# Network Evaluation as a Complex Learning Process

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The following contribution will explicate, based on an understanding of networking as a reflexive process and on an approach working from a theory of regulation, one set of criteria for the development of evaluation designs in a networking context. Needs for evaluation and monitoring that is action- and future-oriented lead to other needs already established by social-ecological planning theory. From these can be generated questions for decisions in monitoring and evaluation within complex actor settings as well as criteria for concepts of evaluation and monitoring in a networking context. On this basis, four dimensions of network evaluation and monitoring are suggested and they are embedded in the multi-dimensional design approach of the "learning network" which puts collective competence development and future- and effect-orientation at the center of the developmental process.

## 1. Networks: Between myth, management and "muddling through"

Networks are by now being discussed in all disciplines of the social sciences as the new paradigmatic form of organization and pattern for action. There are divergent assumptions about their status and range of applicability, their application contexts

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can be political, economic or social, and applications serve numerous possible networking goals and purposes. For these reasons the term "network" is defined as a "compressed term" (Kappelhoff 2000:29): networking represents a perspective of hope, a factor conducive of democratization and successful cooperation, professional optimization, rationalization, market presence, and as a term employed almost as universally as the term "system" (Grunow 2000:314), it is often very nearly mythologized (Hellmer/Friese/Kollros/Krumbein 1999). It is used to represent a variety of possible meanings and forms of cooperation with different degrees of intensity: following Simmel (1908), society for instance is now once more increasingly explained in terms of network theory (Castells 2000; Messmer 1995; Wolf 1999), with "network" as one of the basic social categories.

Networking is also the point of departure for more or less close forms of cooperation in a regional context, often initiated by support programs and generating research interest in practice and action, e.g. the "Learning Region" program. Here we are dealing not only with a clear accentuation of the term "network", but with a "school of thought, a line of orientation, a 'warmth metaphor' including an accentuated demand for initiative: regions shall be guided out of their passive role, taking on an active part in dealing with their concerns" (Gnahs 2003:100). As part of regional networking processes, intermediary agencies for regional learning networks are created which are supposed to tie different social fields together, to give creative support (Jutzi/Wöllert 2003:130) and to serve as bridges for the initialization of regional processes by defining needs, giving orientation, maintaining and integrating patterns (ibid.:135).

Sydow suggests a tighter definition, and thus a higher degree of intensity for networking, characterizing it from a micro-economic perspective on company networks as "a form of organization of economic activity by enterprises which are

independent by law but more or less interdependent economically". The relations that are introduced here are reciprocally complex and rather cooperative than competitive. They are relatively stable, they are created endogenously or induced exogenously and represent more or less "polycentric systems" (Sydow 2001:80). They can be categorized e.g. by their type of control and the stability of their relations (stable-dynamic) (ibid.:81). For applications in competence development Duschek and Rometsch (2004) suggested grouping the various network types into three main types: explorative versus exploitative, hierarchic versus heterarchic, and stable versus dynamic networks (ibid.:2).

Risk and conflict are inherent to the structure of such institutional and organizational cooperations (Messner 1995). Due to their structural complexity, they are not always at an advantage over other forms of organization: Steger (2003) identifies contradictions like self-interest versus collective interest: in building common structures of action, a chance for creating common space for development curtails the flexibility of individual network actors; the commitment that becomes relevant in a networking context reduces the autonomy of the individual network partners, etc. (ibid.: 13f). Sydow (1999) presented the model of structural tension in network cooperation, which will be further discussed below since it can be made productive for the analysis and design of monitoring and evaluation in network cooperations.

The theoretical framing of the network and network arrangements proves to be of decisive importance for the design of network cooperation as well as for the evaluation-theoretical and conceptual position of monitoring and evaluation in a network. In this paper, network cooperation is discussed on a social-scientific basis, as a social process in which the surfacing of specific conflict potentials, risks, and tensions, is to be expected. Theoretical perspectives that have

complexity (Kappelhoff 2000) and structuring (Sydow 1999; Windeler 2001) as their starting point are capable of representing and analyzing this topic in a way that is adequate for design practice and network management at the same time.

## 2. The approach of network regulation as a theoretical foundation for monitoring and evaluation in networks

The network regulation approach offers criteria for the conceptual level of monitoring and evaluation in networking contexts. The five characteristics of network regulation show us consequences for the design of monitoring and evaluation.

### Constitution

One aspect of the five characteristics that belong to an approach following a theory of structuring is a procedural understanding of constitution, which transcends the static look at organizational networks. The network constitutes itself in time and space via social practices, as a collective social setting. It regulates itself systemically and contextually (Windeler 2001:203f). From the perspective of a theory of structuring, monitoring and evaluation are not outside the networking activity, they are part of the system and are systemically generated by it. In the context of a regulatory system monitoring and evaluation are also regulated and constitute themselves during that process.

### Multi-dimensional regulation

The existence of different levels of actors is characteristic for networks: that of the individual, the group, the organization, the network itself and society as a whole. Multi-dimensional regulation means that divergent interests on the different levels are regarded as structurally unavoidable. The different levels of actors become

relevant for the employment of complex monitoring and evaluation in networking processes. One has to deal conceptually with the question which levels should be included for the generation of knowledge and how, and what consequences are intended. One has to ask what different goals and goal achievements in a multi-level context are to be analyzed and how multiple goal structures figure in monitoring and evaluation designs.

**Contextualization**

The third assumption of a regulatory approach is that the constitution of organizational networks is a coordination of activities in time and space. Networks are embedded in specific contexts and environments that play an important role for conditions and cultures of action. Every network will develop its own context-specific culture and specific social memory (Windeler 2001:325).

Network monitoring and evaluation will be designed, and will have to be designed, according to the respective network culture. Thus we can distinguish sector-specific evaluation cultures: In the profit field we find a strong orientation toward planning while networks close to the administration, which may e.g. be confronted with a need to legitimize their activities because they receive public funds, rely on summative and ex-post evaluation. When evaluation concepts are dealt with according to sectors, this then includes practice oriented toward planning and resources, toward process and correction, or toward summative legitimization.

**Co-evolution**

From a theoretical perspective of structuring—and this is the fourth aspect—the development of organizational networks can be seen as a process of co-evolution with the relevant environment. Co-evolution means that context relevancy cannot

be ignored, that the embedding in institutional contexts and relevant environments has to be considered. Not only the inner core of the network which is to change, but the participating organizations as well are exposed to change, so network monitoring and evaluation are capable of fulfilling a learning and development function for the inner core as well as for its environment. It remains an open question in each case to what degree the collective actors are able to reproduce their system reflexively and to establish reflexive monitoring. Subcultures, subgroups, subunits will describe and interpret themselves and their respective situations differently. System monitoring can establish practices which throw a light on the experiences and expectations of the network partners (Windeler 2001:326) and which co-evolutionarily reconnect the environment to the system's inner workings.

**Networking in terrains structured by dominance**

The fifth aspect of an approach according to a theory of structuring is recognition that organizations as collective actors interact competently and powerfully on a terrain structured by dominance (ibid.:30ff). Network membership is very intentional, discursive, strategically important and available (ibid.:251). Evaluation shows a very sensitive relation between contribution and use, and in antagonistic settings it can be contested between stakeholders. That is why procedures and programs need to be designed that analyze the contributions and potentials of the individual actors, the practices and activities as well as the networking context as a whole. General criteria for evaluation and responsibilities for their design, for monitoring, for compliance with these criteria, and for sanctioning, have to be developed reflexively.

Network monitoring and evaluation face the challenge to analyze not only factual dimensions like the management of business activities, but also potential power-driven roadblocks in dominance-structured fields of action, e.g. veto and blocking positions, minimal consensus in goal definition, the curtailing of autonomy of network partners, refusal to learn, and the shifting of risks onto third parties (Sydow 1999:298). The evaluative function (ibid.) of network management is supposed to put the whole range of social, factual, and procedural aspects of network management to the test.

Sydow bases the relationship between network management and network development on a theory of structuring (2001:82): network development is seen as observed change over time within a social system that is reproduced by relevant practices. Change takes place in a planned way through intervention and also in an unplanned way, through evolution. This perspective relates to the process by which network actors refer to network structures in their actions and attempts at guidance, reconstructing those structures by their actions (ibid.:83). Incorporated in this are structures, ways of development, and the possibilities of trans-organizational development—but also the possibility of failure, of unintended results, of alternative actions, of coincidence. Network development (and the effects and feedback effects it has on the organizations involved) can be described as the result of reflexive as well as non-reflexive structuring (Windeler 2001).

To make networks more successful—and this is the procedural and future-oriented function of monitoring and evaluation that will be the center of our attention here—it makes sense to analyze and to design network management as reflexive network development. Monitoring and evaluation then gain central importance for network development: They facilitate the understanding of network development as a field of learning and of the collective development of competence (Weber

2002, 2003, 2004), and they suggest the importance of analyzing empirical networking projects (Weber 2001a).

What then should concepts and designs for network evaluation and monitoring look like? This question leads to others, common in evaluation settings, e.g.: What information shall be generated, and how? What knowledge is needed and functional? What function should reflexivity have, what should it achieve? Who should generate knowledge and what should it be used for? If we take the program seriously that was elaborated at the 2003 DeGeVal convention—evaluation should lead to organizational development (Hanft 2003) and the focus should be shifted from summative and ex-post analysis towards process monitoring and future development (Weber 2001b)—then it makes sense to follow the incremental theory of planning. The social-ecological theory of planning and the 1970s' criticism of classical theories of planning give us criteria that can be used for the reflection and conceptualization of evaluation designs.

## 3. Selection decisions for the generation of knowledge in networks

Uncertainty about the individual actors' judgement, the comprehension of the original situation, the actors' collective action, future developments and strategies under a perspective of transformation (Schäffter 2001) can be made productive, if tied to monitoring and evaluation in a view supported by a defensible theory of science.

Following an objectivist or constructivist understanding of reality we can distinguish an "objectivist" from a "constructivist" evaluation paradigm. These different understandings will now be considered in their polarity, and afterwards their functionality for monitoring and evaluation in a networking context will be

discussed. Their polarity brings monitoring and evaluation into focus as not just instruments, but as networking practices.

While in classical concepts (Rossi/Freeman 1989:18) evaluative approaches were regarded as analytical instruments without the ambition of serving as theory-guided science (Kuhlmann 1998:92), we here consider concepts and approaches to monitoring and evaluation as active practice which is part of and generates specific network cultures. We assume that settings for communicative evaluation are not "just instruments", without preconditions and "objective", but that in reality they have a generative quality, organizing observation and knowledge production according to underlying explicit or implicit criteria and models of evaluation. Working on organizational transformation processes, Roehl and Willke have pointed out the—often substantial—"constructedness" of evaluation settings, which is brought about by the choice of instruments and criteria. Evaluation designs are always subject to leading ideas of change, which include ideas about the validity of changes and which, in a context of complex structures of decision-making, predetermine the evaluative direction (Roehl/Willke 2001:29).

Drawing on cybernetic, social-ecological or systemic criticism of planning in the 1970s and 1980s (Lau 1975, Atteslander 1976) decisions can be identified that become relevant to the selection of evaluation designs. E.g. in the 1970s' criticism, dimensions of subjectivity, communication, and system orientation are emphasized in the face of a rationalist, technocratic paradigm. This criticism leads to an alternative planning paradigm that includes choices that are relevant for the design of planning and monitoring, such as the following:

- Between "technocratic feasibility" and "systemic irritation"
- Between legitimization of the past and planning of the future

- Between the reproduction of the old and the generative production of the new
- Between "expert objectivity" and subject participation
- Between the completeness of what is known and the processing of what is not known/uncertain
- Between result measurement and the development of competence

These selective decisions can be found, in different manifestations, in today's evaluation practice in different social contexts, and their range, their deficits, and their chances for "reality construction" can be analyzed. The following presentation of decisions and questions relevant to evaluation in network settings does not pretend to cover all aspects comprehensively; instead it treats them by means of examples.

### 3.1 Evaluation knowledge between "systemic irritation" and "technocratic feasibility"

Within the evaluation community there is a tension between two contradictory approaches, either of which follows from basic questions of a theory of planning. A "technocratic" approach builds on the assumption that existing knowledge can be used to give an intentional design to social conditions (Herrmann 2001:1365), that social processes can be rationally planned and influenced. On the other hand there is the contrary view, skeptical of a teleological regulative approach to social processes that presupposes predictable results. This view assumes that even the most advanced and differentiated instruments of planning eventually cannot "handle" social reality.

In the 1970s, models that take an optimistic view of regulation are increasingly opposed by regulation-skeptical models calling for more open and dynamic approaches to planning and evaluation. Early on, Lau (1975) pleads for management of complexity through a participative concept of planning that retains a sense of flexibility. Atteslander presents a typology of different planning models and defines a dogmatic, a technocratic and a cybernetic or systemic type (Atteslander 1976:20).

The systemic-constructivist assumption of the self-organization of institutional systems leads to a concept of planning and thus of measuring effectiveness and evaluation which is based rather on "irritation" than on technocratic "feasibility". Reflexivity is encouraged and facilitated in order to partially produce uncertainty (Herrmann 2001:1365).

### 3.2 Evaluation knowledge between legitimization of the past and planning of the future

Another dimension pertinent for today's evaluation debate is the directedness towards past, present or future. Evaluation or monitoring designs aim, to varying degrees, to create legitimacy or change and complex transformation. The directedness of evaluation designs towards past, present or future is today influenced by sectors and organizational cultures.

An "evaluation culture" in the sense of a summative evaluation emphasizes the thorough analysis of the past, the evaluation of previous projects. Here the aim is often legitimization, and evaluation is rather geared towards a bureaucratic model of control, transparency, and the evaluation of goal attainment. The focus is set on the summative evaluation of individual measures and programs without strong

references to organizational visions and goals, and the activities are relatively little strategically synchronized or planning-oriented.

A "monitoring culture" on the other hand emphasizes a process-accompanying, formative evaluation and self-evaluation. Goals connected to monitoring and evaluation are endogenous development, motivation instead of control, process-orientation, and improvement on the level of professional action. Possible risks lie in conducting many parallel activities on all levels (supervision, etc.) which do not receive feedback from each other, which are not directed toward the organizational or networking goal, and which see themselves as strategically oriented. A tendency towards monitoring with self-evaluation classically corresponds with the evaluation concepts preferred by the non-profit sector.

Evaluation designs which are more strongly embedded in a "planning culture" emphasize diagnosis, feasibility studies, and conditions for success; they do not rely very much on summative evaluation. Their focus is on future orientation, financial aspects of a cost-benefit relation, numbers and control. The most effective interventions harmonize with visions and strategies of the system of reference, in this case the network. The aim is not the realization of individual activities but the strategic feedback relationship of all measures that is supposed to create an equal directedness of all activities.

### 3.3. Evaluation knowledge between reproduction of the old and generative production of the new

There is also a tension in monitoring and evaluation between the reproduction of the old and the generative production of the new. This tension is already implicit in the demands made during the planning debate of the 1970s: instead of mechanistic models for planning, the generative production of the new was to be facilitated.

Instead of prognoses of the future based on the status quo, "anticipation" was to be employed systematically. The inclusion of prophecies and projections of all kinds in a context of cybernetic models of planning was seen as more adequate to the challenges and demands of planning than dogmatic or technocratic models of planning (Atteslander 1976:53).

### 3.4. "Expert objectivity" or subject participation

The fourth decision in evaluation represents the distance between evaluation by experts and by participants. Evaluation by experts is often oriented at utilitaristic-rationalist models of action and leaves responsibility in the hands of the expert. The participants tend to become objects of the evaluation, not systemic partners in collective efficiency measurement and evaluation.

In a heterarchic decision-making structure, democratized expertise is a given and the production of knowledge that becomes relevant for action has to work with network knowledge—if it does not, there are distinct risks of interest-guided dominance and colonization on the one hand, lack of acceptance and inner emigration by network partners on the other. Knowledge production in networks thus has to rely on the cooperative structures of "participatory research" (Atteslander 1976:53). The efficiency of the solution of material problems depends on the participation of those concerned, on openness to criticism, on horizontal structures of interaction and on democratic procedures for implementation.

### 3.5 Completeness of what is known or processing of what is not known/uncertain

This decision is tied to different accentuations—is knowing or not-knowing the point of reference? Open and dynamic models of planning and of monitoring

assume a transformable worldview and a comprehensive definition of goals. They do not presuppose knowledge but rather incomplete knowledge or no knowledge about the current situation and its structures. These approaches are synthesizing—they methodically attempt to integrate ideological, technological and social aspects of networking contexts.

The rationality and the kind of prognoses connected to cybernetic efficiency measurement and evaluation can be described as an operational rationality working with a combination of deductive and normative prognoses. In an incremental view, planning can never be final, it is always preliminary and influenced by a large amount of feedback (Atteslander 1976:55). It systematically needs monitoring and evaluation.

Monitoring and evaluation are more than social technology in this case, they are reflexive practice and the creation of communicative contexts where the constitution of social meaning takes center stage. The focus is not on needs presumed to be objective, but on the needs and perspectives of the network actors.

### 3.6 Result measurement or the development of competence

Contrary to a basic view of processes of planning, monitoring and evaluation as "technology", an understanding of planning and monitoring as something to be negotiated is directed towards the development of competence. Contrary to placing planning, monitoring and evaluation before or after actual practice, an integrated view is suggested, which shifts away from a purely concept-oriented evaluation of efficiency towards one that also considers (micro- and meso-) political structures. Monitoring and evaluation are no longer primarily goal-oriented, instead the area of work becomes evaluation-oriented. Measurement of efficiency and evaluation can tune in to a daily networking routine that changes slowly. This understanding

goes hand in hand with an increase in competence and with self-rationalization of the network partners. By taking into view the social aspects of the production of knowledge that is relevant for implementation, an open model aims at the development of competence, functionality in poly-centric and heterarchic structures, and the internal democratization of expertise (Atteslander 1976).

Communicative planning concepts are process-oriented, not schematic; they follow the principle of negotiation. They do not pretend to be neutral in terms of values but facilitate working through the topic of value, the equivocal connection between ends and means in social contexts. Communicative approaches are the only planning approaches that attempt to bridge the gap between conceptual planning and practical action by conceptually integrating the problem of the implementation of planning results. Communicative planning practice further documents that such models represent adequate concepts for action within the complex and contradictory conditions and processes in areas of planning (Herrmann 1998; 2001:1378).

These short sketches of considerations based on a theory of planning can be used for the design of instruments and concepts of evaluation and monitoring. They address central questions about the basic assumptions, the direction and starting points of analysis, about the status of evaluation in networking contexts, implicitly also about instruments and procedures, and they furnish a pattern for meta-evaluation, in so far as evaluation concepts themselves become objects of evaluation with the help of certain criteria.

### 3.7 Consequences for the design of monitoring and evaluation in networking contexts

It has become evident that classical evaluative approaches reach their limits in networking contexts. E.g. in complex program evaluation it could be shown that the fact has been neglected that programs follow “multiple, conflicting and evolving purposes” (Kuhlmann 1998:97), that the context of their conception is often not sufficiently understood, that evaluation is used as a “killer”, that the views of those who are responsible for the program are taken into consideration but not the interests of those concerned (ibid.:98). In the context of a multi-layer concept it is neither possible nor sensible to measure “objective results” exactly, in the sense of eternal truths (ibid.:85). Under a perspective of reflexivity in a networking context, communicative validation, process monitoring and evaluation become integral parts of network regulation as a design approach.

A social-ecological planning paradigm becomes manifest, demanding a mainly communicatively oriented validation, an incremental communicative practice of planning and action that is more adequate to the necessities of the field than classical evaluation designs (Zipp 1976:77). These demands can be tied to the social-ecological approach to evaluation developed by Guba and Lincoln (1989), continued in participative approaches to evaluation (Ulrich/Wenzel 2004) and implemented empirically (Uhl/Ulrich/Wenzel 2004).

Networks are exposed to structural uncertainty about the future, and in their intended and unintended reflexive practice, in the systematic form of evaluative, process-analytical and planning practice with a perspective of collective development of competence, they can be reconstructed as “learning” networks (Weber 2002), i.e., as a field of pedagogical rationality (among others) (Helsper/Hörster/Kade 2003). Intended and unintended qualities of learning will find their space here. Informal, quasi-evolutionary learning processes as well as orchestrated reflexive interventions can generate learning and reflexivity in a

"learning network". Learning (on the different levels of individual actors, groups of actors, the network structure and its relevant environment, up to the social body as a whole) is contingent and uncertain. As learning from experience it is intertwined with everyday working activity. If the knowledge-generating practice of making experiences "on the job" gets established, systemized, and structurally put into a feedback relation with the system's practice, then orderly procedures for institutional and network learning are created. Learning on the subject level and on different system levels also becomes systemized, and monitoring and evaluation are put into a context of a development-oriented strategy of collective learning within the network. Depending on to which dimensions the reflexive generation of knowledge within the network can be designed around, they will be the focus of the following section.

## 4. Dimensions of evaluative and planning-oriented learning within a network

On the basis of empirical networking projects (Weber 2001a) and literature on networking theory we can determine four dimensions for a strategy of collective learning. These design dimensions of system monitoring and evaluation are the social dimension, the dimension of network functions, that of structural tensions created by networking processes and that of learning and learning arrangements (Weber 2002, Weber 2003). In our analysis of network functions and structural tensions we follow the works of Sydow (1999, 2001) and Windeler (2001). While these two aspects have already been objects of network regulation as well as reflexive approaches, the dimension of the social process and that of learning have not yet been considered systematically under a design point of view.

### 4.1 Social regulating and social monitoring

The regulatory approach presupposes structuring by social actors, so the social dimension is thus structurally included. Cooperative inter-organizational relations are seen as based on social processes; personal and social closeness is regarded as a necessary condition for successful networking processes (Winkler 2002:37). Network knowledge is always social, it is created by and embedded in social practice, with its individual and collective elements. As a whole, network relationships are based on exchange, which is, in turn, based on stable expectations and a norm of reciprocity. Trust is also seen as a sine qua non for successful projects (Windeler 2001). This shows that the social dimension is indeed recognized as relevant, but so far it has not been addressed in its quality as a group context. Supported by group-dynamics and team-development approaches, we can here refer to categories of the group process that Tuckman uses to describe different group and team qualities (1965). Tuckman's model assumes that the first phase of groups' encounters is friendly and noncommittal, while the second phase of the process is characterized by struggle for social status and power within the social structure. In a third phase the group then has to come together to a functional whole, and positions in social space have been negotiated. As a fourth phase we see the "performing group". Tuckman extends the group, capable of working and performing, into the future.

Theoretical positions based on structuring and complexity describe networks as co-evolutionary entities (Kappelhoff 2000b:382) that do not show a linear development. Still, Tuckman's four-phase approach is useful for its qualitative criteria for the analysis and design of group-dynamical aspects. His definitions of Forming, Storming, Norming and Performing in a social context can be used for monitoring and for evaluation since they provide criteria for the analysis and

design of the social context which can be found empirically with the help of indicators.

### 4.2 Functional network guidance—monitoring of network functions

Another dimension of monitoring and evaluation is the functional dimension of network guidance introduced by Sydow (Sydow 1999). All elements of network regulation—selection, allocation, evaluation, system integration, configuration of positions, constitution of borders—can be objects of evaluation: the selection of the actors belonging to the system, the allocation of resources, the evaluation of the process and the specifics of system integration, and of the configuration of positions and the constitution of borders (Windeler 2001:249).

In a design approach, "selection" includes the question of "who?"—who shall be included? This question becomes important at an early networking stage. After that the focus shifts to the "allocation" of tasks and resources, the distribution of responsibility among the partners. "Regulation" of cooperation within the network provides the development and implementation of rules between the organizations. "Evaluation" of network organizations can concern the network as a whole or just selected rules of cooperation (Sydow 1999:295f).

Windeler adds two others to these four functional aspects: "system integration" and "border management" (Windeler 2001). Measures of system integration influence the selection of actors; the practice of configuration of positions and of the constitution of borders pose particular challenges to potential newcomers etc. (ibid.:251).

These objects of network regulation are interconnected in a recursive relation. The six aspects of network guidance are open to analysis and elaboration under the

focus of a functional dimension. While Sydow describes them as procedural, they do not just develop their relevance along the stages of the process but also across them: selection, allocation, regulation, evaluation, border management and system integration are necessary and have to be repeated perpetually and circularly. They offer a catalogue of questions, criteria and indicators for network monitoring and evaluation along the emergence of design necessities.

In Sydow's approach to network functions (1999:298) monitoring and evaluation have systematic value. The characteristics of reflexive network regulation provide a concrete basis to the function and design of monitoring and evaluation. All in all it becomes evident that network monitoring and evaluation have to be integral parts of a complexity-oriented reconstruction of networking processes. Sydow assumes that monitoring and evaluation become important factors in the design of paths of development within reflexive network development. They furnish the informational basis for a (more) reflexive network development by network management. While "evaluation" aims at the contributions of individual network organizations, at the quality of the network relations that have been developed or at the "network effect", and while as a function of management it is concerned with the practice of evaluating, "reflexive monitoring" is designed as a tool for supervision of one's own actions, of the conditions and effects of actions and of the actions of others (Sydow 2001:90). From a design perspective, monitoring and evaluation facilitate the systematic regulation of networking risks and the increase of networking success.

### 4.3 Structural tension—monitoring of tension

A third focus of complexity-oriented network monitoring has to be the dimension of structural tension. Sydow has introduced eight lines of tension that have to be

regulated in networking processes—or if lacking regulation can cause a networking process to fail (Sydow 1999). They provide analytical potential and differentiating criteria for the evaluation and design of network cooperations. Messner, coming from political science, has also identified structural dilemmas of networking that have to be worked on within networking processes (Messner 1995, 1994). The following section is based on Sydow's presentation (1999) of the lines of tension between "autonomy and dependency", "trust and control", "cooperation and competition", "flexibility and specificity", "variety and unity", "stability and fragility" (e.g. change), "formality and informality", "economic rationality and preservation of power" (Sydow 1999:300).

Variety—unity: How can a balance be reached between the variety of participating actors and their integration to some kind of unity?

Flexibility—specificity: How flexible is the network in terms of its goals and self-image, how specific is it?

Autonomy—dependency: How much autonomy is possible and what does it consist of, how much dependency exists and what does it consist of?

Trust—control: How much trust and what kind of trust is there; what is regulated by control mechanisms, and how?

Cooperation—competition: What role do cooperation and competition play? What relationship is created between them?

Stability—fragility: What role do stability and fragility play? How are they created? What regulating mechanisms exist?

Formality—informality: How is the relationship between formality and informality regulated, what relationship do they have?

Economy—power: What relationship is there between arrangements of functionality and power? How are power patterns generated?

Windeler (2001) also refers to these lines of tension in his approach based on a theory of structuring. Within a monitoring approach they can be regarded as analytical dimensions and as design parameters. They are useful for the incorporation of reflexivity in discursive and qualitative processes of analysis, thus for clarification and localization within the discursive context and the network's path of development.

### 4.4 Knowledge, communication and system reflexivity: networking as a learning process

Since networks represent dynamic rather than static arrangements of relations and cooperations, networking has to be read as a learning process. Monitoring and evaluation have the function to generate knowledge from practical experience and to reflect on it, in order to deduce knowledge from it that may guide future actions (Uhl/Ulrich/Wenzel 2004:11). So their primary objective is to provide chances for learning and optimization on the system level. They are tied to system reflexivity and communication, re-entering into the circle of active planning within the network. The explicit directedness of monitoring towards the design of learning contexts makes it possible to identify future-oriented developmental potentials of networking projects. Discursive reflection produces awareness of change in the first place—data gathering procedures not only reconstruct their subject in different ways, the subject of reflection itself is changed by it (Hendrich 2003:157). In network contexts as informal learning contexts, aspects of a learning

biography and the estimation of one's own competence can also be used for a kind of monitoring that is oriented to competence development.

The social dimension, the functions of network guidance, the structural lines of tension, and the dimension of learning within the networking process, have been suggested as dimensions for the monitoring of efficiency and for the evaluation of complex transformations (Weber 2003). What instruments and learning arrangements can support complexity-oriented monitoring and evaluation which reply to demands on the social, functional, structural and learning dimensions in a pragmatic and manageable fashion?

## 5. A perspective: instruments for evaluative and planning-oriented network development

As the criticism of under-complex evaluation designs has shown, the focus may not be narrowed to a few efficiency indicators since this includes the risk of distortions. Especially quantified data is often endowed with a status of objectivity that makes it difficult to question the results. Under-complex designs for monitoring and evaluation have counterproductive effects when the truth production of the system generates faulty attributions and labeling or unintended effects, e.g. in the sense of social dynamics. This means that monitoring and evaluation in a network have to be geared towards communication and complex reconstruction.

In complex social systems reflexive network monitoring will not exclusively be left to process counselors, brokers, coordinators and moderators. It will be part of everyday action and has to be functional in terms of the necessities that come with this. Below the level of external evaluation by experts it is recommended that there be developed a discursive, procedural self-evaluation. On this level networking

needs “cooperative core competence” to balance existing tensions. These tensions cannot be dissolved; they are part of the structural characteristics of networking and have to be dealt with productively. In this way they become accessible to process evaluation and optimization. Sydow thinks that a continuous employment and practice of reflexive monitoring can render more formal evaluative methods unnecessary (Sydow 2001:97).

Monitoring and networking in networks are instruments for the construction of reality, wrapped up in a heterarchic and polyvalent structure of interests and in complex transformation processes. For an integrated design of monitoring and planning it seems to be practical to generate open evaluation designs (Lynen von Berg/Hirseland 2004:15). These designs should take the form of participative evaluation (Oels 2003, in publication; Weber 2003; Weber/Benthin, in publication) which should be multi-layered, procedural and temporal. Design criteria for network evaluation should be a multitude of perspectives, process-, future- and identity-orientation as well as an orientation toward a multi-layered approach.

Depending on a given context of economic sectors or institutions, instruments of quality management can be employed, or self-evaluation or ex-post evaluation by experts can be seen as practical. Network monitoring and evaluation which are geared to future-oriented learning and collective development of competence will be designed in a rather decentralized, dynamic and open fashion, although the employment of quantitative methods is not excluded. Evaluative learning arrangements combine qualitative and quantitative methods, methods that generate knowledge and those that “measure” success in a methodical mix, and can thus fulfill the different demands of a networking context. To deal adequately with complex relations of cause and effect they should be represented in a complex fashion (Bangel 1999:354).

Guba and Lincoln (1989) suggested an approach of "stakeholder-based evaluation", one that is participant-oriented and allows the collective definition of criteria and indicators of successful cooperation. Participatory effect monitoring follows a central evaluative objective of increasing the collective capability to act, of breaking out of old ruts, and of doing things differently and possibly better than in the past (Oels 2003). Its goal is to expand the repertoire of action (Benthin/Baumert 2001), to increase autonomy and to minimize the degree of manipulation and passivity (Oels, in publication). The approach to evaluation, monitoring and planning described as "stakeholder-based evaluation" is based on a constructivist paradigm and aims at addressing a large variety of perspectives—which can also be contradictory—in order to create a complex picture of the whole. Indicators and criteria for monitoring and evaluation are generated interactively with the actors concerned. Special emphasis is placed on the definition of learning objectives.

On the basis of a participant-oriented approach, instruments of network management can be put to use which can take over planning, monitoring and evaluation functions and in this way fulfill the evaluative functions of understanding, legitimization and optimization. Especially in open, dialogical settings, the objects of evaluation can be regarded as dimensions of social, functional, structural and learning evaluation.

For example, the social dimension in networks can be analyzed with the help of indicators: the Balanced Scorecard is an instrument for the analysis of network functions as objects of evaluation. Structural tensions can be analyzed e.g. with an appreciative evaluation approach, while the dialogical arrangements of Large Group Interventions can provide an evaluative, planning arrangement of network learning. In this way, contexts and procedures of complex (self-) evaluation are

created that simultaneously cover the functions of understanding and optimization, and if needed legitimization as well (Ulrich/Wenzel 2004:28).

Large Group Interventions provide strategic agility and risk minimization in fast transformation processes with a high degree of network activity, because they make use of collective intelligence (Königswieser/Keil 2000). As procedures of transformation they follow the systemic paradigm (Bunker/Alban 1997:5). Systemic, open approaches like Large Group Interventions make it possible to regulate the network tensions brought about by system monitoring and evaluation. They create a mode of "pedagogical organizing", with its quality of experimental practice (Weber 2004, in publication).

A practice that is oriented towards reflexivity and knowledge generation closes the circle of knowledge provided by monitoring, evaluation and planning in the sense of an incremental, spiral-shaped model of evaluation, working with the iterative practice of producing systemic rationality. But it will never produce "complete" results and will always have rational and irrational parts (Windeler 2001:220). This practice of system reflexivity produces a discursive arrangement of ulterior and self-guidance in which a lot escapes the grip of reflexivity, in which unrecognized conditions and unintended results of actions emerge as well as "blind spots", chain reactions and "reflexively" influenced causal connections. So participant-oriented effect monitoring in networks will always have to try and strike a balance with that which is not known (Kade 2003). For this reason it will escape the myth of technocratic feasibility – and embark on a journey of collective procedural learning.

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