



Instruments to work with Social Systems in Regional Development

English Summary

ÖAR-Regionalberatung GmbH
Alberstraße 10, 8010 Graz

Tel.: +43-316-31 88 48
Fax: +43-316-31 88 48 DW 88
e-mail: oea.stmk@oea.co.at
[http: www.oea.at](http://www.oea.at)

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Richard Hummelbrunner
Robert Lukesch

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***Impulse für
dynamische Entwicklung***

INTRODUCTION

This paper is the English Summary of the report “**Systemic Instruments for Regional Development**” written by **Leo BAUMFELD, Richard HUMMELBRUNNER and Robert LUKESCH** (May 2002). This report presents the results of a research project commissioned by the Austrian Federal Chancellery (Division for Co-ordination of Spatial and Regional Policies).

The research project was induced by the following considerations:

1. “Regions” – or more precisely: the actors of regional development and addressees of regional policies and their interrelationships – can be described as social systems.
2. Social systems are based on communication.
3. Regional development therefore cannot be influenced without modifying communication with and within the relevant social systems.
4. To make interventions in social systems more effective new communication techniques have been developed during the last decades.
5. Regional policies could (and should) make use of such “systemic” techniques, if appropriate.

The **aims** of this project therefore are:

- To give an overview of instruments particularly suitable for working with / in social systems;
- To assess their relevance and applicability for regional development work;
- To present and describe the instruments in a concise and well-structured manner;
- To provide useful background information to facilitate their application.

Methodology

This project started in July 2001 and the final report was completed in May 2002. Material on instruments has been collected via desk research, Internet research and practical experience gained by ÖAR staff on their use (when applicable). Additional literature has been consulted and evaluated, to provide a more profound understanding of their theoretical and methodological background.

Initially about 80 instruments have been screened, and 47 of them were eventually retained for the report. In this selection process priority was given to those instruments which are particularly suited for communicating, co-ordinating and working with social systems, which play a central role in today’s regional and local development.

The instruments are regrouped in three realms of mutual influence: **Perception, Change and Learning**. Learning is the meta - level link which allows to understand changes as well as to change the ways we perceive what happens.

Although it was not (and could not have been) the aim to present a complete catalogue of systemic instruments, the collection presented in this report is nevertheless representative for the core activities in regional development work: Analysing, planning, implementing and managing, monitoring and evaluating. The result of this process is **not** intended to serve as „**recipes**“ or **standard instruments**, but as a menu of options from which to choose. Thus

the repertoire of action in complex situations can be widened and readers are invited to combine these instruments in a creative manner in order to assemble a mix of instruments which is adequate for a given situation or purpose.

This English summary presents the main findings of the project under three headings:

- 1. The need for new instruments in regional policy**
- 2. Sources and models for new instruments**
- 3. Overview of categories and instruments**

The complete (German) report can be ordered by e-mail at iv4post@bka.gv.at and will be available on the web-site of the Austrian Federal Chancellery www.bka.gv.at by the end of 2002.

A. THEORY

1. THE NEED FOR NEW INSTRUMENTS IN REGIONAL POLICY

1.1 A shift of focus in regional policy

Traditionally regional policy in industrialised countries aimed at quantitative economic growth, reduction of disparities between centres and peripheries as well as modernisation and industrialisation of lagging areas. This policy focused on overcoming weaknesses and deficits by improving infrastructures and promoting capital formation, notably via attracting inward investment.

Although in many regions this approach has been proved successful for reducing disparities, it was not possible to effectively tackle structural problems. Therefore new approaches have been pursued since the early 1980s, which aimed at strengthening the endogenous potentials of regions. This policy orientation focused on improving the regional capacity for innovation and adaptation, notably via „soft“ instruments like business infrastructures, improved framework conditions for enterprises and measures in the fields of training or employment.

In the 1990s endogenous renewal of regions has become the dominant regional policy strategy in Austria. This shift was linked with the growing awareness that essential factors for regional development are to a large extent immobile. The more technology and innovation moved into the centre of policy concepts, the more attention was paid to processes and the context conditions (“milieu”). With increasing integration and internationalisation of regions more emphasis was given to external relations, since it was considered insufficient to just look upon endogenous potentials in an isolated manner. In order to improve the competitiveness of regions, increased support was given to co-operation and networking as well as to the role of intermediary service providers.

These changes in regional development strategies are inseparably linked with major **changes in the patterns of thinking and behaviour** of the involved actors:

- **Integrative view:** The success of regional development policy depends on the interaction of economic, social, cultural and physical resources within a territorial unit, and on the quality of collaboration between key actors having access to or being responsible for these resources. Usually several policy areas are addressed simultaneously, which need to be delivered as consistent as possible. To this end they can be integrated in the form of multi-annual programmes as is the case for EU-Structural Funds.
- **New forms of governance:** Both hierarchic governance via (centralised) interventions of the public sector and (decentralised) governance via the offer and demand principles of a market economy proved to be insufficient. Successful and accepted regional policy in realms like technology, human resources, infrastructure or location development requires manifold processes for co-ordination and decision-making. Forms of network steering appear to be particularly suited for this purpose - and have been applied quite successfully e.g. in promoting industrial clusters.
- **Thinking and acting in social systems:** The designers, implementers and beneficiaries of regional policy are regarded as social actors. Projects and programmes need to take their specific interests and requirements into account, and their adequate involvement in planning or implementation is a key factor for success. Thus successful actions require an adequate understanding of social systems and their particularities.

- **Holistic notion of development:** The notion of development via transfer of resources, technology or knowledge is gradually being replaced by the notion of development as a transformation process. In principle, such change is open and cannot be determined in advance, thus it needs to be observed and continuously shaped. In addition, this change should be
 - Localised: It should be rooted in the place, community or region and emphasise its uniqueness.
 - Integrated: It should multiply links between public institutions and private enterprises, between all economic sectors, between profit and non-profit, formal and informal activities.
 - Sustainable: It should satisfy the needs of the present generation and preserve or increase the (human, social, economic, natural) capital for the following ones.

As a result, tasks and projects become increasingly multi-layered and –faceted; social actors become more and more aware of the complexity of development processes.

1.2 Regions as complex systems

For these reasons adequate handling of the **complexity of social systems** becomes a major challenge in regional and economic development policy. The specific features of complex systems can be summed up as follows (KÖNIGSWIESER R., LUTZ C. 1990):

<i>Simple systems</i>	<i>Complex systems</i>
<ul style="list-style-type: none"> – few, similar elements – few linkages among elements – potential for behaviour and actions of elements is very limited – stable, deterministic impact chains – quantifiable behaviour – possible states of a system can be predicted (analytic explanations, certainty can be achieved) – allow complete steering and control 	<ul style="list-style-type: none"> – many, different elements – strong linkages and interdependencies – large repertoire of behaviour and actions of the individual elements – manifold, variable impact chains – less quantifiable behaviour patterns – the uncertainty of possible states can be recognised (synthetic understanding, reduction of uncertainties) – allow only limited steering and control

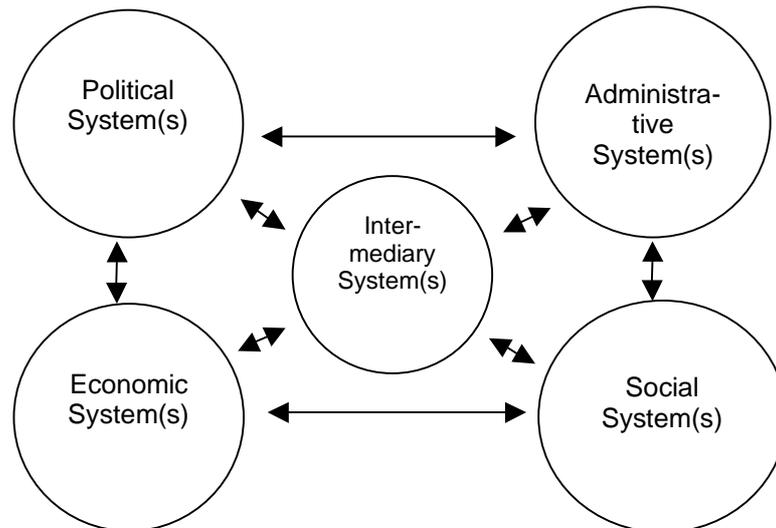
Complex situations are the result of many different elements (e.g. actors, actions, factors) and the **dynamics of elements and linkages**. Since not only the elements, but also their relations can change over time, a large number of possible states can be reached. Due to the linkages, changes in a single element do not remain isolated, but can influence others, which leads to adaptive change throughout the whole system as well as to unintentional effects. (ULRICH H., PROBST G.J.B. 1991).

Complex situations are characterised by the „emergence“ of new qualities at the level of the whole system, brought forth by the mutual linkages. Self-regulation and feed-back mechanisms result in “cybernetic“ behaviour, which cannot be understood via the individual elements, but only through their interaction. If the observer does not take into account this **“internal” behaviour of systems**, he or she can react ineffectively or even counter-productively.

Complex systems can never be completely analysed. In order to understand their functioning, it is not even necessary to dispose of detailed information about all the elements. It is however crucial to adequately represent the underlying **behaviour patterns**, for which a few data might be sufficient, provided they are carefully selected and appropriately linked, based on non-linear and “fuzzy” logic (VESTER F. 1999). Since every action can be both - cause and effect, “circular” interaction patterns replace “linear” cause – effect thinking. These

patterns are made up of (negative and positive) feed-back loops and regulate the behaviour of a system.

Social systems can be linked in manifold ways; depending on their degree of mutual influence they are either strong or loosely „coupled“. They are composed of sub-systems (*in extremis* individuals), which all have their **own structures, rules and logic**. As these determine their behaviour and cognition, every (sub)system can only have a selective and limited view of reality, and relevance is essentially determined from an internal perspective. It becomes evident that there are quite different types of social systems (with different structures, rules and logic) involved in policy making in general and regional policies in particular:



Under such circumstances, efficient operation requires that the individual systems recognise their own limits and are open for other views and logic. This is a continuous task which must be realised in a pro-active manner via appropriate **communication and management of relations**. This is the role of networks or intermediary systems (e.g. development agencies), which operate at the interface of several systems and facilitate joint orientation and concerted actions of relatively autonomous partner systems.

However, complexity in social systems is not an “objective” but **subjective** feature. It is observed, interpreted and handled differently by different actors. What makes complex situations difficult, is determined in the heads and minds of the individual observers. An incalculable reality with time-delays and manifold side effects is a special challenge for our everyday thinking, which functions along simple „linear“ rules. This leads to uncertainties in handling complex realities and to wrong information or assumptions about them (DÖRNER D. 1989).

The behaviour of complex systems can hardly be determined. There are limits to plan or create future situations, as they evolve “organically” via self-organisation processes. And they can only be **partially influenced or controlled** from outside. Indirect forms of steering are most appropriate, which make conscious use of self-organisation capacity and influence them via general rules. Giving up direct interference and detailed regulations enables to achieve more flexibility and adaptability to circumstances varying in time and place.

Intentional action in complex situations is made difficult due to their **lack of transparency**. Many essential features are not (or not immediately) accessible to those who have to plan or take decisions. Only parts or individual actions are seen, but their relations and underlying structures remain obscure. And even when these relationships are recognised, one can

never know exactly what the situation is like at the very moment – or what will happen in the future (SENGE P. 1990; SENGE P. e. a. 1994).

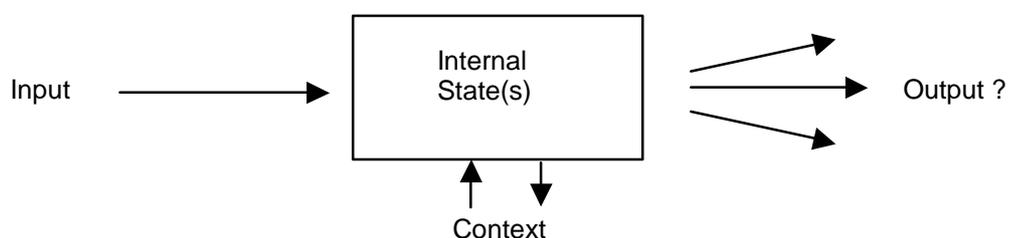
1.3 Pitfalls in dealing with complex systems

The most frequent reaction to these difficulties and challenges is to either ignore complexity altogether or to reduce it mentally in order to be able to handle it. DÖRNER D. (1989) lists the most important **mistakes in dealing with complex systems**:

- **Isolated view**: A lot of data and information is gathered, but they are not analysed in relation to each other. Thus important „systemic“ qualities and cybernetic dynamics are not recognised.
- **“Quick fix”- mentality**: Individual problems are identified and dealt with in this isolated manner. Thus efforts are dissipated by treating minor details or symptoms. Attention is preferably paid to the easiest or most immediate tasks without understanding how they are functionally interrelated in a wider context.
- **Caught by past success**: A factor or problem is (often correctly) recognised and treated at the outset. Due to initial success this early focus is maintained and other signals (e.g. contradictions, malfunctions) are ignored.
- **Neglected side effects**: Based on linear thinking, actions are undertaken because they are believed to be “right”, without taking other consequences into consideration. By this today’s solutions turn into the problems of tomorrow.
- **Tendency to exaggerate**: Due to their internal behaviour, systems tend to react with some delay. As a consequence interventions tend to be “overdosed” - or reduced (too) drastically in case of counter-reactions.
- **The demand for obedience**: The desire to directly influence a system (or the assumption to have unveiled its functioning!) enforces a tendency to neglect the self-organisation capacity of systems and to impose authoritarian styles of governance.

However, this **mental “trivialisation”** (FOERSTER H. v. 1970) of social systems strips them of their most important qualities – internal dynamics and self-organisation – and treats them like simple machines. In this perspective reality is regarded as a simple input-output model, in which the same input (e.g. support measure) will always lead to identical output, regardless of circumstances. This reductionism happens, if development programmes are defined from a strictly linear point of view in order to align resources for achieving pre-defined targets, like in the *Logical Framework Approach*.

But **interventions in complex social systems do not (only) work linear and one-way**. Due to internal dynamics they also trigger processes, which can neither be foreseen nor reduced to original plans or intentions. Social systems can react differently at different times to the same input – depending on their internal state. Since they are in a mutual relationship with their context, their behaviour can neither be explained from inputs nor their internal states, but results from the interaction of both:



If this is ignored, explanations are of little help and can even be counterproductive or misleading. If e.g. a region were reduced to a trivial system by drastically limiting the behaviour of individual and collective actors to a few predetermined possibilities, they would lose their capacity to adapt and develop. This ultimately requires that the „recipient“ systems of programmes, which are designed in such a linear manner, are “dead” respectively inert, and certainly do not possess the qualities of living systems (ULRICH H., PROBST G.J.B. 1991)!

The desire for direct influence and control, which is an inherent feature of linear thinking, can also lead to inappropriate forms of intervention. For instance, to correct faulty (or undesirable) output through direct corrections or interference (analogous to the search for „defective“ parts or processes in machines). However, since in social systems the output depends on complex interactions, it makes little sense to intervene at this “**object level**”. It is the structure of a system, the interaction of elements and/or with the context which need to be changed. But this requires to intervene at the level of rules which determine a system’s behaviour (“**meta level**”) and ultimately influence – but in an indirect way – the production of outputs (MALIK F. 1984).

When a complex reality cannot be brought satisfactorily under control via linear methods, this usually leads to increased control. Ineffective rules are countered by intensified regulation (“more of the same”), but this will only increase complexity and cannot solve the fundamental management problems of interacting social systems.

The same holds true for simplifications, when they are formulated only from the point of view of one sub-system, neglecting the often adversary and counter-intentional effects this has for the other partner systems. As has been shown above, effective management of complex situations would require a shift from the object-level of details to the meta-level of rules.

However, many of the instruments which are used in local and regional development are marked by these deficiencies. To a large part they have been conceived under quite different framework conditions, e.g. small and simple systems, infrastructure planning, stable environments. Standardised methods dominate which are based on a „linear“ notion of development. They are not suited very well to deal with complex situations, since they are not flexible enough and do not allow to consciously deal with differences (of points of view, interests etc.) or the requirements of social systems.

1.4 The quest for systemic instruments in regional development

Successful work with / in social systems requires to take account of their specificities, notably the **fundamental limits with respect to information, influence and control**. Future states can only partially be planned or created, as they essentially evolve “organically” through self organisation processes. These spontaneous orders are the result of human actions, but they do not necessarily correspond with previous plans or intentions (MALIK F. 1984).

But such actions also require new methods and instruments, which are adequate for these conditions. Systems and complexity theory has established a new paradigm for understanding complexity. **Systems thinking** is grounded on these theories and encompasses four essential components (OSSIMITZ G. 2000):

- Thinking in interrelations (feed-backs and causal loops);
- Dynamic Thinking (in time sequences and internal dynamics);
- Thinking in models (with adequate forms of representation);
- Systemically sound acting (with conscious reflection of interventions).

On this basis a series of innovative instruments and methods for complex systems have been developed over the last years in diverse fields such as organisation and business consultancy, management theory and –practice, development aid or psychotherapy.

But to date these instruments are still very little known and hardly put to use in regional development work. In particular there is no systematic inventory and an assessment of their potential use in regional development. This is the fundamental objective of the present work.

2. SOURCES AND MODELS FOR NEW INSTRUMENTS

2.1 Systems and complexity theory

From the “Vienna Circle” to the “Vienna School”

Systems theory does not constitute a uniform, consolidated stock of knowledge, but rather stems from original research undertaken quite independently in diverse fields, which later on have influenced each other. Although systems theory has developed in parallel strings, its main protagonists have fostered intense exchanges beyond the boundaries of social and natural science from the very beginning:

- The founders of cybernetics (Norbert Wiener, John von Neumann, Heinz von Foerster) - whose scientific roots can be found in the so-called *Vienna Circle* of cognition theorist Moritz von Schlick – had frequent exchanges with physicists (Albert Einstein, Wolfgang Pauli) and chemists (Linus Pauling, Ilya Prigogine). Beyond the role of physics as the leading science in those days, it was the „copernican” shift away from Isaac Newton’s mechanics towards a theory of relativity of both space and time, which fascinated the scientific community at that time.
- Scientists involved in cybernetics, physics or psychotherapy communicated vividly across their borders of discipline. As an example we can take the intense exchange between Wolfgang Pauli and Carl G. Jung, whose concept of *synchronicity* allowed to connect two simultaneous events beyond a cause - effect relationship. For a long time psychotherapy has been the only discipline which has translated cybernetic thinking into practical instruments of change.
- According to Fritjof Capra, all important achievements of cybernetics result from comparing organisms and machines. It is therefore not surprising that biologists like Ludwig von Bertalanffy or Humberto Maturana and Francisco Varela could directly link their theory of self-organising biologic systems with cybernetic thinking, which was also the basis for the development of the concept of biocybernetics (Frederic Vester).
- The works of the anthropologist Gregory Bateson had far-reaching consequences for fields as diverse as communication and learning. Anthropologists, cyberneticists and psychologists were united in their fascination for the processes of the human brain.
- In Germany Niklas Luhmann has adapted the biological concept of self-organisation for social systems. His theory of social systems, later on expanded by other sociologists like Helmut Willke, has inspired the emergence of a systemic (organisational) consultancy approach notably in German speaking countries. Several important representatives come from Austria, the members of this so-called *Vienna School* include Beratungsgruppe Neuwaldegg (Alexander Exner, Roswitha Königswieser), OSB (Rudolf Wimmer) and CONECTA.

Key concepts and terms of systems theory

Systems are conceived as sets of elements or sub-systems, which are formally or mentally distinguished and related with each other, constituting a complex whole. The quality of elements, their interaction patterns and relations define the specific features of a system. This leads to the following basic assumptions:

- All parts of a system are connected
- Small changes can have great consequences
- There are no unequivocal „cause-effect“ patterns
- Changes within systems take place continuously.

The characteristics of a system result from the specific inter-relationships of its parts. Furthermore, productivity and development of the parts are largely determined by their interconnectedness.

Recognising a system is only possible if it can be differentiated from a context. „System“ and „context“ are „constructions“ made by observers, thus there are no definite distinctions, but they depend on individual perceptions and the purpose of observation.

Organisations are prototypes of social systems, from a systemic standpoint they consist of:

- A variety of relations and connections (e.g. in a regional development organisation between staff, board, supporters and target groups).
- The descriptions of this variety which are produced within an organisation. Such descriptions can be pictures, stories, anecdotes, joint reflections, metaphors etc.

Organisations are **dynamic systems**, marked by their specific internal dynamics which they actively maintain. Organisational dynamics are essentially understood as social phenomena: Feelings, emotions and energies are connected in a "social space" to form the internal logic of a system, which largely determines the behaviour of individuals within the organisation. Organisations become dynamic by continuously **producing and processing contradictions and ambiguities**, which result from the various contacts with their environment. By the impulses from the processing of these contradictions the organisation keeps moving, and continuity and identity can only be achieved through activities.

Fundamental changes in perspective can be achieved in many cases just by **linking subsystems** operating at the same level, but with different tasks. The exchange of different views and a joint reconstruction of reality through dialogue can lead to new agreements on objectives or the exchange of services. *Both-and* patterns and multiple descriptions may replace *either-or* relations. Contradictions and ambiguities remain and the acceptance of differences stimulates learning and change processes. Normative thinking is replaced by an attitude of curiosity and questioning. Systems thinking requires **multiple perspectives**, without slipping into simple relativism or arbitrariness. An adequate picture of reality can only emerge by viewing it from multiple angles, and by using or adding different descriptions or explanations.

Social systems are **living systems**, which means they have a large repertoire ("variety" in cybernetic terms) of behaviour. This liveliness enables systems to remain flexible and to produce new solutions under changing circumstances. Social systems show considerable robustness in handling undesired interferences, they can ignore them or process them in a way which is meaningful for them. They have their own structures and rules, and through communication and decision making processes they produce an operational mode (logic) which is specific for them. It is these very processes which differentiate them from others and are decisive for their success.

Living systems have the capacity for **self-organisation**; they develop their own internal mechanisms of regulation and stabilisation (*autopoiesis*), which guide a system's

development capacities. From the outside living systems can only be influenced, if their internal logic and self-organising mechanisms are taken into account. In principle, external influence is only effective by modifying the operational context (via rules, vetos or physical changes) or by changing relations and communications with a given system. However, this means that external interventions must be regarded as relevant by the system which should be influenced. Thus they must be designed in a way that the message is understood by the “receiver”.

2.2 Management theory and -practice

Over the last decades, increasing dynamics and complexity of the environment (e.g. markets, competitors) have brought new challenges for enterprises. These changes have induced subsequent modifications in management concepts and practices, which can roughly be sub-divided into four phases:

- *Business Planning* (1945 – 1973): Initially there was a dominance of short-term planning of financial resources (budgeting, controlling) and optimising of processes, but since 1960 increasing capital intensity and competition required a longer-term perspective involving forecasts and multi-annual planning.
- *Strategic Planning* (1973 – 1980): The oil crisis has cast serious doubts on the usefulness of extrapolations and demonstrated the need to cope with discontinuities. The methods of strategic planning have spread widely, and at present they constitute the core of instruments used in local and regional development: SWOT analysis, context analysis and the deduction of goals and strategies via logical sequences or portfolio techniques (ANSOFF H.I. 1979, PORTER M.E. 1998).
- *Strategic Management* (from 1980 onwards): The speed of change since the early eighties has forced businesses to improve their capacities to adapt and to innovate. Particular emphasis is placed on „soft facts“. The „strategic fit“ between enterprises and their context is to be achieved through the co-ordination of all management areas (MINTZBERG H. 1979).
- *Evolutionary Management* (since 1990): The increasing complexity of enterprise – context relationships leads to a more holistic understanding of management. Managing means to form, steer and develop social systems, for which a set of innovative techniques for planning, organising and controlling are used, which are based on systems thinking and require continuous reflection and organisational learning (GOMEZ P., ZIMMERMANN T. 1997, PROBST G.J.B. 1987, SCHWANINGER M. 2001, SENGE P.M. e.a. 1994, ULRICH H., PROBST G.J.B. 1991).

2.3 Development co-operation

Living and working conditions in „Third World“ countries – in particular for poor and marginalised people – are increasingly precarious, unpredictable and chaotic. Promoting development under such conditions drastically revealed the weaknesses of one-dimensional, reductionist thinking. Many problems and failures in development aid can be attributed to inappropriate handling of complex relationships.

Working in an intercultural context has shown the limits and problems of external interventions. The use of expatriate „experts“, unfamiliar with local conditions, has frequently lead to unrealistic concepts and considerable cultural alienation from target groups.

As a consequence a number of approaches and methods have been developed since the seventies, which allow to deal better with complex situations, because the beneficiaries' perspectives and their varied points of view are systematically taken into account:

- **Social anthropology** has provided the notion of *exogenous and endogenous* representation, which has been operationalised in manifold ways.
- Approaches derived from **applied anthropology** (e.g. participatory observation, field work) were adapted and combined with action research methods (Kurt Lewin).
- On this basis **participatory methods** were developed that are oriented on dialogue and based on principles like simplicity and common visualisation (CHAMBERS R. 1997).

2.4 Psychotherapy

In the USA, several therapeutic directions have emerged based on Sigmund Freud's psychoanalysis, and notably hypnotherapy and systemic family therapy have turned out to become important predecessors for systemic consultancy.

Hypnotherapy was founded by Milton Erickson, a physician and psychologist, whose successful therapies and publications helped to re-establish the reputation of hypnosis (which had already been a recognized form of treatment in the 19th century). In his well-documented work he introduced techniques like the use of metaphors, paradoxical interventions (such as the prescription of symptoms), the linguistic patterns of trance work and the concept of establishing *rapport*. Hypnotherapy has provided decisive impulses for *solution-focused therapy* of Steve DeShazer and Insoo Kim Berg.

M. Erickson's acquaintance with the anthropologists Gregory Bateson and Margaret Mead introduced him to the circle of the founders of the Mental Research Institute in Palo Alto, Don Jackson and Virginia Satir, who were later joined by Paul Watzlawick, Carol and Stephen Lankton. Virginia Satir was probably the first therapist who regarded not individuals but the whole family as her client. From her concept Bert Hellinger picked up important elements for his constellation work and his **systemic-phenomenologist approach**. The founders of Neurolinguistic Programming (NLP), Richard Bandler and John Grinder, have used V. Satir's therapeutic questioning techniques in elaborating their *metamodel of language*. Gestalt therapist Fritz Perls, the first therapist having been studied and by the former, has introduced the systematic use of different cognitive positions for finding solutions.

Through his theory of archetypes, C.G. Jung has co-established the use of metaphors, and his psychological typology formed the basis for the so-called *Myers-Briggs-Types*, today the most widespread model for personality profiles. C.G Jung's idea of the collective unconscious has later on influenced Rupert Sheldrake's *hypothesis of formative causation* (better known under the name of **morphogenetic fields**). During the last years this concept has once again caught much attention due to its compatibility with B.Hellinger's phenomenological approach. It provides interesting ideas for a new theory of evolution: It states that once a form has been established, it facilitates the formation of similar forms - independently of differences in time and space. The same holds true for behaviour patterns, which R. Sheldrake calls „motoric fields“.

A large number of the US-based predecessors of today's systemic approach in therapy and counselling were political emigrants from Central Europe; only after 1945 this tradition was taken up again on their places of origin. Two centres for the development of systemic therapy must be highlighted in particular: The *Centro per lo Studio della Famiglia* in Milano (Maria

Selvini-Palazzoli, Don Boscolo and others) has introduced *circular dialogue and questioning techniques*. And the *Heidelberg School* (Helm Stierlin, Fritz Simon and others) has connected therapy with Niklas Luhmann's theory of social systems and thus established the **systemic-constructivist approach** in therapy and counselling.

2.5 On the transferability of systemic methods to regional development

The instruments presented in this work largely apply to small groups (families, teams) or relatively limited organisational systems (enterprises, institutions). It can thus be questioned whether they can be applied to large systems (e.g. regions) in a meaningful way. We believe that such a transfer is possible, because regions resemble smaller systems in many ways and show similar features, which means that they are also accessible for similar methods. The large number of people living or acting in a region is by itself not an insurmountable obstacle for similar approaches.

Of course, the applicability of each instrument for regional development work has to be tested case by case, because it can only be proven empirically, not theoretically. However, there are some arguments which show that methods, which have proven to be successful in organisational and business development for dealing with complex systems, can also be applied fruitfully in the context of regional development (apart from evident cases, where they are applied to work with institutions, development organisations, networks etc.).

There are basically four arguments which, at a first glance, seem to demonstrate that regions (here not understood as administrative units!) are fundamentally different from organisational systems, and these are often quoted against the transferability of instruments. But if one takes a closer look, these presumed differences do not hold valid:

- **„Regions have unclear, vague boundaries“:**
Yes, but this is not only true for regions, but also for enterprises or organisations. From a systemic perspective the boundary is always relative, drawn in the mind of an observer: For instance, in constellation work customers appear as indispensable parts of the enterprise system, but they do not figure in other representations e.g. organigrams.
- **„Regions do not have a power centre, they are somehow “headless“:**
From a systemic perspective also small systems are self-organising in the sense that formal power centres (e.g. board, managers) cannot exert complete control over a system to which they themselves belong. In regions the governing system is formed by key actors, who have access (the “key”) to or dispose of essential resources. But these actors rarely operate in a coordinated manner and their collaboration has rather an intuitive, unconscious character. One of the key tasks in regional development is to make the steering function of these key actors more conscious and rational.
- **„Being part of a region is neither a matter of fate (as in families) nor is it an act of choice (as in organisations)“:**
Regions are not fundamentally different from families and organisations, they rather show a mixture of their characteristics. On one hand, there are elements determined by fate: Someone who has lived long enough in a region, will be lastingly influenced (even if not living there any more). On the other hand, people can usually migrate without major hindrances and thus alter their “membership”. Last, but not least, regional actors do not even have to be present in a region to be part of them, because the essential question is whether they dispose of resources which are relevant for a region's development. That's why also higher level systems, e.g. national authorities and their representatives, appear

in a double role: They constitute at the same time enclosing (meta-systems) and enclosed (sub-systems) of a region.

- „Regions cannot be “managed” due to their size, the multitude of actors and the diversity of interests“:

The question is whether there is a measure for the manageability of systems, which can be derived from their number of elements. The assumption, that the difficulties in managing systems will increase with their complexity, is based on *Ashby’s law of variety*: „Only variety can absorb variety“. This means that „in order to keep a complex system under control, the governing system has to have a variety which equals the variety of the system to be steered.“ (SCHWANINGER G. 2001).

Thus we do not see any fundamental reason why regional actors cannot achieve a certain degree of rational steering, provided they succeed in establishing a collective leadership structure which on one hand fulfils normative - strategic tasks for the region, and on the other hand „is able to represent the essential qualities of the whole system at the higher level meta-system“ (BEER S. 1989).

However, as usual it depends on circumstance – and from the point of view of the authors this is determined by **five “R”-factors** which influence the quality of **regional governance**. It belongs to the essential tasks of regional development managers to take due account of these factors in their work:

- **Representation:** Beyond the size of small communities, not everybody can be involved to the same degree in decision-making processes. This means that the totality must be represented through a selection which is capable to “stand for the whole”. The selection has to take into account two aspects: First, the criteria for sub-dividing a system in order to determine representatives (e.g. age, profession, gender, income). Secondly the question, who makes the selection and who has the capacity and legitimacy to invite others to participate.
- **Relationship:** Considerable differences can occur with regard to how (much) representatives adhere to their whole (the region). Kind and extent of relatedness are determined by two components: Territorial ties, which are essentially formed through property rights respectively their use; and social ties to the “community”.
- **Resource access:** As has been stated above, it is fundamental to involve those representatives, who hold strategic positions with regard to relevant resources for the region’s viable future: Regional *key actors*.
- **Resonance:** Conscious and rational change is facilitated by the capacity of key actors to develop relationships fostering the emergence of collective intelligence in a double sense: Emotional intelligence, meaning a „climate of trust“, and cognitive intelligence, which can be regarded as the capacity to form a joint opinion, create a coherent vision and establish reliable agreements upon the rules for harmonising interests.
- **Recursivity:** Whereas the first four criteria concern the framework at a territorial level, this criterion stresses the importance of self-similar interaction patterns at different levels. Regions are networks of the meso – level and their steering capacity is linked to a high degree with the capacities of sub-ordinate (e.g. municipalities, enterprises) or superior (e.g. province, state, EU) organisational levels.

3. BIBLIOGRAPHY

ANSOFF H.I. 1979: Strategic Management. London.

BAUMFELD L., HUMMELBRUNNER R., LUKESCH R. 2002: Systemische Instrumente für die Regionalentwicklung. Study commissioned by the Austrian Federal Chancellery

BEER S. 1989: The Viable System Model: Its provenance, development, methodology and pathology. In: ESPERJO R., HARNDEN R. 1989: The Viable System Model: Interpretations and Applications of Stafford Beer's VSM. (John Wiley & Sons Ltd.)

CHAMBERS R. 1997: Whose Reality counts? Putting the first last. (ITDG) London.

DÖRNER D. 1989: Die Logik des Misslingens. Strategisches Denken in komplexen Situationen. (Rowohlt) Reinbek bei Hamburg.

FOERSTER H. v. 1970: Molecular Ethology, an Immodest Proposal for Semantic Clarification. In: UNGAR G. (ed.): Molecular Mechanisms and Learning. (Plenum Press) New York.

GOMEZ P., ZIMMERMANN T. 1997: Unternehmensorganisation: Profile, Dynamik, Methodik. (Campus) Frankfurt/Main, New York.

KÖNIGSWIESER R., LUTZ C. 1990: Das systemisch-evolutionäre Management. Neue Horizonte für Unternehmer. (Orac) Vienna.

MALIK F. 1984: Strategie des Managements komplexer Systeme. Ein Beitrag zur Management-Kybernetik evolutionärer Systeme. (Paul Haupt) Bern, Stuttgart

MINTZBERG H. 1979: The Structuring of Organisations. Eaglewood Cliffs.

OSSIMITZ G. 2000: Entwicklung systemischen Denkens. (Profil-Verlag) München.

PORTER M.E. 1998: Competitive Advantage. (Free Press) New York.

PROBST G.J.B. 1987: Selbst-Organisation, Ordnungsprozesse in sozialen Systemen aus ganzheitlicher Sicht. (Paul Parey) Berlin, Hamburg.

SCHWANINGER M. 2001: Intelligent Organisations: An Integrative Framework. In: Systems Research and Behavioural Science 18, p. 137-158.

SENGE P. 1990: The Fifth Discipline. (Doubleday-Currency) New York.

SENGE P., KLEINER A., ROBERTS C., ROSS R., SMITH B. 1994: The Fifth Discipline Fieldbook. (Doubleday-Currency) New York.

ULRICH H., PROBST G.J.B. 1991: Anleitung zum ganzheitlichen Denken und Handeln: Ein Brevier für Führungskräfte, (Paul Haupt) Bern, Stuttgart.

VESTER F. 1999: Die Kunst vernetzt zu denken – Ideen und Werkzeuge für einen neuen Umgang mit Komplexität. (DVA) Stuttgart.

B. OVERVIEW OF CATEGORIES AND INSTRUMENTS

According to the structure of the report, the following overview classifies the instruments in **two main groups**, which in turn are sub-divided into **13 categories**, each representing a thematic area and marked by a capital letter (A to M):

a) The categories A to C comprise those instruments and techniques, which represent **basic tools** of the systemic approach. They can be used or combined in manifold ways and are also employed in the applications presented below:

- A. Techniques for systemic dialogues
- B. Forms of systemic interventions
- C. Systemic Modelling

b) The group of categories D to M comprises **applied instruments** for various thematic areas, classified according to the aspects *perception*, *change* and *learning*.

Perception:
Understanding systems

- D. Techniques for Situation Analysis
- E. Context Analysis
- F. Strategic Territorial Assessment

Change:
Transforming systems

- G. Strategy Development
- H. Scenarios
- I. Integrated and Systemic Planning
- J. Process Management

Learning:
Understanding changes and changing perception

- K. Learning Systems
- L. Knowledge Management
- M. Monitoring and Evaluation

The **report** contains brief introductory texts for each category, which describe the theoretical and methodological background and enable a better understanding of the instruments' working modes and use. The selected **instruments** have a number code and are briefly described in a standardized 2-page format:

- Purpose or aim for which the instrument can be used
- Context of use
- Content and structure of the instrument
- Usefulness and applicability for regional development
- Recommended literature and web sites.

In this summary we present brief descriptions for each category and the associated instruments, each one including literature for further reading. A quick reference sheet is attached at the end, which is based on the assessment criteria used in the report and should facilitate the selection of appropriate instruments.

A: Techniques for Systemic Dialogue

A good dialogue is a means to foster collective intelligence. This marks the difference from a discussion or debate where standpoints are being juxtaposed and, if desired and possible, harmonised with each other. A well structured, meaningful dialogue is a gain for all individual participants *and* for the “group mind”. Contrarily to a debate it would not make sense to try and “win” a dialogue.

Systemic dialogue techniques are commonly used in therapeutic settings, but also in team building and organisation development. They are based on three essential assumptions:

- *Different observation positions make a difference*: Exposing oneself to different perspectives helps to overcome mental barriers or unilateral thinking and to find solutions and answers which are acceptable for all.
- *A system can be changed only by itself and not from outside*. A dialogue never aims at direct influence or persuasion, but rather at referential experiences which enable the partners to change their “mental maps”.
- *Language matters*: The purposive use of specific language patterns helps to understand the partner’s mental map “from within” and at the same time to overcome its limitations.

Instruments described:

A1: Systemic questioning

Here language patterns are used in an investigative way. A situation is regarded from different angles, until it is seen differently by those interviewed. The sessions are very strictly controlled by the interviewer (no discussions among the participants!). Questions are not only intended to obtain information, but can also change perception or generate new information and knowledge

SIMON F.B., RECH-SIMON C. 1999: Zirkuläres Fragen. Carl-Auer-Verlag, Heidelberg.

A2: Circular Dialogues

Guided by external facilitators, participants have the opportunity to perceive a given theme from at least three perspectives (A, B and C). The sequence is formalised and allows the juxtaposition and analysis of the perception of oneself and of the other.

BAUMFELD L. 1999: Projektorientiertes Arbeiten in komplexen Situationen. Self-published, ÖAR Regionalberatung GmbH, Wien. www.oear.co.at.

A3: Reframing

This technique is trance-induced, circumventing the conscious control of thoughts and opening minds for new tracks towards improvement and learning. A past event is put in a new frame, either by changing its context or its meaning, so it can be viewed differently.

WATZLAWICK P., WEAKLAND J.H., FISCH R. 1974: Change. Principles of Problem Formation and Resolution. (W. W. Norton) New York.

A4: Solution focus

This is a light and elegant, almost conversational, but very effective technique. Problems are “ignored” by directly exploring solutions in the past, presence and future. The self-organisation (“self-help”) capacities of the interviewees are stimulated in a way that enables them to overcome a state, which they have regarded as problematic before

FUHRMAN B., AHOLA T. 1992: Solution Talk. (W.W. Norton) New York.

B: Forms of Systemic interventions

Systemic interventions are interferences in a given system, based upon hypotheses about their functional patterns. Their aim is to widen the margin of action leading to improved viability by influencing its functional patterns. Systemic interventions can serve as governance tools for complex systems and essentially require five steps:

- Observing and collecting information
- Formulating hypotheses
- Planning intervention(s)
- Intervening (carrying out actions/communications)
- Observing and collecting information (completing the cycle)

In the phase of observing and formulating hypotheses, it is essential not to focus on the particularities of actors, but on interrelationships and interaction patterns between the actors. Hypotheses should be future oriented and confer a positive expectation. In the planning phase, the architecture, design and techniques of an intervention are elaborated. On each of these levels the dimension of time, space, social relations and content has to be considered.

Systemic interventions have been transferred from therapeutic contexts to the realm of organisation and enterprise development. They focus on a number of critical points:

- *Mental maps* of persons or organisations, which represent the way how they see their system and its context.
- *System dynamics*: In an interlinked system every action also has effects for the actor itself. Thus linear cause-effect patterns are replaced by reciprocal “circular” interaction patterns (which are often obtained by inter-connecting linear views of individual actors).
- *Boundaries*: They both disconnect and connect systems with their environment, and are essential for determining identity and coherence.

Instruments described:

B1: Tetralemma

This model structures available behaviour options: either, or, neither-nor, both–and. This way a system’s internal dynamics can be symbolised and new insights gained. It is particularly helpful for overcoming rigid “either-or” thinking and avoiding one-sided views in ambivalent situations

VARGA von KIBÉD M., SPARRER I. 2000: Ganz im Gegenteil – Tetralemmaarbeit und andere Grundformen Systemischer Strukturaufstellungen. (Carl Auer) Heidelberg.

B2: Constellation work

This technique was originally developed in family therapy and helps to reveal or transform the dynamics at work in systems, which the present actors are not aware of. Situations are modelled in space through the use of representatives, and their feelings and actions are used to find new constellations which represent viable alternatives or solutions

HELLINGER B., WEBER G., BEAUMONT H. 1998: Love's Hidden Symmetry. What Makes Love Work in Relationships. (Zeig, Tucker & Theisen).

B3: Large group interventions

They should facilitate large scale change processes by gathering diverse representatives of a system simultaneously in the same room and working with them in an interactive manner. Techniques for this are: Open Space, Future Search and Real Time Strategic Change

As an example: OWEN H. 1997: Open Space Technology. A User's Guide. (Berrett-Koehler).

C: Systemic Modelling

Representing and communicating the functional patterns of systems can be done either by oral description or by visual modelling. Visual modelling is a more powerful means for reducing the complexity of information about the system by emphasising their main features. Visual models can serve to explain how a system actually works and which interactions are responsible for e.g. stabilisation, reproduction or the production of outputs. Inter-relationships can be depicted by matrices, when dealing with quantitative information. However, for visualising interlinked cause-effect-chains graphic representations are much more appropriate. They go beyond the limitations of linear thinking and allow to represent circular relationships, where cause and effect can no longer be clearly distinguished.

Graphic representations and models may focus on

- the *context of a system*, namely the exchanges and connections between a system and its environment (internal characteristics of the system are treated as a “black box”);
- the *type of effects* caused by the system’s responses to external stimuli;
- the *system’s structure*: The question is, which and how many critical elements and their interrelationships actually determine the system’s main functional operations.

Cybernetic science, which deals with recognising and governing non-linear processes, has developed a language based upon cyclic relationships. Complex processes can be modelled as combinations of two basic interaction patterns: Affirmative (increase) or counter-affirmative (decrease) relations, which can be linked together in order to form a closed *feed-back*.

Instruments described:

C1 Causal loop diagrams

This is the basic technique for qualitative modelling. The elements of a system are linked to form closed feed-back loops, which represent their causal relations (both quantitative and qualitative entities can be used, even alongside). Depending on the total of positive and negative relations, they either form reinforcing (“positive”) or balancing (“negative”) feedback cycles. In-depth analysis of these feed-back cycles provides important clues about a system’s internal dynamic and behaviour

O’CONNOR J., McDERMOTT I. 1997: The art of systems thinking. Essential skills for creativity and problem solving. (Thorsons, an Imprint of HarperCollinsPublishers) London.

C2 Stock-flow diagrams

They are the graphic representations for quantitative modelling and are extensively used in computer-aided *systems dynamics* models. They classify the elements according to their cybernetic qualities and distinguish between stocks (describing a state) and flows (expressing change). They only operative with quantitative entities and illustrate the dynamic behaviour of a system via simulations or forecasts of future states

see notably the publications of FORRESTER J.W., for instance 1969: Urban Dynamics. (The MIT Press) Massachusetts.

C3 Viable System Model (VSM)

This combination of context and structure representation has been developed in management cybernetics. It describes those relations and feed-backs which are necessary to maintain a system viable in a given environment and regroups them in five essential subsystems, which are responsible for operative, strategic and normative management tasks

BEER S. 1979: The Heart of Enterprise. (Wiley) Chichester.

D: Techniques for Situation Analysis

Situation analysis helps to understand how a system works, it is the first step of a problem solving cycle. Many of the instruments used nowadays in regional development are derived from strategic planning. They focus on strengths and weaknesses, relying on strategic success factors, put in relation to the context conditions (opportunities, threats). However, they focus solely on detail complexity and they represent the various elements in a rather static and isolated form, which makes it difficult to understand a system's dynamic complexity (but it is also possible to introduce interrelations in SWOT analysis).

A sound situation analysis should improve the understanding of relevant interrelationships and processes. Three different perspectives can be chosen from:

- *System orientation*: A system is clearly distinguished from its context and modelled in line with a specific purpose. This kind of models can relate to the effect of the system upon its environment (e.g. input-output models), to the internal structures and processes (e.g. organigrams or flow charts), or to the factors of influence (e.g. context analysis).
- *Cause orientation*: Phenomena are registered, categorised and put in relation to system elements. In a next step the phenomena and elements are connected to formulate plausible hypotheses upon cause-effect chains determining the system's behaviour.
- *Solution orientation*: The investigative look is directed towards possibilities to influence the system's behaviour, distinguishing between functional (what shall be achieved?) and instrumental analysis (how and by which means can a desirable state be achieved?).

Instruments described:

D1 Systemic problem analysis

This approach is based on insights of systemic communication theory whereby problems are regarded as social "constructions". It consists of a set of rules for identifying mechanisms that are responsible for the problem generation. Before solutions are considered, the positive functions of problems ("the good in the bad") and prior attempts to solve them are analysed.

SIMON F. 1995: Die andere Seite der Gesundheit – Ansätze einer systemischen Krankheits- und Therapientheorie. (Carl-Auer-Systeme) Heidelberg.

D2 Linked problem analysis

This technique uses causal loop diagrams to connect a limited number of key factors of influence in order to understand the prevailing dynamics and to find the right point of intervention in order to interrupt patterns which create or maintain problems

VESTER F. 1984: Neuland des Denkens – vom technokratischen zum kybernetischen Zeitalter. (dtv) München.

D3 Process analysis

Extensively used in organisation development, this method links individual tasks to form a value adding process. The analysis focuses on linkages and the quality of relations, which can bring new insights, e.g. when viewing the entire process from a client's perspective.

BUCHNER D., HOFMANN U., MAGNUS S. 1999: Prozess-Power. (Gabler).

D4 Appreciative Inquiry

This technique is strongly solution oriented and is based on the appreciation of past experience and success, designed in four steps (discover, dream, design, deliver). It is very effective because positive energies are cumulated, and it can be applied in a variety of contexts, from small teams to large groups.

COPERRIDER D.L. 1999: Appreciative Inquiry. (Berrett-Koehler) San Francisco.

E: Context analysis

Systems are constituted by boundaries which differentiate them from their context. In socio-cultural systems boundaries are made by decisions; e.g. enterprises constitute their boundaries by the decision “make or buy”. A social system can only survive if it produces “value” (in the largest sense) for its subsystems and for its context. Therefore context analysis is an essential element in today’s strategic management. Basically it consists of three tasks:

- *Sensibilisation* for the significance of the context (e.g. business partners, customers, suppliers, competitors);
- Identification of those segments of the contexts which are *relevant* for the system;
- Sensing the *opportunities and threats* represented by the context.

The instruments E1 and E2 focus on an enterprise, organisation or network and the relationships within their sectoral or territorial environments. In regional development, it is appropriate to shift the level of observation to the territory itself. This is the underlying concept of many instruments for strategic area assessment, dealt with in the next section (F).

(Net)Working for regional development requires an approach of “multiple personality”. The regional government, development association or agency has to see the forest *and* the trees; it is part of the system, and its task is to co-ordinate all relevant (public or private) partners in order to create added value for the whole region. But although being part, it acts on behalf of the whole region, thus representing the whole. At the same time, there are administrations and political organisations which also have a similar ambition to represent the whole – from their individual perspective. The excellence of regional development agents expresses itself in the ability to appear in multiple roles at the same time, never trying to replace other actors in their specific roles.

Instruments described:

E1 Value Net

The “stakeholder approach” focuses on the interests of relevant actors: It comprises the four steps: *scanning* (identification of stakeholders), *monitoring* (identification of important trends), *forecasting* (anticipation of relevant changes in the context) and *assessment* (interpretation of results and conclusion for action). The “value net” can be used to place relevant partners according to their function as *suppliers*, *customers*, *complementors* and *competitors*, taking into account that each partner can play more than one role in the “game” of adding value

NALEBUFF B.J., BRANDENBURGER A.M. 1996: Co-opetition. (HarperCollinsBusiness) London.

E2 System Analysis

This tool has originally been designed for analysing interorganisational systems (e.g. clusters, networks), The relevant elements of a system’s context are regrouped in five areas: demand, competition, supply and support, R & D, political/administrative environment. The analysis is done via activating interviews and allows to identify the basic structures and mechanisms of a system. The results are regrouped in system charts which show the key elements and their internal and external relations

BRATL H. / TRIPPL M., 2001: Systemische Entwicklung regionaler Wirtschaften, (Eigenverlag invent Ges.m.b.H) Wien.

F: Strategic area assessment

Instruments for strategic area assessment are embodying the idea of the uniqueness of territories and regions, supposing that the essential resources for regional development are already there – either activated or sleeping. This is the basic idea behind the concept of endogenous regional development, which arose in the seventies, promoted by regional movements and local development initiatives, and since then has become a mainstream concept, sometimes labelled with synonyms such as “integrated” or “sustainable” development. It would be more precise to say that the wording has been mainstreamed, but regional policies sometimes do not congruently follow the espoused approach.

Strategic area assessments are based on the following methodological assumptions:

- The quality of the diagnosis largely depends on the quality of the distinctions initially made to structure the field of observation. Each segment of the whole should inherently represent aspects of the whole instead of constructing fragmented and isolated parts.
- Real change already starts with a change in perception. Actors should be involved in both acting and reflecting through all stages of the process.
- Pictures tell more than a thousand words: Shared vision processes and public dialogue should be supported by (photo)graphical means.

Instruments described:

F1 Innovation compass

It comprises nine components of territorial development: *Environment, population, identities, governance, competencies, activities, finance, markets and images*. The specific advantage of this tool lies in the possibility to derive promising development strategies from the shape of the cobweb diagram which results from the rating of the nine components done during an interactive workshop with local actors

LUKESCH R. 2002: The innovation compass: An interactive tool for strategic area assessment. Vol. 23 of *Amazonia 21 publication series*. Available at oeaar@oeaar.co.at.

F2 Assessment of the territorial capital

It is a method directly derived from the LEADER experiences. It shaped the mould from which the tools described before (F1) and after (F3) have been derived. It comprises eight key areas of development, which are assessed and rated by local actors

AEIDL 2001: LEADER – From the initiative to the method. CD-ROM, Bruxelles (www.rural-europe.aeidl.be).

F3 Bottleneck analysis

It is also used in the context of rural development and comprises eight components (bundles of “soft” and “hard” factors), which are considered essential for the development of the area. The analysis is done in interactive workshops with local actors who identify minimum thresholds for those components which can act as development “bottlenecks”

GEISSENDÖRFER M., SEIBERT O. 2000: Erarbeitung einer Methodik zur Beurteilung des lokalen und regionalen Innovationsbedarfs zur praxisgerechten Anwendung in Form eines Beraterleitfadens. Triesdorf.

F4 Participatory local appraisal

This “family” of area assessment tools intensely integrates diagnosis and action. Originally elaborated in the context of developing countries, they have also been applied in industrialised countries, e.g. in village renewal processes. They are based on simple, participatory techniques for collecting and representing data and allow to understand complex realities from the point of view of those directly concerned.

CHAMBERS R. 1997: *Whose Reality counts? Putting the first last*. (ITDG) London.

G: Strategy development

Strategy development means to empower the human capital of an organisation or enterprise to learn how to deal with the high complexity of its environment and to increase the own ability to learn with respect to the management of performance, decision making and communication processes. A process of strategy development takes some weeks or months, containing several feedback loops which ensure the joint reflection and continuous improvement of the learning process itself.

In complex environments such as regions, the focus shifts from prescriptive strategies towards the process of strategy making, from expert-based approaches towards more participatory approaches, and from strategic planning to dynamic approaches which are more adaptive to unexpected changes. Apart from purposive strategies (whether they are accomplished or not), it is also necessary to take into account so-called *emergent* strategies, which root in the informal problem solving routines of an organisation.

Purposive strategies consist of two elements:

- The *vision*, e.g. as the outcome of a strategic vision building process.
- The *positioning*, which is translated into objectives, action plans and appropriate indicators for monitoring.

Instruments described:

G1 Strategic Vision

A strategic vision consists of three parts: The guiding principles and values, the mission and the aims, which an organisation or region sets itself within a certain time frame. This tool is very appropriate in situations when a new group of actors comes together, when new horizons should be opened for the common future, or when an organisation/region wants to adapt their own vision to that of an enclosing "meta-system" (e.g. national level) etc.

SENGE P., KLEINER A., ROBERTS C., ROSS R., SMITH B. 1994: The Fifth Discipline Fieldbook. (Doubleday-Currency) New York.

G2 Balanced Scorecard

Introduced in the early 1990s, BSCC has become a standard instrument in accompanying strategic development in business and, to an increasing degree, in organisations in general. It is based on four types of indicators for measuring performance: *Customers/markets, internal resources, internal processes and learning/quality improvement*. Its introduction in regional development contexts is imminent.

KAPLAN R., NORTON D. 1992: The Balanced Scorecard – Measures that Drive Business Performance. Harvard Business Reviews 70/1.

G3 Dynamic strategy development

This is more an attitude which can be observed in businesses operating in highly dynamic contexts, than an instrument proper. Strategies are considered as living systems which cannot be designed beforehand but gradually emerge from individual and loosely connected actions. Dynamic strategies continuously unravel and integrate new facts, and they also make deliberate use of self-organisation forces at work in social systems.

MINTZBERG H. 1998: Strategy Safari. (Simon & Schuster) New York.

H: Scenarios

The power of scenarios was first demonstrated by the Royal Dutch/Shell company during the oil crisis of 1973, for which it turned out to be well prepared due to the scenario thinking having been introduced by Pierre Wack and his team right before that time. The scenario technique combines a number of instruments for diagnosis and planning in a four-stage process:

- *Definition of the scenario field* and description of influence factors;
- *Analysis of the interlinkages* and identification of the key factors in the scenario field;
- *Description of more than one development paths* of each key factor;
- *Analysis of the plausibility of future projections* and description of consistent, contradiction-free scenarios.

Scenarios are creative images of possible futures. Apart from being powerful instruments for long term planning under conditions of high uncertainty, they are also a means to structure a dialogue in a way that opens the minds of all dialogue participants. They can be designed with the help of computer-aided simulation techniques (e.g. Jay W. Forrester's *systems dynamics*), or as an interactive process, during which local actors exchange and eventually change their views upon their common future.

In a less scientific and more interactive format, Robert Jungk's *future workshop* equally builds on scenario thinking. It comprises three stages: *Criticism, vision building* and *implementation*. This setting can also be extended and adapted to large groups, e.g. in Marvin Weisbord's *Future Search Conferences*. Due to their participatory character, future workshops are frequently integrated into local agenda 21 processes.

Instruments described:

H1 Scenario technique

Scenarios help to be prepared for the most probable future and to avoid risks arising from possible, but undesirable developments. Looking into the distant future is not a common attitude, but can be very helpful to take good decisions *now*.

VAN DER HEIJDEN K. 1985: Scenarios - The Art of Strategic Conversation. (Wiley) New York.

H2 Future images and future stories

This tool uses elements of the scenario technique to facilitate a dialogue within a municipality or region. With the help of desktop publishing soft ware, photographs are manipulated to show local actors what their territory would look like in the future, if current trends continue.

HIESS H. 2000: Cultural Landscape 2020 – Future Images and Future Stories. In: HÄBERLI R. et alii 2000: Proceedings of the International Transdisciplinarity 2000 Conference "*Transdisciplinarity: Joint Problem Solving among Science, Technology and Society*", Workbook 1, p. 416-419. 27/2 – 1/3 2000, Zürich).

H3 Simulations and games

They combine computer-aided models with role play and are often used in training contexts. They facilitate interactive learning and are very effective in building up competency for understanding and handling complex situations. Standardized soft-ware has greatly reduced the costs and preparation which is required for their use.

HÖGSDAL B. 1996: Planspiele, Manager-Seminare. (Gerhard May Verlags-GmbH) Bonn.

H4 The Forum Theatre

Participants play a critical situation over and over again, with changing "actors", until they find a satisfying and sustainable solution. Thus choreographic and dramatic elements are used in identifying future states and scenarios.

BOAL A. 1979: The Theatre of the Oppressed. (Urizen Books) New York.

I: Integrated and systemic planning

Planning under conditions of uncertainty and a dynamic environment requires a flexible approach (“iterative planning”), regarding plans as *hypotheses* about future developments. Their usefulness needs to be regularly reviewed in the light of experiences and/or context changes. Thus the focus of attention needs to shift away from “planning” to “governance”, and planning and implementation are seen as parallel, not sequential processes.

This type of planning is a highly communicative process and plans serve as communication tools which need to be simple and visualised in order to be well understood by the relevant public. Moreover they should not be too deterministic, prescribing a path to be followed, but rather remain flexible in order to offer options or alternatives if conditions change.

Regional development planning also means multi-layered planning as expressed by a hierarchy of plans. Each organisational or territorial level represents the operational aspect of the next higher one, and at the same time provides the normative and strategic frame for the next lower one. This approach corresponds to the principles of decentralisation and subsidiarity.

Instruments described:

I1 Milestone Planning

This method does not orient actions towards fixed objectives, but rather on intermediary targets (“milestones”) which are closer and easier to identify. Furthermore, different options to reach a certain result can be kept open as far as possible, and the chosen path is broken down into phases or determined as late as possible. This ensures flexibility and helps to stay operational even if final objectives are unclear.

DÖRNER D. 1989: Die Logik des Misslingens. Strategisches Denken in komplexen Situationen. (Rowohlt) Reinbek bei Hamburg.

I2 Conditional Planning

Assumptions and conditions for implementation are integrated in the plan. This prevents mechanistic implementation of plans regardless to context changes. It also facilitates review processes and the development of alternative routes, if necessary. - DÖRNER D. 1989 *ibid*.

I3 Boundary Planning

This approach sets the conditions for successful implementation in negative terms: What needs to be avoided (instead of specifying what should be achieved)? Thus the boundaries between desired and undesired behaviour or actions can effectively be outlined, which provides coherence, but leaves room for creativity and autonomous action of partners.

SIMON F. and CONECTA Group 1998: Radikale Marktwirtschaft – Grundlagen des systemischen Managements. (Carl-Auer) Heidelberg.

I4 Territorial Charter

This instrument has been developed in France and integrates spatial development and regional planning in a single format. It strongly relies on maps and other means of visualisation. It is well suited for addressing the various challenges involved in territorial planning in an integrated manner and results in a jointly elaborated agreement or charter.

GORGEU Y., JENKINS C. 1997: La Charte de Territoire. Mairie-Conseils et Fédération des Parcs Naturels Régionaux de France, Paris.

I5 Local and Regional Agenda 21 Processes

This concept for implementing the principles of sustainable development is a highly participatory process which create new links between public authorities and private actors. It is also integrative, as economic, environmental and social issues are dealt with jointly.

ICLEI 1996: Local Agenda 21 Planning Guide.

J: Process Management

A process is a sequence of logically interrelated activities, carried out within limited time and according to specific rules. In a value-adding process, one can distinguish

- *primary processes*, directly related to value adding;
- *secondary (support) processes*, representing all the logistical and administrative operations which make the primary processes possible;
- *tertiary (enabling) processes*, representing leadership tasks such as human resource development, controlling and shaping visions and strategies.

In contrast to industrial processes, processes in regional development are open-ended, whose results are not pre-established in advance, and make heavy use of different types of networks (e.g. strategic, regional, project or political networks).

In accordance with the need to integrate different interests and particular activities, appropriate work formats have to be designed: Individual work (internal staff or external experts), individual or group interviews for information gathering, thematic or geographic teams, large groups or sounding boards (for feedback and reflection exercises) etc.

Instruments described:

J1: Context steering

These are indirect forms of action which aim at creating environments in which desired outcomes are likely to emerge. Context steering is a key element of multi-level governance, notably negotiating and decision-making processes involving relatively autonomous actors.

WILLKE H. 1995: Systemtheorie II. (G. Fischer) Stuttgart-Jena.

J2: Network steering

Networks are very useful for managing the interaction of social systems. Their effective steering implies the following core tasks: *Negotiation and persuasion; communication and learning; co-operation; trust; self-obligation; accountability and durable relationships.*

CASTELLS M: 1996: The Rise of the Network Society. (Blackwell) Oxford and Malden (MA).

J3: Design of micro-processes

This tool is based on a time chart and helps to visualise the basic patterns of any micro-process: Core tasks, required relations or flows and desirable involvement of actors, e.g. promoters, decision makers and others concerned.

BAUMFELD L. 2001: Abläufe bildhaft gestalten. (Manuscript ÖAR Regionalberatung).

J4: Process oriented project design

Such project designs operationalise six main principles: *Customer orientation; shaping of transformation processes; a systemic-holistic approach to project management; functional planning and management; continuous quality improvement.*

MAYRSHOFER D., KRÖGER H.A. 1999: Prozesskompetenz in der Projektarbeit, (Windmühle).

J5: Attractors

Attractors (a term derived from chaos theory) represent typical and repeated behaviour patterns. Since organisations rely on a limited number of possible attractor states, they can be used to influence change (i.e. the shift from one attractor state into another) with relatively little effort. This is particularly promising in dynamic and unpredictable environments.

EOYANG G.H. 1997: Coping with Chaos: Seven simple tools. Lagumo/Minnesota.

J6: Fractals

All organisations are fractal, i.e. self-similar at all organisational levels. Networks or organisations function best if their subsystems are connected with each other and to the greater whole in similar ways. That is the core of interface management.

EOYANG G.H. 1997 *ibid.*

K: Learning Systems

Learning means acquiring knowledge and skills. To perceive knowledge as a process, is the first step towards a systemic understanding of learning. The second step is to perceive learning as a multilevel process:

- *Adaptive learning* constitutes the first learning loop. Herein the system learns to adapt to changing environment conditions. But under conditions of permanent, dynamic change, this kind of learning is no longer sufficient.
- *Generative learning*, also called double loop or deuterio-learning, does not only adapt behaviour, but changes the ways how we perceive and act, i.e. the structural conditions of behaviour.
- *Evolutionary learning* would mean a deep transformation of the identity characteristics which determine our ways to perceive, to act and to learn.

Although the idea of *learning regions* is still not sufficiently conceptualised, their general features are considered to be: a *common vision* shared by the relevant actors; a *spirit of co-operation* among public and private actors; each actor focusing on the own *core competencies*; a redundant number of *networks* integrating all interested actors; an intense *communication flow* toward the internal and external public; *openness* to use endogenous resources *and* external opportunities.

Instruments described:

K1: Diagnosis of learning organisations

Organisational intelligence can be assessed through eleven aspects: *Strategy building as a learning process; free flow of information; formative controlling system; internal exchanges; flexible remuneration; structures fostering qualification; strategic observation of the environment; early sensing of changes; inter-organisational learning; appropriate climate of learning; learning opportunities for all.* These aspects can be diagnosed in large group conferences. After the diagnosis the actors define internal projects to achieve excellence.

PEDLER M., BURGOYNE J. G., BOYDELL T. 1996: The learning company. (McGraw-Hill) Maidenhead.

K2: Action Learning Programme

The ALP is a possible means to combine individual and team learning with organisational learning. It comprises five steps: *Orientation and preparation, the start-up conference, the creation of action learning groups, the setting-up of dialogue groups* (with suppliers, customers, sponsors etc.) *and the final conference*, where the achievements are discussed.

REVANS, R.W., 1980, Action Learning. (Blond & Brigg) London.

K3: Team learning

Systemic instruments for regional development aim at generative learning at individual and collective levels. Team learning links individual learning to the learning organisation. This requires appropriate techniques, such as the *dialogue*, characterised by the key elements *invitation, intensive listening, self-observation* and the *suspension of one's own assumptions*. Another technique is the *qualified discussion*, balancing advocacy and inquiry and gradually constructing a shared meaning among participants.

SENGE P., KLEINER A., ROBERTS C., ROSS R., SMITH B. 1994: The Fifth Discipline Fieldbook. (Doubleday-Currency) New York.

K4: Competency development

Its aim is to identify the core competencies of actors, i.e. resources, capabilities and processes which are the basis for sustainable success. Their wise use and development will ensure the long-term competitiveness of the respective system (enterprise or region) and can be used in identifying suitable strategies or organisational structures.

PRALAHAD C., HAMEL G. 1990: The core competence of the corporation. Harvard Business Review, May/June p. 79-91.

L: Knowledge management

Knowledge is generally referred to as *the* productivity factor of the information age. The growth of knowledge, in contrast to other resources, seems to be infinite because of its immaterial character. Knowledge management is one of the core processes in regional development. It mainly consists in reinforcing a region's human capital, as well as the relational capital through network co-ordination. Good management depends on the capacity to sort out relevant information, which should not be confused with data. Data are representations of numbers, sets or variables. They only become information when linked to a particular context capable of producing meaning. And finally information turns into knowledge, if it is put in relation to a significant experience or the rationale of a system.

We can distinguish implicit and explicit knowledge. They are interlinked in a "knowledge spiral" (NONAKA I., TAKEUCHI H. 1995: *The knowledge-creating company*. Oxford University Press):

- *1st step (Socialisation)*: Individuals acquire implicit knowledge through observation, imitation and communication;
- *2nd step (Articulation)*: Implicit knowledge is transformed into explicit knowledge;
- *3rd step (Combination)*: Explicit knowledge gets codified and is combined with other existing knowledge;
- *4th step (Internalisation)*: Knowledge is integrated into the capital stock of implicit competencies.

Good knowledge management depends on the "intelligence of interaction patterns". Appropriate tools should

- foster redundancies instead of reducing them;
- provide a "conceptual umbrella" over the common perspectives about the future;
- set qualitative criteria for valuing new knowledge;
- prepare the ground for self-organised subsystems, in which new knowledge can grow;
- develop an information system for registering and accessing explicit knowledge;

The last aspect is often overrated at the expense of the aspect of human communication. Integrated models of knowledge management comprise *technology-oriented, people-centred* and *systemic approaches*.

The knowledge base in "learning regions" is constituted by the following three elements:

- The *human capital* of a region, which can be considered as a software which manifests itself in acquired skills and capabilities, knowledge and competencies, but also in organisational routines, cultural habits, personal attitudes and world views;
- The *infrastructure* and organisational settings for the production, processing and dissemination of knowledge;
- The ways in which knowledge is disseminated, made accessible or utilised.

Instruments described:

L1: Instruments for knowledge management

During the last years a variety of instruments have been developed, which are summarised under the following headings, representing different aspects of knowledge management:

- Perceiving and mapping implicit and explicit knowledge;
- Building and embedding knowledge (in individuals or teams, technically or culturally);
- Distributing knowledge by supporting, mentoring, transmitting and diffusing it;
- Using knowledge by creating incentives and dismantling barriers;
- Channelling knowledge by sorting out relevant information;
- Valuing knowledge according to its usefulness.

WILLKE H. 1998: *Systemisches Wissensmanagement*, (Lucius & Lucius).

M: Monitoring and Evaluation

Monitoring systems provide information for management purposes and usually rely heavily on (quantitative) indicators. But in complex situations, it will be necessary to shift from monitoring of indicators to monitoring of processes, from expert-based to participatory approaches and from management information to tailor-made decision support systems.

Evaluation is frequently seen (and introduced) as external control and obligation instead of a joint learning opportunity. However, constructive learning only takes place if the evaluation is kept separated from auditing or control activities. The following pre-requisites derived from system thinking should be taken into account:

- *Dialogue orientation*: Learning has to take place *within* the evaluated system;
- *Integration of different perspectives*: Internal reflection and external views are combined;
- *Focus on utility*: Intended use(r)s have to be identified and their specific information need to be addressed;
- *Iterative process*: Evaluations need to be designed as successive loops of reflection.

Instruments described:

M1 Orientor system

This system, developed by Hartmut Bossel, is to date the most complete consistent indicator model (for sustainable development). It can serve as an example for an interlinked set of indicators, capable of showing crucial relations in complex systems

BOSEL H. 1997: Deriving indicators of sustainable development. In: Environmental Modeling and Assessment (1996), p. 193-218. (Baltzer Science Publishers BV).

M2 “Most Significant Changes” Monitoring

This approach shows that participatory monitoring even works without using pre-defined indicators. It is a structured process for widespread, continuous observation of the most significant internal and external changes with regard to a project or programme. The observations are reported and validated interactively across several hierarchic levels.

DAVIES R. 1998: An evolutionary approach to facilitating organisational learning. In: Development as Process. (Routledge/ODI) London.

M3 SEPO frame (success/failure/potential/obstacle)

This is a simple and well experimented tool for self-evaluation, which has a time (past/future) and a content dimension (positive/negative). It is well suited for participatory processes and can easily incorporate additional dimensions e.g. internal or external causes.

ZIMMERMANN A., ENGLER M. 1996: Prozessmonitoring – Eine Arbeitshilfe für ProjektmitarbeiterInnen. (GTZ/GATE) Eschborn.

M4 Outcome Mapping

This tool kit was originally designed to assess development aid programs, which essentially reach their objectives in an indirect manner, e.g. via partners. The focus is not on impact, but on outcome, in particular on behavioural changes of partners or target groups.

EARL S., CARDEN F., SMUTYLO T. 2001: Outcome Mapping. Building Learning and Reflection into Development Programs, (International Development Research Centre/IDR) Ottawa.

M5 Systemic Evaluation Framework

This instrument serves to structure the object of an evaluation as a system with constitutive elements and relationships. Results and impacts are not treated as isolated phenomena, but put in relation to internal and external factors. Thus it serves to avoid “context-stripping” in evaluations and to draw conclusions which are relevant for improvements.

HUMMELBRUNNER R. 2000: A systemic approach to evaluation, Paper presented to the European Evaluation Society.

QUICK REFERENCE

In order to facilitate the selection of appropriate instruments, all those which are categorised under “applications” are briefly validated according to the following criteria:

- Investment in resources – time and cost: high (€ € €), medium (€ €), low (€)
- Need for external support : high (†), medium (††), low (†††)
- Suitability for phases in a program cycle (A = Analysis, P= Planning, I= Implementation, M = Monitoring & Evaluation)
- Degree of use in regional development (+++ much use, ++ some use, + hardly/not used)

Nr.	Instrument	Resources required	External Support	Suited for Phases	Degree of use
Perception : Understanding systems					
D1	Systemic Problem Analysis	€		A	++
D2	Linked Problem Analysis	€€	†	A	++
D3	Process Analysis	€		A, P	++
D4	Appreciative Inquiry	€	†	A, P	+
E1	Value Net	€		A, P, M	+
E2	Systems Analysis	€€	†	A, P	++
F1	Innovation Compass	€		A, P	++
F2	Assessment of Territorial Capital	€		A, M	+
F3	Bottleneck Analysis	€		A	++
F4	Participatory Local Appraisal (PLA)	€€		M	++
Change: Transforming systems					
G1	Strategic Vision	€		A, P	++
G2	Balanced Scorecard (BSC)	€€	†	A, P	++
G3	Dynamic Strategy Development	€€		A, P, I	+
H1	Scenario Technique	€€€	†	A, P	+++
H2	Future stories / images	€€	†	A, P	+++
H3	Simulations and plan games	€€	†	A, P	+
H4	Forum Theatre	€€	†	A, I, M	+
I1	Milestone Planning	€	†	P	++
I2	Conditional Planning	€	†	P	+
I3	Boundary Planning	€€	†	P	+
I4	Territorial Charter	€€	†	A, P, I, M	++
I5	Local / Regional Agenda 21 Processes	€€	†	A, P, I, M	+++
J1	Context Steering	€€	†	P, I, M	+++
J2	Network Steering	€€	†	P, I, M	+++
J3	Design of Micro-processes	€		P, I	+++
J4	Process oriented project design	€		P, I	+++
J5	Attractors	€		P, I, M	+
J6	Fractals	€		A, P, I, M	+
Learning: Understanding changes and changing perceptions					
K1	Diagnosis of learning organisations	€		A, P	+
K2	Action Learning Programme (ALP)	€€€	†	A, P, I, M	+
K3	Team - Learning	€€		A, P, I, M	++
K4	Competency Development	€		A, P, I	++
L1	Instruments for knowledge management	€€	†	A, P, I	+
M1	Orienteer System	€€		M	+
M2	„Most significant changes“ Monitoring	€€		M	+
M3	Success/Failure/Potential/Obstacle-Frame	€		M	++
M4	Outcome Mapping	€€	†	M	+
M5	Systemic Evaluation Framework	€€		M	++