

Microeconomics from a social-ecological perspective – the basic concept

By Adelheid Biesecker and Stefan Kesting

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Introduction

The basic concept described in this article is part of a larger textbook project on microeconomics from our pre-analytic social-ecological vision (to use Schumpeter's expression). It is mostly derived from various heterodox economic approaches of which we distilled basic microeconomic ideas to combine them in one more or less consistent model of action. Enriched with institutions, this theoretical explanatory framework will be useful to analyze the economy as a realm of social-ecological action. Because of its complexity our approach is capable to identify and sort out amalgamations of certain types of action and their changes across a certain span of time. It thus helps to discuss possible ways of a balanced combination of different types of action and patterns of rationality for a sustainable development in the future.

A) Action type and coordination procedure

Table 1: Action type, means of coordination, and coordination procedure

<i>approach</i>	<i>action type</i>	<i>means of coordination</i>	<i>Coordination Procedure</i>
Neoclassical Economics	utilitarian	money-prices	Market as price mechanism
Game Theory	strategic	money-payments, strategies	Market (as a place of strategic games)
New Institutional Economics	strategic framework of rules	money, contracts, sanctions	Market as a contractually framed place for transfer of property rights
Humanistic Economics	utilitarian and morally (Kant)	money-prices, moral values	Golden Rule, Market as morally checked price mechanism
Socio-Economics	socially embedded, norm oriented, committed	prices, emotions, moral values	Socially encapsulated market, rules of "we" (community)
Critical Institutionalism	conscious and unconscious rule following	norms, moral values, language, power in institutions	Processes of bargaining and valuation
Practical Social-Economics	communicative, responsible	rules of discourse, language	Practical discourses
Ecological Economics	co-evolutionary, responsible	responsibility, rules of sustainability	Orientation along rules of sustainability
Feminist Economics	caring, precautionary	norms, language, emotion (compassion), responsibility, rules of caring	Caring relationship, orientation along rules of caring

If we take a close look at nine different microeconomic approaches (see table 1 above) of which the first three are more or less orthodox while the others are heterodox, we will find specific assumptions about the type of action and the primary procedure to coordinate single acts implicitly and explicitly made in any one of the approaches.

In the traditional model “economic man” uses his means (money) to maximize his utility with the help of acquired goods. The table shows that several different approaches enrich and enlarge the traditional orthodox model of action by manifold types of action. This consistently implies an extension of the coordination procedure, too. In orthodoxy this is exclusively only the market as price mechanism where supply and demand are leveled out by prices. The other two orthodox approaches stick to their focus on the market while interpreting it slightly different as place of strategic games (Game Theory) and of transfer of property rights (New Institutional Economics). In all heterodox approaches, however, the market steps back to either be supplemented or replaced in its central role by other coordination procedures. Accordingly, the means to achieve coordination do change: while at first the means (in orthodoxy) is money, i. e. money prices, in heterodox approaches it is supplemented and in part replaced by norms, values, language, orientation along rules, and emotion (compassion).

As a consequence, not only does the orthodox formal model of “economic man” evaporate, but we have to accommodate to a theoretical world of much higher complexity. Hence, a theoretically guided structuring of these different types of action and procedures of coordination is necessary which will lead to a useful model for microeconomic analysis. This structuring will be done in the following in two steps: at first the types of action will be combined to a model of action, and henceforth this complex model of action will be embedded into specific realms of action with the help of a certain notion of institution. This two-step methodological procedure is necessary because, after thinking carefully about the list of the in table 1 collected types of action, it becomes clear that they are already present on two different levels: on the one hand on the level of personal relations and on the other hand on the level of social rules. In the concept of microeconomics from a social-ecological perspective both levels shall be reconciled.

B) A complex theory of action

Order of action types:

Hence, the first task will be to bring the action types into a sensible order. The structure of the manifold action types and coordination procedures follows a basic framework developed by Habermas which is in turn an interpretation of Max Weber’s theory of human action. The criterion for this structure will be a notion of an orientation of a certain act, the sense, so to speak, which the actor attaches to it, whether it is done in isolation or socially i.e. together with others.

The orientations of action proposed by Habermas are: “oriented towards success” and “oriented towards understanding”. Orientation towards success aims exclusively at an outcome which will fulfill the individual plans of the actors. Action oriented towards understanding is characterized, however, by open ends and outcomes because they can only be defined during an interactive process in mutual understanding with others. For the latter orientation mutual understanding with others is of equal importance as individual success.

From some of the heterodox approaches – namely Feminist and Ecological Economics – a third orientation can be derived which we will call here “orientation of caring”. It defines an orientation of action not only along the needs of the actors themselves, but as well along the needs of co-existing other human beings or of the natural co-world.

With the help of those three orientations of action the types of action can be grouped in the following way:

Table 2 : Action types and orientation of action

situation of action	orientation of action			
		success oriented	oriented toward understanding	care oriented
	non-social	instrumental action		
	social	strategic action	communicative action	precautionary action

Thus, the diversity of types of action from table 1 is concentrated in four action types which are all but one placed in social situations of action according to Weber¹. Only instrumental action, where “economic man” confronts a world of goods all by himself, is not social.

In very specific situations instrumental action will be an appropriate description of human behavior. This is true in other specific situations for strategic action which incorporates the strategic action within a framework of rules of New Institutional Economics because the logic of action remains unaltered.

The characteristic situation of action for “communicative action” is coordinated by language and discourse. For “communicative action” a discourse where all participants have equal rights guaranteed by specific rules of conduct does in fact take place. In “communicative action” which is taken as a category from Practical Social-Economics, several elements of different concepts are included: the golden rule of Humanistic Economics, which is further developed as mutual understanding and dialogical elements of Socio-Economics.

Both action types oriented towards caring: caring action and precautionary action are merged here though they are different in respect of their situation of action. “Caring” means traditional gender specific and thus norm following action within the family. It contains the principle of “commitment” of Socio-Economics. “Precautionary action”, however, is basically caring oriented, but transfers this type of action to the whole realm of the economy while becoming detached from its traditional norm following gendered foundation. Precautionary action includes caring action. Its new principles of action emerge in discourse and through compassion and sympathy with cooperators, stakeholders and victims. If the needs of future generations and the natural co-world which both cannot express themselves are taken into consideration, for such ‘responsible action’ a fictive kind of discourse has to be supposed which requires a responsible and empathizing deliberation by contemporary living economic actors. This concept of ‘responsible action’ stems from Practical Social-Economics. Here, the co-evolutionary action of Ecological Economics is contained.

Action types and realms of action:

These four types of action can be combined with different realms of economic actions:

The success oriented types of action are those which are usually identified by orthodox economics with the market economy. Thus, we do collect them here under the category of ‘bargaining’. They are action type B in our model of action.

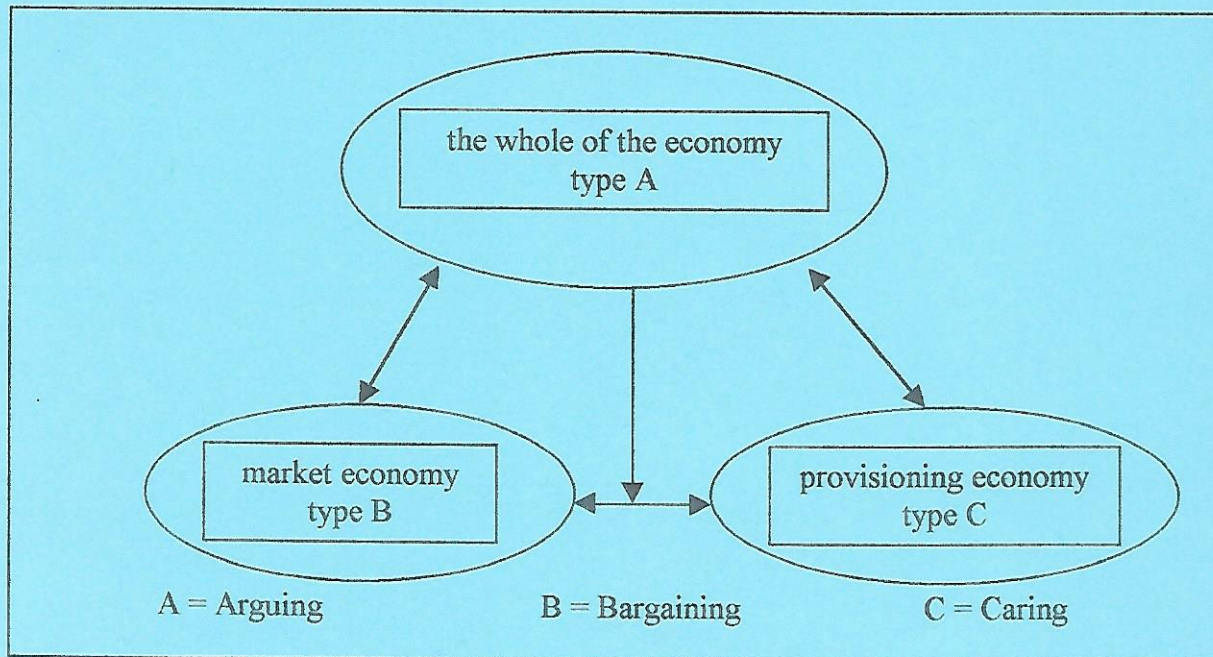
The caring oriented types of action are attached in contemporary feminist economic and ecological economic discussions with the economy of provision, household and subsistence. Their foundation is ‘caring’, the ethic of care. Hence, we call them action type C.

¹ Max Weber defines social action as oriented in its motivation towards the behavior of others (cf. Weber 1972[1922]).

The action types oriented towards understanding are used recently to explain cooperative processes coordinated by language. People argue with each other during these processes to arrive at common goals of action. Borrowed from Jon Elster (1994) these types of action are labeled 'arguing' i.e. action type A. Because our concept aims especially at the cooperation between market and provisional economy we tend to place this action type in what we call 'the whole of the economy' i.e. in processes which close the gap between market and provisional economy.

Altogether, this can be called an ABC-model which is illustrated in figure 1.

Figure 1: ABC-model of economic action



Co-ordination of action along processes of co-operation:

Economic action is becoming social, communal, mutual action through forms and procedures of coordination with the help of means of co-ordination. This was already visible in table 1. Which procedures and means of co-ordination play a role for the ABC-model?

This question is only rather easy to answer with respect to action type B: the market as price mechanism, place of strategic games or contractually framed place for transfer of property rights is the appropriate form of coordination of all three variants of orthodox economics. But what about the other two action types, A (arguing) and C (caring)? And how are all three action types A, B and C coordinated with each other?

To answer these questions yet another theoretical term is necessary: 'co-operation'. If we take a look again at table 1 it becomes clear that all heterodox approaches and also New Institutional Economics work with procedures of coordination which presuppose in one way or the other mutual and interactive action. And mutual and interactive action in the economy means cooperation.

Cooperation in the economic realm of action means in general to act or fulfil a task together. This togetherness (community) can, however, be very different. We can describe these differences according to our ABC-model as follows:

- *Co-operation as strategic co-operation:* this is a form in which self-interested economic men develop "community". In his blueprint of action the other actor is only a means for economic man to achieve his goals. Hence, he is acting strategically, i.e. the (re)action of

others is considered and integrated in his plans of action. Strategic cooperation is thus the specific commitment to cooperate of an economic actor in order to further his own goals with the help of others. In such situations, strategic action (action type B) is dominant. Theories which formulate such cooperation are Game Theory and New Institutional Economics. In the latter cooperation occurs because the individual actors want to minimize transaction costs. Game Theory shows that even self-interested individuals cooperate if they meet each other repeatedly (cf. Axelrod 1984). They develop norms of trust (cf. Vanberg 1993). Those norms express the principle of reciprocity which is prevalent in competition, too. In strategic cooperation, however, it may take some time after service or delivery until its equivalent counter-service or –delivery will follow. One actor cooperates in expectation of later rewards, i.e. cooperation of the other. Like competition this principle of cooperation is based on a symmetrical relation, it is cooperation among equals. In economic reality, however, we frequently encounter asymmetry and inequality among economic actors. Moreover, in real life we are faced with inequality between those acting in the present and future generations or the natural co-world. A theory of cooperation which takes such inequality into account has to consider more than strategic presuppositions.

- *Co-operation as co-operation of understanding:* If people who act contemporarily and communally in the economy are not equal, but unequal, e.g. owners and non-owners, this constitutes a difference of power. If we assume strategic cooperation for that case, the result will be exploitation of the powerless by the powerful. If we want to allow for other possible results, some other principle will have to be at work. Here this principle is called fairness. Fairness means to treat others as equals though they are unequal, i.e. to view them as autonomous ends, not as means of our own maximizing activity. Fairness cannot be a natural endowment of human beings and no individualistic concept per se, but only a social concept. What is considered “fair” is defined in a social process of deliberation. In social processes of deliberation we find action type A, arguing or communicative action. While in strategic cooperation individual actions are coordinated by money, expected rewards or contracts, in cooperation of understanding coordination is based on discourses with according discourse rules. Here, cooperators are not only interested in attaining their individual goals, but mainly in mutual understanding with others. This kind of cooperation includes a qualitatively different principle of mutuality than strategic cooperation: mutuality is grounded in the acceptance of the other as equipped with equal rights and as of equal importance (cf. Ulrich 1993: 42). This principle of mutuality takes the inequality between contemporary economic actors into account.
- *Cooperation as precautionary-responsible cooperation:* Not all stakeholders are able to participate in discourse. The already mentioned inequality between people capable to speak and act for themselves today and a speechless natural co-world and speechless future generations is inevitably persistent. To cope with situations of that kind, and if we do not want to ignore the legitimate claims of those speechless stakeholders, our action type C (caring and precautionary action) will be appropriate. To include speechless stakeholders into a process of deliberation, a caring and precautionary attitude is necessary. In addition to language; empathy and responsibility function as means of coordination. The attitude: “To take others into account in contemporary economic decisions”, and “to care for future generations and the natural co-world” is called responsibility here.

Therefore we choose the term precautionary-responsible cooperation to describe this kind of cooperation, which is obliged to the principle of caring responsibility and which we turn to, when faced with inequality between contemporary and future generations and the natural co-world.

Relation of forms of coordination and types of action

After these conceptual thoughts about different forms of cooperation we can now try to answer the question concerning the relation of forms and means of coordination to types of action. We are talking of 'forms of co-ordination' to distinguish this more abstract category from the variety of procedures of coordination listed in table one, column four:

- Action type A (Arguing) is related to cooperation of understanding as its typical form of coordination. It describes an economic situation where stakeholders try to develop a common goal and way of attainment of this goal during a deliberative process. Means of coordination are language and rules of discourse.
- Action type B (Bargaining) is related to competition and strategic cooperation as its typical forms of coordination. In this situation individuals are self-interested, they handle goods on a market to maximize their utility. They bargain with others, in case they need them for or during their transactions or include others into their plans of action and are aware of the fact that others will do that as well. Means of coordination are prices, expected payments or (strategic) contracts.
- Action type C (Caring) is related to precautionary-responsible cooperation. Caring and precautionary economic action is grounded in one's own needs and wants and those of others, while those others include also speechless stakeholders (like e.g. the natural co-world or future generations). Means of coordination are also language and rules of discourse because caring economic actors have to reach a common understanding comparable to cases of cooperation of understanding. Its main characteristic, however, is not only to understand the other, but empathy and responsibility are of crucial importance as means of coordination.

If figures are attached to the four forms of coordination (competition: 1, strategic cooperation: 2, cooperation of understanding: 3 and precautionary-responsible cooperation: 4) the following scheme can be derived:

Table 3: action types in forms of coordination

action types	forms of coordination
B	1, 2
A	3
C	4

Those categories of action types and forms of coordination are neither given per se nor will they last for ever. Instead these different types of action are built and rebuilt in a process during which habits and routines are created and installed (process of institutionalization). They are not developed in a pure form, but are mixed in patterns of action. They are the result of a process of social construction. This is a process in which society takes over old traditional types and patterns of action, changes them and tries out new ones. These patterns are of practical relevance in certain realms of action (families, households, firms, markets for goods and services, labor markets etc.).

From time to time the question was raised in the social sciences, whether it is possible to create a general model of action, or whether we are not forced to take specific differences into account. Hence, Etzioni (1988: 11) wants to differentiate action types between households and firms. In addition, Williamson (1985: 43) who assumes an opportunistic human actor (this is a strategic economic man, i.e. s/he is cunning) concedes that an opportunist is not an

adequate theoretical model for the worker. From his point of view, workers are stolid and unguarded optimists because they rely on promises.

This is reason enough for us, not to attach certain types of action to certain persons, but to differentiate them according to specific institutionalized realms of action (cf. the following part C). As a consequence, action type B would be more prominent in firms than in households, action type C easier to find in households than in firms, and action type A common for deliberative-cooperative social entities like customer dialogues, round table discussions and cooperation among firms and households.

We are purposely and explicitly using the comparative *more* because we are convinced that a complex model of action like our ABC-model is especially useful to analyze the mix of different types of action in concrete situations. It pays tribute to the fact that such mixtures are often to find in the reality of the economic realm of action.

C) Institutions in the economy

It was stated above that the different types of action can be more or less attached to specific institutionalized realms of the economy, while it is essential for economic analysis to show and disentangle the amalgamation of those different types of action. What is such an 'institutionalized realm of action'? The first step to answer that question, is to clarify what institutions are in economic theory.

Different definitions of institutions discussed in economics

The term institution occurred in the history of economic thought at the turn of the twentieth century. It goes back to the founder of American Institutionalism Thorstein B. Veblen (1857-1929). For a long time, however, this category played no major role in either orthodox or heterodox economic theory in Europe. Its reinvention and revival began in the sixties of the twentieth century in the US and the eighties in Europe. This was the starting point for orthodox economics to develop a theory of institutions, too. The insight that any kind of economic action is constrained and enabled by rules won large recognition.

Three different categories of institutions are widely used today in economics and economic sociology:

- the orthodox way to treat institutions called New Institutional Economics
- the category of institution in Critical Institutionalism also known as Neo-Institutionalism
- the concept of institutions in economic sociology or Socio-Economics

The theory of institutions of *New Institutional Economics* was initiated in the works of Douglass C. North (born 1920) and Oliver E. Williamson (born 1939). Their fundamental category is 'transaction costs'. Apart from production costs incurred by the process of production, these are all costs which result from the process of trading goods or property rights: e.g. bargaining costs, costs to set up contracts and to control them etc.. Because economic actors are modeled as economic men, they try to reduce and minimize transaction costs with the help of rules, i.e. institutions. The reason for the invention of institutions given in this approach, is: transaction costs.

(However, this statement is no longer shared even by all new institutional economists. North did already question the efficiency of institutions in his book of 1981 "Structure and Change in Economic History" and explained it by imperfect information of economic actors. Hence, it is equivocal to place North within the camp of New Institutional Economics.)

Thus, New Institutional Economics is founded on the orthodox model of action and rationality: Institutions are, like decisions of a consumer in neoclassical economics, results of rational choice. They are constraints of action. North distinguishes formal and informal

constraints. The latter are norms of conduct, customs and conventions. The former are political, economic and contractual rules.

In the concept of *Critical Institutionalism*, however, institutions have nothing to do with efficiency. Here, institutions are acquired routines, mutually expected rules of conduct and conventions in a social process of interaction. Ingrained and engraved on them is the socially shared experience of the past. Bush (1987: 1076) defines institutions as: "a set of socially prescribed patterns of correlated behavior". The correlation is done by values. These values are on the one hand 'ceremonial' which means they secure hierarchies, status positions and power. And they are on the other hand 'instrumental' which is to say, these values are expressions of the knowledge of society, needed to solve social problems.

Correlated patterns of behavior according to this definition are e.g. the following (cf. Bush 1987: 1082):

$B_c V_c B_c$	$B_i V_i B_i$
$B_c V_c B_i$	$B_i V_i B_{ci}$
$B_c V_c B_{ci}$	$B_{ci} V_i B_{ci}$
$B_{ci} V_c B_i$	
$B_{ci} V_c B_{ci}$	

Mit:

B_c = ceremonial behavior

B_i = instrumental behavior

B_{ci} = mixed ceremonial-instrumental behavior

V_c = ceremonial value

V_i = instrumental value

Following this definition we find in institutions as well a stable backward binding element (ceremonial values, ceremonial behavior) as a mobile forward driving element, which fosters social change (instrumental values, instrumental behavior). These twofold opposing trends, one conservative and backward oriented; the other progressive, enabling development and creatively oriented towards the future, are called 'intra-institutional dichotomy' in Critical Institutionalism.

Here, institutions are on the one hand constraints of action, on the other hand they do enable economic activity and provide certainty. They were created in a historical process and are therefore 'path-dependent'. Whether anything will change in society in the sense of an institutional transformation depends on the intra-institutional dichotomy, will therefore be due to whether ceremonial values are dominant or not. Institutional change can be described as a replacement of ceremonial values with instrumental ones, that is of ceremonial behavior with instrumental behavior. This kind of change is kicked off by technological progress in the sense of new knowledge.

An example: the invention of the internet:

The internet is the expression of new knowledge. This knowledge provides solutions for social information and communication problems. While it is implemented into the everyday life of society this new knowledge comes across *ceremonial values* like e.g. information monopolies, which hinder its usage. Little by little, however, those values are substituted by 'instrumental values', e.g. the request for democratic freedom of information for all. So society will also gradually change its whole informational behavior due to the use of internet technology.

Contrary to Neoclassical Institutional Economics an institution in Critical Institutionalism is a social category per se, it implies the correlation of the acts of several different people. It remains deeply influenced, however, by the above described dichotomy of ceremonial and instrumental elements.

The term institution in *Socio-Economics* has neither anything to do with efficiency nor with the above mentioned dichotomy. Here, institutions are socially constructed realms of action. They were formed and changed in a historical process by many generations of people and so bear history in them. Hence, they are path-dependent like in Critical Institutionalism. Socio-economic analysis of institutions regards networks, i.e. more or less loose bundles of relations between economic actors, as prefiguring institutions. While networks become stable, they become institutions. Otherwise they simply evaporate. So institutions are networks in the stage of 'locked in'. Examples are the historical emergence of stock markets or department stores, the formation and change of labor markets as well as firm and bank cooperatives which developed from social movements (e.g. Car-Sharing-Companies in Germany).

In the literature the example of Q-W-E-R-T-Y is widely used to illustrate *path-dependency of institutions*. Q-W-E-R-T-Y are the first five letters read from left on the upper row of keys on the keyboard of an English typewriter. Quite a while ago tests have revealed that this order of keys is not the most efficient. With some other order it is possible to write much faster. How did the Q-W-E-R-T-Y keyboard arise and why does it still persist?

Paul David who investigated these questions (cf. David 1985) found out that during the time of its invention (1860) Q-W-E-R-T-Y was indeed efficient. In those days it was important to reduce the speed of typewriting to limit the number of misspellings because corrections were very complicated. In the mean time, since technology has developed much further this is no longer a problem. Nevertheless, firms bought machines based on Q-W-E-R-T-Y and secretaries and typists are trained on them. A more efficient order of types has no chance. The inefficient order of Q-W-E-R-T-Y is 'locked in', ceremonial values hinder any use of new knowledge, the implementation of another order of keys on our keyboards.

Our definition of institutions

For the analysis of patterns of action which are widely used in certain realms of action, we will use a notion of institutions which combines elements of North's new institutional, the (neo)institutional and the socio-economic conception:

Institutions are socially constructed, path-dependent patterns of action, which follow specific (formal and informal) rules of expectation and behavior.

Patterns of action are understood as mixtures of the different types of action A, B and C with different forms of coordination. Such a pattern may be e.g.:

- B (1) B
B (1) B
B (1) B

which means: the action type 'bargaining', which is used by several actors, is coordinated by competition as form of coordination. This would be a 'pure' competitive market.

- Another example would be:

A (3) B
A (3) A
B (1) A

This is a mixed pattern of action, in which arguing and bargaining are mixed and coordinated with each other by competition (1) and cooperation of understanding (3). Such a mixed pattern of action can be found e.g. in modern corporations where it is common besides traditional competition to act communicatively in various structures of cooperation.

If we keep the action types summed up and elucidated in table 2 in mind, and take a look at our definition of institutions, it becomes clear that institutions (patterns of action) contain

these different action types. Their specific mixture becomes practically relevant in institutionalized realms of action.

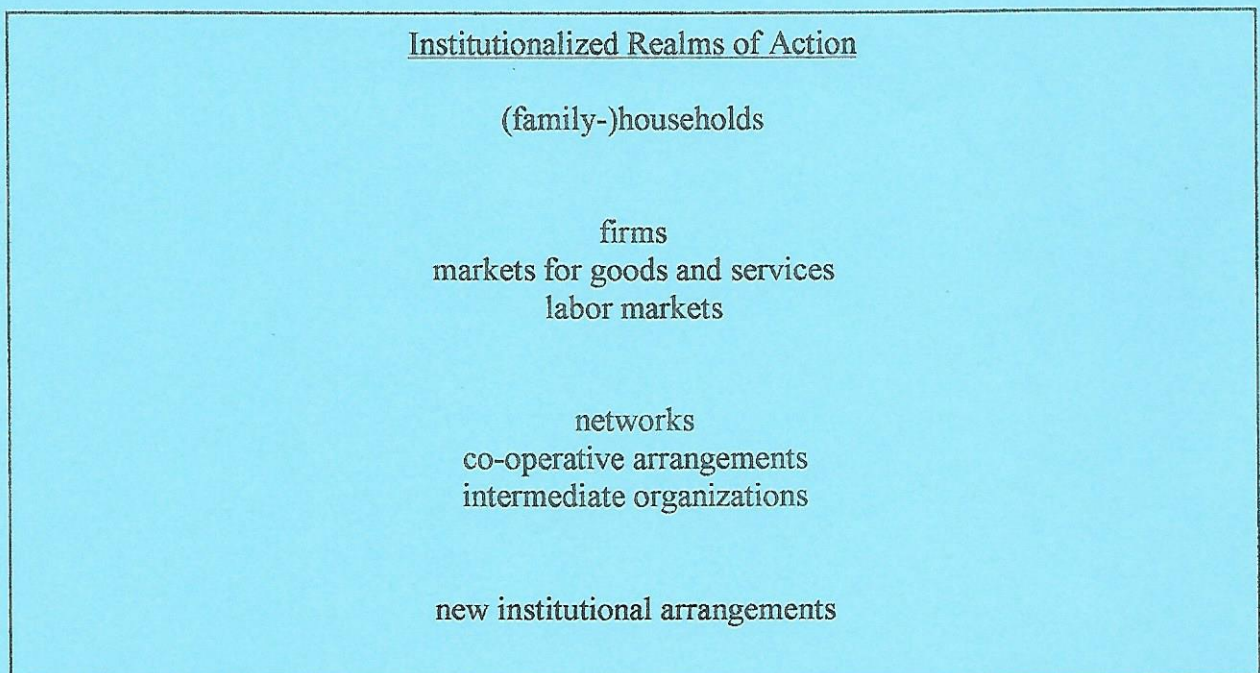
This conception of institutions resembles that of Critical or Neo-Institutionalism in its way to regard institutions as socially co-ordinated patterns of action. Nevertheless the types of action are different and there is no dichotomy. And while action is coordinated in Critical Institutionalism exclusively along values (ceremonial or instrumental) in our conception this is done by the aforementioned four forms of co-ordination with the help of specific means of co-ordination. Values are included as one of those means.

Institutionalized realms of action

Institutionalizing is a historical process. In this text, however, we do not pursue the historical process of actual events in the past, but the theoretical one, i.e. the emergence and development of certain ideas. Nonetheless, theorizing is about real phenomena. Orthodox theory starts from the premise that in the history of real events only action type B did persist. This does legitimate the transformation of mere analytical conclusions into concrete advice for and against a certain economic policy within this paradigm. We, however, start from the premise that besides action type B not only type A and C do exist, but that in the last 250 years various specific mixtures of those types respectively specialization of them in certain realms of action did evolve.

We distinguish as a first approximation the following institutionalized realms of action in the economy:

Figure 2: Institutionalized realms of action in the economy



Family-households, firms and markets are representing the core of these economic entities. We find them in all economic theories. Concrete co-operation is grounded on these basic entities and does produce links between them, between households, between firms or between households and firm. If the state is involved in co-operation we talk of intermediate organizations or entities. Networks, however, are more or less loose alliances and mergers of economic actors according to our notion of institutions which is taken from the socio-economic conception. They may either form a more stable institutionalized realm of action or

dissolve. "New Institutional Arrangements" is a category for all experimental or avant-garde entities. It is a term characterizing transitional states in a dynamic process of institutional change. Examples are advisory "Energy Agencies", "Agencies of Regional Development" or agencies to counsel and co-ordinate Agenda 21 processes, which were founded lately in Germany. All these "New Institutional Arrangements" emerged from social movements like the environmentalists. History will show whether they will last.

After these considerations we can arrange the elements of our conception of institutions as follows:

Table 4: Conceptual elements of an institution

action type	co-ordination form	action pattern (e.g.)	action realm
A	1	B (1) B	household
B	2	B (2) B	firm
C	3	B (1,3) A, B	market for goods
	4	A (3) A	labor market
		A (3, 4) C	etc.
		C (4) C	
		etc.	

D) Economic Action and Sustainability

The model of economic action developed so far, allows for the integration of the ecological dimension which in turn justifies to call our approach "theory of social-ecological action". The only micro-economic approach which does not abstract from nature altogether or regards it as a mere resource is the approach of Ecological Economics. The action of ecological economic man is based on the concept of sustainability (cf. Costanza et al. 1997 and Soederbaum 2000). In Ecological Economics sustainable development is defined according to the report of the Brundtland-Commission as: "... to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland report 1987: 8). From this general principle scientific discussion in ecological economics arrives at four rules of behavior:

- The rate of exploitation of renewable resources should not exceed their rate of regeneration.
- The amount of poisonous emission should be within the eco-system's capacity to assimilate it.
- The rate of exploitation of non-renewable resources should be compensated by a comparable increase in the use of renewable resources or by a comparable increase of efficiency in the use of non-renewable resources.
- The time frame of human interference with the natural environment has to take the timing and step by step ability of reproduction and reaction of natural cycles and environmental processes into account.

The ecological economic debate distinguishes between three dimensions of sustainability:

- The ecological dimension: Conservation of the evolutionary capacity of the natural world.
- The social dimension: Preservation of society by participation, democracy and equality.
- The (in a narrow sense) economic dimension: Maintenance of economic productivity to meet social needs.

All three dimension are relying on each other – sustainability oriented at only one of those dimensions is impossible. Sustainable economic life covers all three dimensions: the traditional commercial dimension is supplemented with the physical (ecological) and social dimension. Moreover these two dimensions take priority of the first one. (This explains why we add “in a narrow sense” above: a sustainable economy does contain all three dimensions – it is economy “in a wider sense” this includes the traditional commercial economy in a narrow sense). Sustainability constitutes a norm – i.e. we apply our analytical instruments here to a normative subject.

Sustainability is not complete as a concept. Among other reasons, because the natural environment (co-world) is too complex to understand it in all respects, i.e. we are confronted with real uncertainty, the future is open in principle. To act sustainable, means to act precautionary. Sustainability is a process – the path has to be found while in motion, step by step. How sustainability is defined specifically and correctly, is the outcome of trial and error. The aim of this tentative and precautionary approach is to co-ordinate all three dimensions with each other. In this process it is important to ensure the participation of all individuals and social groups. Accordingly the preamble of the “Earth Summit Agenda 21” emphasizes:

“Critical to the effective implementation of the objectives, policies and mechanisms agreed to by Governments in all programme areas of Agenda 21 will be the commitment and genuine involvement of all social groups” (Agenda 21 1993: 219).

In the same way, sustainability needs personal cooperation, the cooperation of all stakeholders. Only such a cooperative process can ensure a development towards a society which is based on a sustainable economy.

If we take a look at our ABC-model of economic action (Fig. 1) with its three forms of cooperation (strategic cooperation, cooperation of understanding and precautionary-responsible cooperation) it becomes clear that this analytical model is well adapted to integrate all three dimensions of sustainability in the following way:

Table 5: Types of Action, Forms of Cooperation and Dimensions of Sustainability

Type of Action	Form of Cooperation	Dimension of Sustainability
B	strategic cooperation	economic dimension (in a narrow sense)
A	cooperation of understanding	economic dimension (in a narrow sense) and social dimension
C	precautionary-responsible cooperation	economic dimension (in a narrow sense), social dimension and ecological dimension

- Action Type B (bargaining, understood as instrumental or strategic action) can only be coordinated by strategic cooperation. Means of coordination is money respectively expected pay-off or contracts. This cooperation is based on self-interested economic rationality of all participants who take notice of each other as means to fulfil their own goals. A lot of affected persons are excluded. Only the economic dimension of sustainability (in a narrow sense) can be integrated into economic action via this form of cooperation.

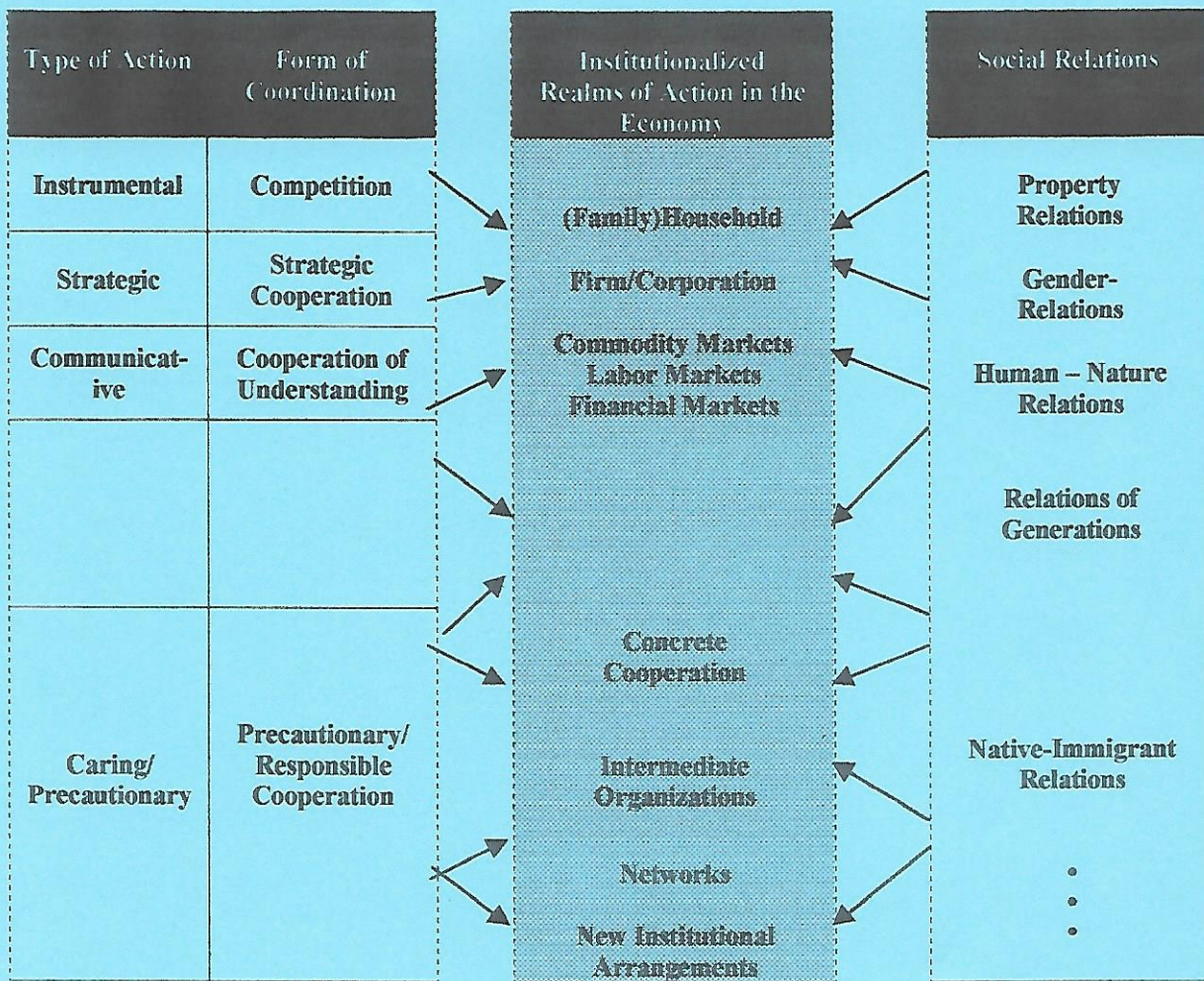
- Action type A (arguing, action oriented towards mutual understanding) is coordinated by cooperation of understanding. Means of coordination is ordinary language used in discourses. Cooperating partners are all stakeholders interested in a solution of a common problem. This is a stakeholder concept of cooperation, which is based on the equal participation of all affected persons. In this form of cooperation the main goal is not some form of self-interested maximization, but rather the common interests in a satisfactory solution of a certain problem. The solution itself is open, it will be developed during a cooperative process. Participants in this process are not means for each other to reach self-interested aims, all are ends in themselves. It is not a process of exchange, not *quid pro quo*. It is focussed on mutual recognition during common action. This action type and its related form of cooperation (of understanding) can integrate the economic dimension of sustainability (in a narrow sense) as well as the social dimension.
- Action type C (caring and precautionary economic action) extends the circle of possible participants in the process of action towards “speechless” stakeholders like the natural co-world and future generations. The integration is made possible along precautionary-responsible cooperation which relies not only on language as a means of coordination, but also on empathy and responsibility. Responsibility in the sense that the right to live and prosper of “speechless” stakeholders is well respected (conditions of evolution for the natural co-world and satisfactory conditions of survival for future generations). Hence, this form of cooperation is capable of integrating all three dimension of sustainability.

If we take our thoughts on institutions into consideration (i.e. on social patterns of action) and their practical relevance within institutionalized realms of action, it becomes clear that, where the question of formation of a sustainable economy should be addressed, we have to look out for new institutional arrangements which leave enough room for caring/precautionary action and responsible/precautionary cooperation.

E) The economy as a realm of social-ecological action – a conclusion

The realm of action “economy” can be represented with the help of the following table 6 including four types of action (table 2), related means of coordination (table 1), institutionalized realms of action (figure 2) and a broader set of social relations:

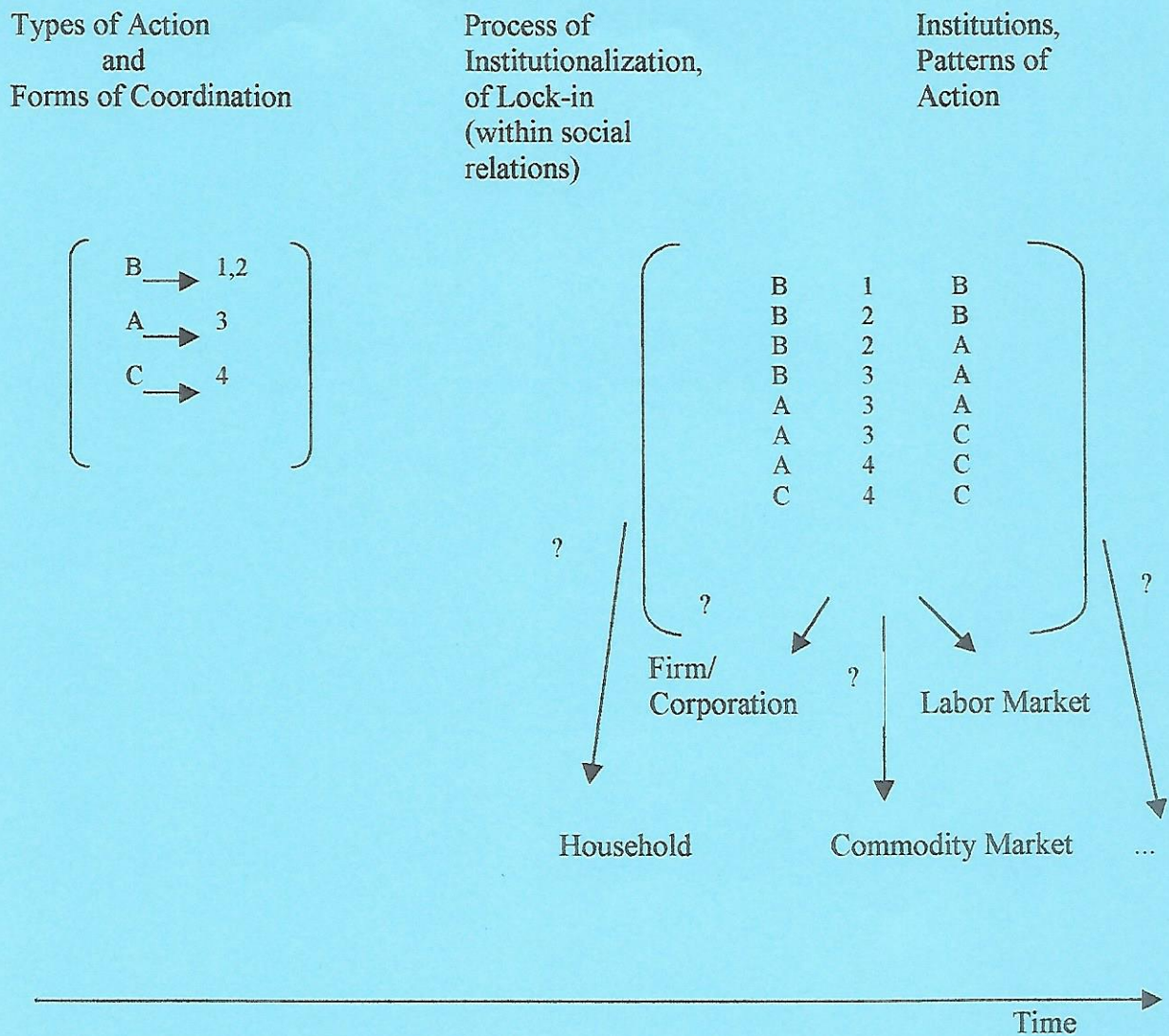
Table 6: The Economy as a Realm of social-ecological action



Though in this table types of action and forms of coordination are approximately attached to specific realms of action, the rather unsystematic order of arrows is done on purpose to signal that this should only be understood as a rough pattern. It is indeed exactly the task of economic analysis to identify explanatory types of action and their specific mixture (patterns of action) in a certain field of research.

The process within an economy as a realm of social-ecological action can be modeled as done in the following figure:

Figure 3: The Economy as a Realm of Social-Ecological Action (Process)



? = Task of Inquiry: Which patterns of action are used in practice in specific realms of action?

Table 6 and figure 3 allow for the comparison of microeconomics from social-ecological perspective with other conceptions of microeconomics. In the light of the neoclassical conception for instance table 6 is melt down to table 7:

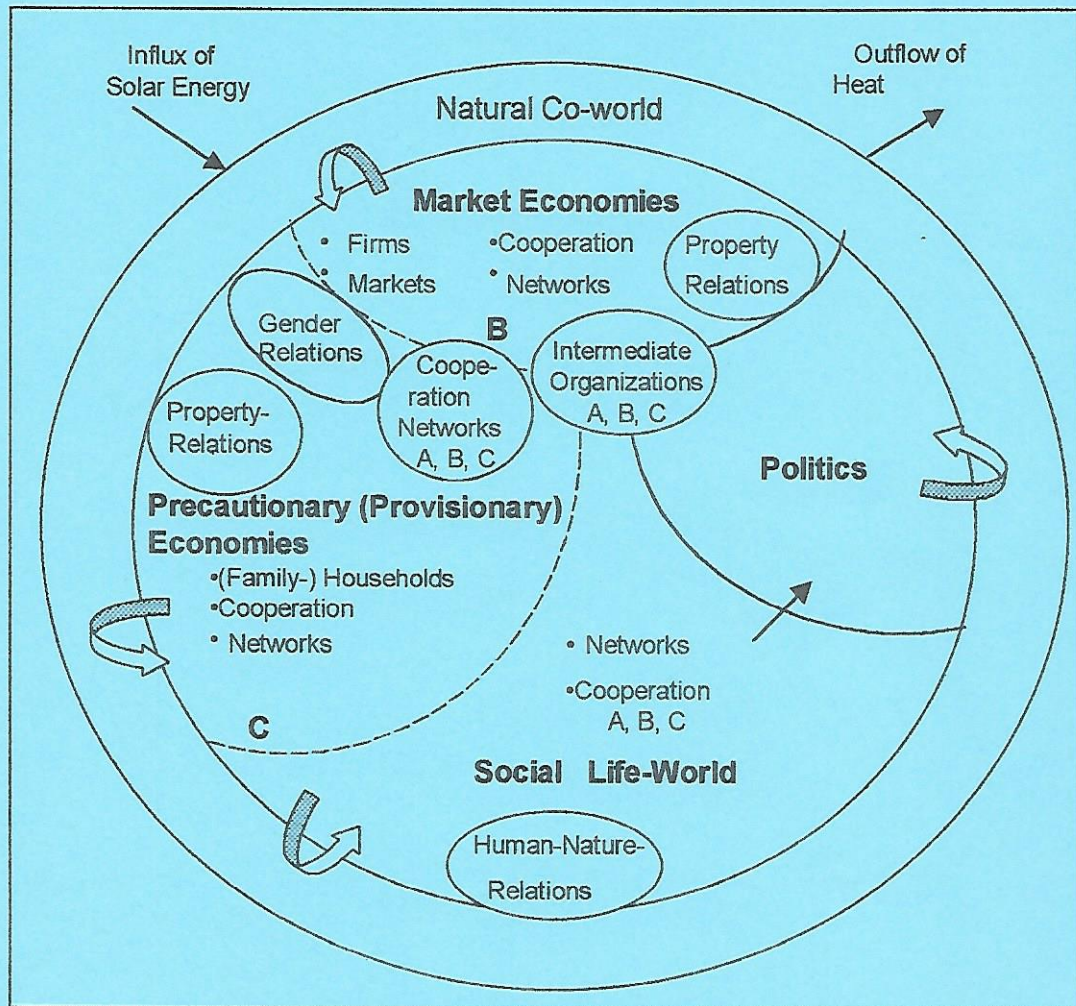
Table 7: The Economy as a Realm of Action, the orthodox-neoclassical notion

Type of Action	Form and Means of Coordination	Realms of Action
Instrumental	Competition/ Money/Prices	Households Firms/Corporations Commodity Markets Labor Markets

It would be possible to draw similar tables in accordance with any other conception of microeconomics.

A picture that tries to model a realistic view on the subject of an economy as a realm of social-ecological action according to our conception will look like the following:

Figure 4: The subject of microeconomics from a social-ecological perspective: The embedded economy as a realm of social-ecological action, structured along institutionalized realms of action, characterized by a model of A B C types of action



In the (simple and preliminary) theoretical framework given in figure 4 the (family)household is placed within the realm of precautionary (provisionary) economies whereas the firm and the market are part of the market economies. Action types C (Caring) and B (Bargaining) are attached accordingly, because they are seen as especially prominent in those realms.

Cooperation and networks are in practice in both spheres, however, they also bridge and connect those spheres. Here, the just mentioned action types are mixed and supplemented with action type A (Arguing) because such cooperation cannot work without discourse and mutual understanding of participants. Nevertheless cooperation and networks emerge also outside the economic realm. Their typical form of organization is as non-profit-organization (NPO). This term was founded as a definition meaning the opposite of profit-organizations (PO), i. e. ordinary firms and corporations and highlights the fact that NPOs focus on activities without profit. Examples are educational, welfare and voluntary charity

organizations, health and other special interest groups as well as sports clubs. These organizations defined by some common activity or interest, might resemble households in some aspects, they are, however, indeed crucially different, because they are not founded on a shared everyday life in a permanent or at least long lasting time span. Whether at all and in what respect these entities are, nonetheless, founded on economic principles taken from household or corporation is a matter of inquiry. Because the outcome of such research is rather open, the whole ABC model of social-ecological action is attached to NPOs.

In this respect cooperation and networks are quite similar to *intermediate organizations*, though the latter are fairly different from cooperation and networks in other aspects: because they emerge as interactive bridges and connections of households, firms and state entities, they can be characterized as mixtures of action types A, B and C which is systematically rooted in their very foundation. As far as within such intermediate organizations the interaction of different institutional arrangements is only possible via mutual understanding. Action type A will be of some importance. Examples are round table discussions in Agenda 21 processes, regional planning commissions and advisory boards on several regional levels.

The area of "politics" is still a blank space. Nevertheless, though we would refrain from any "economic theory of politics", if we think of social welfare and action, we can imagine a conception of an activating or enabling state, that can be based on our notion of an embedded economy and a manifold action model. This would entail a bottom up conception of economic policy, i. e. economic policy inspired, engraved and designed by actively engaged citizens. The role and task of the state would be to encourage and empower its citizens in their social and economic efforts.

In figure 4 the realm of the market economies is purposefully drawn as a circle which has a dotted line as its boundary to the realm of precautionary (provisionary) economies. This symbolizes the openness and diversity of market economies which are no longer simply the playing field of "economic men". Through the influence of action types A and C, the role of institutions and bridging and connecting cooperation, networks and intermediary organizations, market economies are transformed into spheres where an innovative and sustainable future can be created.

This should not be misread as an attempt to play down the contrary tendency of an influence of action type B and narrow economic rationality on the precautionary (provisionary) economies, the social life-world and natural co-world. To confront economic reality, however, such communicative and caring possibilities and potentials can help to open up paths of future social development that can rely on those empowering other principles of action.

Hence, microeconomics from a social-ecological perspective is *critical science* in the sense of Habermas who highlights the following two elements of a critical science:

"It is *critical* both of contemporary social sciences (here: economics, A.B./S.K.) and of the social reality they are supposed to grasp. It is critical of the reality of developed societies inasmuch as they do not make full use of the learning potential culturally available to them, but deliver themselves over to an uncontrolled growth of complexity. ... But the theory is also critical of social-scientific (economic, A.B./S.K.) approaches that are incapable of deciphering the paradoxes of societal rationalization because they make complex social systems their object only from one or another abstract point of view, without accounting for the historical constitution of their object domain Critical social theory (economic theory, A.B./S. K.) does not relate to established lines of research as a competitor; starting from its concept of the rise of modern societies, it attempts to explain the specific limitations and the relative rights of those approaches" (Habermas, vol. 2, 1987: 375).

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