation of power, hierarchy, and status differentials (favoring those who came into power with the earlier institution), and of identity, belongingness, adherence to symbols, etc. (of the lower ranks) may *prevent the interaction system* to properly learn, and gain a new collective coordination, a *renewed collective action capability*, and a new, adapted institution that would be required according to the instrumental value criterion.

Note that we assume that a proper new institution would facilitate even lower average decision costs in the long-run. The more disconnected from the problem the abstract norm gets, and the more *fight over unilateral or mutual exploitation* may re-emerge, the more the average *transaction costs* of the old norm may *increase again*. Thus, in the long-run, the potential average transaction costs of a more proper new institution may fall below those of the old norm, despite its initial high average and marginal costs. This, of course, does not guarantee that the system will regain anew a proper collective action capability, as game-theoretic analysis makes clear. See *Figure 6* for another illustration of the process.

Figure 6: **Average Transaction Costs and Institutional Economies of Scale Supporting the Emergence of a Ceremonially Warranted Norm After Some 'Technological' Change--Illustration.**



In all, this endogenous institutional degeneration may help systematically *explain* the *ceremonial* dimension and its *domination* in a hierarchical environment. *Figure 7* illustrates the dimensions and characters of institutions during a 'life-cycle' as described.

Figure 7: **The Instrumental and Ceremonial Dimensions of Institutions—From an Instrumentally Warranted Institution to an Abstract Norm—Illustration.**

Institutional Dimension →	**Instrumental**		**Ceremonial**	
Normative Load	**Problem solving** ***Instrumental Institution***	**Keep decision-making easy and smooth; maintain hierarchy and differential status** ***Instrumental Norm***	**Don't care for new problems; follow the criterion of career making, differential status, and hierarchy, and the prescriptions of those in power and high status** ***Abstract Norm***	
Examples	Decent car driving; investing in climate protection; abstaining from cheating, deception, fraud, bribery, ...	Some institutions of the teaching-learning situation (placement in the classroom; professor-student relation); ...	Some rules in professor-student relation; ...	Purely symbolic acts; abstract 'eternal laws' of society and corresponding belief systems; most parts of ideology and religion; ...

6) The 'Discretionary Character of Progressive Institutional Change' and a Game-Theoretically Informed Policy Perspective

6.1) *The Possibility, and Improbability, of Instrumental Solutions in a Spontaneous Decentralized Individualistic System*

As *progressive institutional change* will normally not automatically emerge—particularly when systemic *crises* and conditions of widespread *uncertainty* and *fears* may lead to *enforced ceremonial encapsulation* or even *regressive institutional change*—it remains an issue of proper deliberate, discretionary *policy action*, as institutionalists have always argued (see Bush, pp. 1107-9). In the institutionalist tradition, M.R. Tool further developed the theory and philosophy of *instrumentalism* and progressive institutional change into a so-called '*social value principle*', which operationalized the *pragmatist* institutionalist conception of public policy and its formation (see, e.g., Tool 1994). It elaborated the issue that democracy and *democratic participatory policy* is substantial in the sense that reasonable decisions on prices, wages, income distribution, etc. will have to be determined in transparent cause-and-effect-based *negotiation processes* of all social interests involved (the so-called 'negotiated economy'; see, e.g., Commons 1934). This is not primarily about some abstract 'majority rule' but about the substantial

> 'process by which majorities […] are formed' (Bush, p. 1109),

and such process would be heavily interconnected

> 'with the process of inquiry upon which instrumental valuing depends' (ibid.).

In this way, *substantial, participative, and discursive democracy* would support collective long-run rationality and action capacity, and with this an increasing dominance of

instrumental values and instrumentally warranted patterns of behavior—i.e., progressive institutional change.

The *'non-cooperative' game-theoretic* perspective, in contrast, is not so much about discourse and verbal communication but rather on 'tacit' learning from repeated interaction and from the consequences of combined action.[11] Nevertheless, it suggests a *similar conclusion* regarding the *critical role of discretionary public policy action*, related to the interaction system of the individual agents and the critical factors determining its process and outcomes. In fact, game-theoretic modeling and related complex model simulations have specifically demonstrated that there is no automatic or easy way out of *dominant defection*, and even of *repeated breakdown of some institutionalized cooperation* after it has emerged in complex settings and long-run evolutionary processes (e.g., Liebrand, Messick 1996; Lindgren 1997).

Thus, a very basic game-theoretically informed policy conclusion, based on the most simple single-shot approach as above, may be the following. We refer to Elsner 2001 and make a longer story very short here. Remember the simple PD-supergame single-shot inequality above. It indicates that if the discount parameter, i.e., the weight of future payoffs or the probability 'to meet again next interaction', is greater than a certain combination of pay-offs, cooperation will pay. Obviously, it is unfavorable for cooperation if (b) and (c) are relatively high and (a) and δ are relatively low. The simple algebraic *logic of policy action* resulting is obvious:

$$\delta\uparrow \; > \; [(b\downarrow - a\uparrow)\downarrow / (b\downarrow - c\downarrow\downarrow)\uparrow]\downarrow.$$

Note however, that the PD payoff structure must not be dissolved as such, since this would imply a trivial and politically costly solution (i.e., subsidizing a such that eventually $a>b$) (see below for more detail).

Thus, the problem that remains and cannot be solved by hyper-rational individuals coined for an ideal 'market' is the very social-dilemma structure, related to an individualistic ideal 'market' culture—when, however, the real world does not fit this ideal but is characterized by *directly interdependent* and *directly interacting agents* (see, e.g., Kirman 1998). An individualistic culture confronted with permanent complex and dilemma-prone incentive structures implies that the process of solving a 'collective-good' or a social-dilemma through cooperation will usually be highly *time-consuming* and *unstable*, if not *blocked* at all. The more individualistic the culture is—or the stronger the dilemma-structure is in terms of the relations of a, b, c, d, and δ--, the greater is the incentive to defect or even to deviate from an already established institution of cooperation.[In a more elaborated population model on the critical size of institutions we have shown that institutions and its carrier groups or platforms will become exploited (invaded) by defectors beyond a critical maximum (a 'meso') size when few invaders profit from exploitation of many cooperators—see Elsner, Heinrich 2009.] Again, we can see a full *equivalence* with the *institutionalist* conclusions with respect to *ceremonial dominance* here.

The process of (instrumentally warranted) institutional emergence and the conditions for its *initiation*, its sufficiently *fast emergence*, and its *stability* over time has been extensively

[11] This means that we will take the policy agent here as given, informed by a deliberately negotiated economy—admittedly a 'catch-all' entity. Modelling such processes with game theory would be in the domain of 'cooperative' game theory. As a prominent example, see, e.g., McCain 2009.

investigated in the recent three decades, after some pioneering explorations by, e.g., Schelling 1978; Schotter 1981; or Axelrod 1984/2006 (among the countless game-theoretic and PD-based modeling and simulation approaches, see, e.g., Stanley et al. 1994; Liebrand, Messick (eds.) 1996; Lindgren 1997; Fudenberg, Levine 1998; Offerman, Sonnemans 1998; Oltra, Schenk 1998; Eckert, Koch, Mitloehner 2005; Demange, Wooders (eds.) 2005; Traulsen, Novak 2006; Jun, Sethi 2009; Spiekermann 2009; see also, e.g., Field 1994 for another institutionalist evaluation of the game-theoretic approach).

For instance, computer simulations of evolutionary processes based on social coordination problems have illustrated that disproportionately long times may be necessary to establish cooperation as an institution, and that even then cooperation may be fragile and occasionally collapse, because of mere small external changes or of internal dynamics.

It is thus necessary to design a *supra-individualistic, i.e., broader and more long-run, rational mechanism* to support this process and complete the system, namely an additional *public-policy intervention* to initiate, accelerate, and stabilize the process, which cannot be brought forth with sufficient speed and stability by the 'market' or any decentralized individualist system alone, if there are ubiquitous dilemma-prone direct interdependencies and thus coordination/cooperation problems in the real world 'out there'.

6.2) *'Meritorics' For a Negotiated Economy*

The conception of the *merit good* (see, e.g., Brennan, Lomasky 1983; Musgrave 1987) has substantiated '*meritorization*' (i.e., a positive social valuation) exactly on the basis of 'community preferences' that have evolved from interaction processes beyond the 'market' logic (Musgrave 1987, 452). This implies a *social evaluation* of the outcomes of the 'market' through some kind of a social decision-making broader than, relatively independent of, and superior to it.

For our purpose we will define a merit good as a good possibly resulting from the decentralized evolutionary interaction process of emergence as indicated (in this sense a 'private good'), which, however, needs to be evaluated through a *social decision-making* process on the grounds of its deficient quantity, quality, and—as new dimensions discovered in deficient 'market' processes with coordination and cooperation problems—the *time* needed for its production as well as the *certainty* and *stability* of acquiring it through a decentralized process (see also, e.g., Ver Eecke 1998).

Institutionalists have always claimed that democratic and participative socio-political decision-making should continue to be relatively independent of the 'market' allocation and should have priority over it (see, e.g., Hayden 1994). The institutionalist conception of the *negotiated economy* was exactly elaborated to show that the 'market' has to be deliberately embedded in a wider socio-political process, and how this is possible (see again Commons 1934, 612ff., 649ff.; also, e.g., Ramstad 1991; Nielsen 1992).

We will not delve into this discussion any deeper here, but will simply assume an economic policy agent who is legitimized through a process of participatory democratic decision-making, subject to the criteria of the pragmatist 'instrumental value principle'. In this very process, *public policy objectives* can be developed which provide the *criteria for the 'meritorization' required*.

Against this background, the economic policy agent may employ instruments *related to the interactive process of the private agents* to change those interactions, aiming at initiating, accelerating, and stabilizing the provision of the merit good through promoting cooperation.

6.3) *Instruments of an 'Interactive' or 'Institutional' Economic Policy*

Not only does the public policy agent have to publicly identify the specific characteristics of the 'good' he wants the private agents to cooperatively produce (basically the 'Pareto-superior' economic situation as illustrated), i.e., the public objective or 'merit good', but he must also establish incentives to promote cooperative private behavior that favors this superior social solution. For instance, he may *involve the private agents into projects* to be pursued cooperatively, which helps (1) *increasing their awareness of their complex and dilemma-prone interdependence* (for this, see, e.g., Bush 1999), (2) *enabling them to learn to cooperate*, and (3) *increasing their awareness of the fact that they always will have a common future* to meet again (a high δ) (and then either reward each other for previous cooperation or continue sanctioning and 'warfare' for earlier defection).

Rewarding Cooperation

The first complex of instruments of interactive economic policy is rather obvious; it aims at changing the incentives (the payoffs in the technical sense) in order to *increase the relative rewards for cooperation* ($a\uparrow$) or the *opportunity costs of common defection* ($b\downarrow$ - $c\downarrow\downarrow)\uparrow$, or decrease the *opportunity costs of common cooperation* ($b\downarrow$ - $a\uparrow)\downarrow$. See the simple logic of policy actions attached to the single-shot inequality above.

The single-shot inequality also shows that the more successful the public agent is in integrating the private agents into a *future-bound* process—i.e., the higher the discount parameter $\delta$is--, the less the increase of the relative rewards for cooperation need to be.

However, this trade-off between the rewards for cooperation (a) and the 'shadow of the common future' (Axelrod) (δ) does not imply a contrast between *quantitative* (namely, pecuniary) and *qualitative* instruments, i.e., offering pecuniary subsidies as opposed to promoting more favorable expectations among the agents (of 'meeting again'). As has been shown from long lasting practical experience, the incentives from the public policy agent which reward cooperation may even primarily consist of *non-pecuniary* benefits (see again Elsner 2001).

Enlarging the 'Shadow of the Future'

The second complex of instruments of interactive economic policy is not so obvious. It refers to the analytics of the basic interactive process, i.e., the logic and *probability of 'meeting again'* (the same agent in a future interaction)[12]. Consistent with the single-shot solution, cooperation can be promoted if the discount parameter can be increased, i.e., if future interactions become more probable or *future-awareness* of the agents can be *promoted*.

Although it is not so obvious, this characteristic condition for the success of the basic evolutionary process can also be subject to policy control. As Axelrod (1984/2006) has already mentioned, the public agent can indeed increase the importance (i.e., the probability,

[12] Note that the introduction of *reputation mechanisms and chains* in more complex population models helps considerably extending the number and range of agents falling under this criterion.

or weight) of future interactions with the same by organizing cooperation in the form of frequent project-based meetings, or make it permanent, e.g., by organizing *meetings with a greater frequency*, dividing projects into several sub-interactions, *connecting different projects* so that the same agents will meet in different arenas, connecting them *over time*, etc. Obviously, there is ample opportunity for the public agent to deliberately *design the conditions of interaction* to promote cooperation in a variety of subject areas that private agents are jointly interested in, namely, in order to improve the common conditions (location factors) of their individual economic activities (infrastructures, intermediary agencies, and even improving the industrial structure itself by strengthening all individual agents involved).

This policy perspective can be, and has been, applied to manifold areas of industrial and regional policies, *cluster* and *network policies*, innovation and information policies (see, e.g., Elsner 2000, 2001). Also, it has been demonstrated to be a '*lean*', 'qualitative', 'structural', and thus *inexpensive* policy (it definitely is not about subsidizing cooperation so that $a > b$).

It is *institutional policy* since it refers to the processes of institutional emergence, and it is '*double interactive*' as it refers in an interactive way to the conditions and intermediate results of the interaction processes of the private agents.
Finally, it has been shown to be applicable by 'enlightened' interdependent and interacting agents themselves, as their own policy strategy, e.g., in their cluster, their value-added chain, their innovation network, etc., or by an 'enlightened' neutral private cluster or network advisor hired by the agents. As far as this has its inherent limits, the public agent's state activity, a *new type of 'enlightened' public agency*, to be sure, is required.

The evolutionary-institutionalist interpretation of the game-theoretic perspective obviously largely and 'naturally' converges with the policy perspectives institutionalism has developed over decades.

7) A Short Conclusion

In this paper, an effort was made to

- *revisit the institutionalist theory of institutional change* as formulated by P.D. Bush, after (roughly) 25 years;

- reconsider the *logic of its conception of institutions* and institutional value-behavior-structures;

- elaborate surprising *equivalences, similarities* and *complementarities* of a *game-theoretic* perspective, if embedded in a proper evolutionary perspective and 'process story', with the institutionalist approach, as demonstrated in the cases of (1) the conception of *institutions*, (2) *value-warranted institutional structures*, (3) the *basic asymmetry between instrumental and ceremonial warrant*, (4) the concept of ceremonial dominance, and (5) the different resulting *forms of value-behavior-structures* and their potential *endogenous dynamics*, i.e. institutional change;

- elaborate some *relative advantages and disadvantages of each perspective*, as for instance

  (1) the advantage of the *institutionalist* approach towards the specification of the different value-behavior structures, based on a clear conception of the instrumental-vs.-ceremonial asymmetry, of the *dynamics of ceremonial encapsulation*, and of *progressive and regressive institutional change*;

  (2) the clearer *distinction* in the *game-theoretic* perspective between *institutions* and simpler *social rules* (with the *same asymmetry*, though), based on its greater potential of a logical analysis of the processes of institutional emergence, furthermore its logical requirement to *endogenously explain the emergence and dominance of the ceremonial warrant* as instrumentally warranted institutions changing into 'abstract norms';

- *parallel* the inescapable *'discretionary' policy perspectives* in both approaches, where already the most simple formal solution shows that a proper game-theoretical argument can contribute some *specific implications for policy instruments*, which, however, may well fit into the broader institutionalist conceptions of the *social value principle* and the *negotiated economy*.

In all, a modern revisiting, interpretation, and enrichment of the 25-years old state of the art of the institutionalist theory of institutional change is possible—with, in all, more complementarities and synergies rather than incommensurabilities and paradigmatic differences.

It appears that such a review bears some potential, and the institutionalist conceptions of institutions, evolution, and change may profit from insights based on proper use of game theory—but also, and perhaps even more so, evolutionary-institutional game-theory may considerably be informed from encountering the rich tradition of evolutionary institutionalism.

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