

# An Approach to Adapt the Paradigm of Integral Planning to Urban Development

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## 1 ABSTRACT

The paper presents results of an examination of planning processes and situations of urban development in Germany. The paradigm of Integral Planning is currently located in a few disciplines, e.g. in the context of energy efficient and sustainable building design, or in the field of organizational development. There has been an attempt to define the term of “Integral Planning” in a generic manner to use the concept across different levels of system boundaries and planning disciplines that were met in this context. Further, an attempt was made to distinguish several characteristics of urban development that can be used to configure an integral planning process more specifically according to the planning situation at hand.

The work is part of an accompanying research programme concerning the participating cities in the “Energy Efficient City Contest” (<https://www.wettbewerb-energieeffiziente-stadt.de/>), awarded by the German Federal Ministry of Education and Research. The contribution should lead to an improved insight in the paradigm of Integral Planning, and an improvement that breaks this approach down into a practical value in communal administration.

## 2 CONCEPTUALIZING A RANGE OF PLANNING APPROACHES

Currently the approach of Integral Planning is well known in the field of sustainable building design (e.g. Xia 2011). In Germany it is also increasingly claimed to use it in the topic of energy efficient urban development (cf. BMVBS 2011, DIFU 2011, STMUV 2011). The terms “integral”, “integrative”, “integrated” and “holistic” are often used interchangeably. But they could also be used to distinguish several options to adapt the approach in a more specific way to the different situations in urban development. This would make it easier to operationalize the approach regarding local constraints and usefulness.

The term “Integral Planning/Design” (lat. *integrare* = to restore, to complete) is used with different emphasis and meaning in several disciplines. In the field of sustainable building design, it initially became an approach to significantly improve the energy performance of buildings, corresponding to an increased ecological awareness since the 1970s. Furthermore, additional requirements for today’s buildings led to an extension of “horizontal integration” (stakeholder and disciplines) and “vertical integration” (lifecycle).

Beyond its application in civil engineering and facility management, “integral” means in general a characteristic like “belonging to and constituting a whole” (Duden 2016, transl.). The term addresses a cross-linkage and interaction of elements as well as the emergence of qualities that do not exist on a basic level of systems’ elements. From such a systemic view, like in the field of spatial and urban planning, and following a general approach of Integral Planning, the subject “city” is seen as a specific present mode of urbanized human life. Its physical manifestation is considered as a result of spatial dynamics and decisions in humans’ daily actions. Changes and dynamics are ongoing aspects of cities’ life and in the long term cities show no stability (cf. Portugali 2012). The process of integration of stakeholders and various aspects into early planning stages changes. Currently these changes in planning processes are even drawn up in normative guidelines (e.g. VDI 7000). These are necessary changes to become and to stay a “Smart City”, too.

### 2.1 Nested Structure of Subjects of Planning

Energy efficient urban development includes some concurrent understandings of the possible subjects of planning that are contributed by various disciplines in this area. In the context of the German “Energy Efficient City Contest” a broad range of disciplines were involved, e.g. from building physics, utility engineering, energy economy to urban planning, sociology or political science. Hence, there is also a broad range of measures, that are discussed in the topic of energy efficient urban development. These vary for example from “first aid” measures without larger public expenditure to technical improvements in communal facilities, or from approaches increasing private expenditure for energy-efficient building refurbishments to improved multimodal transport systems (cf. Rexroth et al. 2016).

Figure 1 exemplarily illustrates some distinct system views, from a narrow notion of technological issues to a broader socio-spatial notion. The model shows a nested structure that reveals that different understandings do not necessarily exclude each other, but they rather refer in each case to a specific selection of interactions and aggregation in a chain of humans-environment-technology. Each selection addresses a different prior concern, exemplarily and in short: Selecting a technical object will create a focus on product-specific properties (e.g. performance of a heater, range of an electric car). Regarding a technical system brings the interaction of objects into focus (e.g. improvements in control and regulation technology). An eco-technical perspective concerns the interaction between a man-made environment and its ecological impact on nature (e.g. emissions, consumption and regeneration of resources). A socio-technical view addresses the behavior of humans in a technical environment (e.g. acceptance and usage of innovative products, private expenses on thermal insulation, individuals' ventilation behaviour). And finally, a socio-spatial perception includes questions about the humans' uses of space, their concurrence in a limited spatial capacity or changes in spatial structures (e.g. caused by social, economic or technical transformations). The often used term "system" to describe a city or urban area includes different subjects of planning that vary in quality corresponding to the prior concern: An artefact (physical or technical objects) or a cultural practice (specific mode of human life). Each of them leads to different sets of planning instruments, handling of participation and intended improvements.

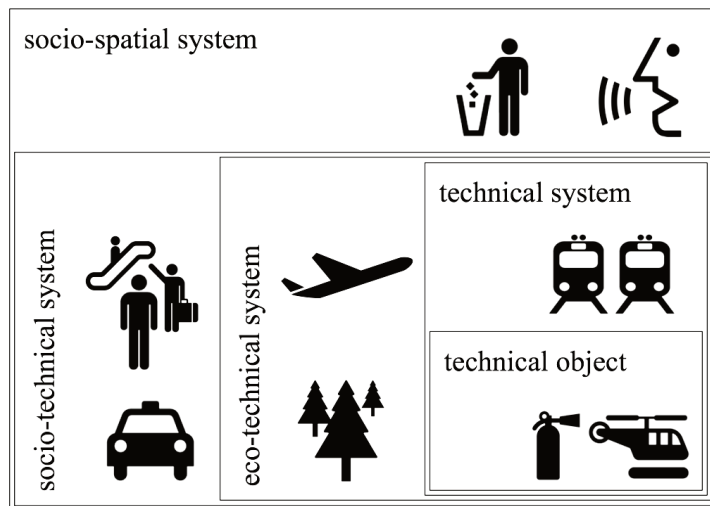


Figure 1: Nested Structure of exemplary Subjects of Planning.

## 2.2 Two Dimensions to distinguish Planning Approaches

In the field of organizational development, there are two dimensions to be considered for setting up a process structure in change management projects: the topical and the organizational dimension (cf. Schiersmann & Thiel 2014). The previously described understandings show also two comparable dimensions to distinguish planning approaches: (a) the range of issues to be considered, and (b) the range of participants or actors to be involved in the planning process.

Following a definition by Glasl who labeled organizational projects that include all topics and a whole organization as "Integral" (cf. Glasl 2000, p. 4), we define subsequently such an ideal openness in planning as "integral planning". A delimited approach that is narrowed to one issue and one actor can be opposed to this as "focused planning". To complete between these cases we define planning approaches that handle a broader range of issues as "integrated planning" and a broader range of actors as "integrative planning". Table 1 was derived from Glasl's classification (ib.) and modified to the topic of energy efficient urban development. It proposes a two dimensional classification scheme including nine arrays with distinct planning approaches. Examples of projects and actors were added to illustrate the concept.

The ideal concept of "Integral Planning" is defined as an unlimited openness in both directions, the direction of issues and the direction of actors. Reality will limit this to a practical extent, but it should be aimed to reduce a premature limitation as much as possible. On the other side, focused approaches have to be derived from more integral approaches to operationalize their implementation to the level of particular measures and responsible actors.

Range of Issues Range of Actors	(A) One Primary Issue	(B) Several Equal Issues	(C) Open to all Issues
(1) One Primary Actor	<b>mono-topical / uni-sectoral</b> e.g. energetic modernization of communal buildings  building department	<b>pluri-topical / uni-sectoral</b> e.g. local energy and climate concept  environmental agency	<b>integrated / uni-sectoral</b> e.g. mayor's five-year plan regarding an integrated urban development  mayor
(2) Several Communal and Local Actors	<b>mono-topical / multi-sectoral</b> e.g. industrial local heating supply to a municipal sports center  building department, public utility, industrial enterprise	<b>pluri-topical / multi-sectoral</b> e.g. energy-efficient and functional urban refurbishment  planning authority, energy consultants, redevelopment agency, homeowners	<b>integrated / multi-sectoral</b> e.g. urban development strategy with an included energy and climate concept  city council, city administration, local initiative for climate protection
(3) Open to all Local and Interested Actors	<b>mono-topical / integrative</b> e.g. communalized power supply shared with a citizens' cooperative  citizens, public utility, enterprises, (...)	<b>pluri-topical / integrative</b> e.g. urban redevelopment including energetic, functional and social transformation  residents, shop owners, planning authority, housing companies, public utility, (...)	<b>integral</b> e.g. open strategy formation regarding spatial, social, (...) and energetic development  citizens, city administration, public utility, local economy, public transport enterprises, NGOs, (...)

Table 1: Classification of Planning Approaches in the Area of Energy-Efficient Urban Development. (Source: Glasl 2000, modified)

City	Dimension A: „Attractivity“ Educationally Motivated Immigration [Persons per 1.000 residents]	Dimension B: „Value Added“ Welfare Recipients [Percent of residents < 65 years]
Aachen	114	11,7
Delitzsch	-45	21,6
Duisburg	15	18,1
Düsseldorf	61	13,3
Essen	32	17,9
Göda (data of rural district)	-70	14,0
Hamburg	66	13,3
Landau	65	6,9
Leipzig	106	19,6
Magdeburg	92	19,8
München	110	6,6
Oldenburg	63	13,4
Rosenheim	56	6,9
Schneeberg	-64	17,9
Schwäbisch Gmünd	7	7,9
Stuttgart	80	8,2
Wolfhagen	-38	8,2

Table 2: Cities participating in the first stage of the Energy-Efficient City Contest (Data: Bertelsmann Stiftung)

### 3 SELECTION OF CASE EXAMPLES AND EXAMINATION OF CHALLENGES

#### 3.1 Selection of Case Examples

Within the context of the Energy-Efficient City Contest, in 2008 about 70 German cities and communities applied for a funding of a customized energy-efficiency strategy including a first concept-stage and a subsequent implementation-stage (continuing). A body of experts selected 15 projects (concerning 17 cities) for the first stage. Among these, the cities of *Delitzsch*, *Essen*, *Magdeburg*, *Stuttgart* and *Wolfhagen* were

awarded for their concepts and funded for the second stage – to implement their concepts on local level over a five years period.

For our work the field of 17 cities was examined to select cities with distinguishable challenges in development. A classification based on number of inhabitants or demographic aging was not appropriate for this purposes. So the cities were classified according to two dimensions: (a) The attractiveness for young people as a requirement for regeneration – measured by educationally motivated (im)migration. And (b) the possibility for the residents to achieve a value added as a requirement to settle down and raise a family – measured in welfare recipients. The statistical data is based on the communal information system “Wegweiser Kommune” provided by the private operating foundation “Bertelsmann Stiftung”. To compensate single peaks, the data was averaged over a five years period (2007-2011). Table 2 contains an overview about the 17 cities.

To illustrate the gaps in dynamics between the cities, the data were normalized and in case of “Dimension B” subsequently inverted. The data were transferred to a graph that shows following results (cf. Figure 2):



Figure 2: Cities participating in the Energy-Efficient City Contest and their Concerns in Urban Development

(The interpretations are just characteristics in relation to the other cities under examination and in the range of these values!) The distribution shows that most of the cities are concerned with a specific topic of spatial dynamics that influences their current development. We labeled the fields following as “constrained by ...” cases. Five cities tend to a rather moderate development (closer to the center). The vertical height is interpreted as a level of global prosperity (population and economy). The horizontal position shows its sources: In the left section we find cities that are attractive for educational purposes (e.g. university or college town). In the right section we find cities that benefit from employed people (e.g. residential town). Prospering cities like Munich and Stuttgart show high values in both dimensions.

The cities of *Delitzsch*, *Magdeburg*, *Stuttgart* and *Wolffhagen* are clearly located at a specific challenge. So they are appropriate case examples for further reflections following behind. Additionally the city of *Essen* is

considered as a case example of moderate dynamic. All selected cities are part of the second stage of the contest (Implementation Stage) and thus a part of an ongoing accompanying research programme.

### 3.2 Examination of Challenges

The challenges of the cities were examined by several studies in the context of the accompanying research programme. There were comparisons of statistical data (e.g. local budget, population, mobility, energy), spatial connection to regional centers, interviews of project staff, interviews of residents and descriptions of the appearance of the cities from an external view (cf. Rexroth & Both 2015, 2016). Some results that will be necessary for further reflections are resumed in short:

#### 3.2.1 Constrained by Negative Growth: Case Example Delitzsch

Delitzsch is located in eastern Germany about 25 km to the north of Leipzig. For Delitzsch the challenge is to ensure basic public services and preserve the ability to act despite a stagnating or declining number of inhabitants. Important concerns will be economic promotion to maintain and locate businesses (production, services, retail). Further, the development of the nearby city of Leipzig will influence the development of Delitzsch and the region of northern Saxony. Due to the proximity to Leipzig a relevant concern will be the residential function. Delitzsch can play an important role as an attractive living environment for families and seniors – close to a capital city but for itself featured with attractive and high quality urban spaces and parks in a middle-sized scale. But a limited local budget needs the critical anticipation of the regional development and its “main force” Leipzig in relation to all local public investments (cf. Rexroth & Both 2015, 2016).

#### 3.2.2 Constrained by Limited Occupation: Case Example Magdeburg

Magdeburg is the state capital of Saxony-Anhalt and located in eastern Germany between Hannover and Berlin. As in other industrial cities in former East Germany, after the German reunification in Magdeburg a large number of residents emigrated to prospering regions in former West Germany. Today these negative dynamics seem to be overcome. In relation to the other case examples Magdeburg shows the highest number of educationally motivated immigration of young people, which means a high potential for the city. What lacks is the “cohesion” to make these people settle down beyond their graduations. So the dominating concerns are the economic promotion followed by marketing efforts to increase the visibility as a state capital and as an important German waterway intersection (ib.).

#### 3.2.3 Constrained by Growth: Case Example Stuttgart

Stuttgart is the state capital of Baden-Württemberg and urban center of a densely populated and prospering region in southern Germany. Unlike the other case examples, Stuttgart faces challenges to control and channel a process of growing in the context of limited spatial capacity. The current dynamics lead for example to gentrification, segregation, rising costs of living or rising land and real estate prices. Amplified by its particular topography of landscape and micro climate (location in a basin), increasing automobile traffic and other pollutions significantly harm the air quality. Hence, there is an immediate demand for private and public investment into a energy-efficient, zero-emission and high-performance infrastructure (ib.).

#### 3.2.4 Constrained by Lack of Vision: Case Example Wolfhagen

Wolfhagen is a mediievally founded town about 30 km to the east of Kassel, the regional center in northern Hesse. Like for other small and middle sized towns in rural areas, one challenge is to preserve attractivity for young people and young families. Due to a close connection to a former German military base, the recent closure of these barracks generated a big conversion area and a functional recession to be handled by the administration as well as by the population. The connections to Kassel and regional labor markets enables the residents to live a relatively affluent life. But for younger, not motorized or elderly mobility-impaired people the access to public services, retail, education or cultural events means a challenge. The people of Wolfhagen are faced with an overarching task to commonly develop a long term vision of what will distinguish and characterize the town itself, the use of timber-framed buildings in the center district, and the foundations of the local economy. Physically there is a need for decentralized and modular infrastructure, that can operate in an efficient way regardless of population dynamics, vacancy or direct local energy demand (ib.).

### 3.2.5 Constrained by Moderate Dynamics: Case Example Essen

Essen is located in western Germany in the center of the Ruhr Valley – currently the largest agglomeration in Germany and historically the main area in the development of the German steel and coal industry. During the 19<sup>th</sup> century the population grew up about 26 times as a result of industrialisation. The neighborhood of many large cities is a particular characteristic of the Ruhr Valley that effects local efforts. Today the Ruhr Valley cities, as former industrial cities, share the same challenges and an ongoing post-industrial transformation process that dates back more than 50 years. As Delitzsch and Magdeburg, for Essen the challenge is to ensure basic public services. The utilization of local budget and economic promotion is a main concern for local development. But in contrast to the case example Stuttgart, the economic structure of Essen is characterized by large (former industrial, now technology & services) enterprises and less small or medium-sized businesses. The regional networking and the coordination of public investments and infrastructure is an important concern. The budgetary situation needs to generate intercommunal synergies and to avoid individual investments that generate countervailing effects for neighboring cities and vice versa. Also it is necessary to capture private and commercial engagement (ib.).

## 4 GENERALIZATION OF APPROPRIATE PLANNING APPROACHES

The selection of a planning approach that is appropriate for the situation and practical circumstances is regarded as crucial for the success of a project. To claim the approach of Integral Planning in a dogmatic way without taking into account the specific local needs is regarded as a contradiction in itself. The case examples show some starting points to generalize relations between the characteristics of the dynamic and the appropriate planning approach as a “gradual configuration” of Integral Planning. So the specific configuration is seen as a necessary operationalization in a general and subordinated setting of an “integral awareness”.

A “*Constrained by Negative Growth*” case forces a city, like the example of Delitzsch, to subordinate all public measures to the consolidation of the local budget. Therefore measures are preferred to save energy and operating costs in municipal real estate and facilities. Furthermore inevitable public investments should generate significant positive effects for the local economy and consider the local effects out of regional dynamics. The strategic objectives are focused clearly. Therefore an appropriate planning approach needs to be open and flexible to opportunities, but handle the process in an efficient and quick way like approach B-1 or B-2 (Table 1).

A “*Constrained by Limited Occupation*” case forces a city, like the example of Magdeburg, to make high efforts to economic promotion. Especially cooperations between local institutions in the sectors education and research, regional businesses and entrepreneurs can offer perspectives for the students that arrive every year at the town. The strategic objectives are also focused clearly, even more than in the previous case. Therefore an appropriate planning approach is focused on specific topics, but open and flexible to the range of actors and efficient and quick in the process handling – an approach like A-2 or B-2 (Table 1).

A “*Constrained by Growth*” case forces a city, like the example of Stuttgart, to handle the dynamics in a way that the quality of living is preserved and living in city is still affordable for the inhabitants. There are high demands to the systemic and interdisciplinary thinking. An appropriate planning approach is open to all issues that have to be considered. However, there is a needs for specific expertise and efficient process handling, which suggests a selection of actors – an approach like C-1 or C-2 (Table 1).

A “*Constrained by Lack of Vision*” case forces a town, like the example of Wolfhagen, to a realignment in many scopes. This realignment has to be founded on a broad commitment by the whole community and needs efforts in communication and transparency. Many concerns and routines from “golden days” are obsolete, which causes a need for new and individual approaches in public administration. An appropriate planning approach is open from the beginning to all topics and actors. In the range of case examples it is nearly an ideal case of “Integral Planning” – an approach like C-3 (Table 1).

A “*Constrained by Moderate Dynamic*” case forces a city, like the example of Essen, to focus on local budget discipline, capture opportunities in the field of private and economic engagement, and encourage regional networking. Due to this an appropriate approach is focused on urgent topics and on networking efforts, thereby open to a range of actors. These are approaches like the arrays A-3 or B-3 (Table 1).

## 5 MATCHING CHALLENGES AND PLANNING APPROACHES

To combine and illustrate the previous reflections we overlaid the characteristics of the theoretical defined planning approaches with the generalized challenges found in the case examples (cf. Figure 3):

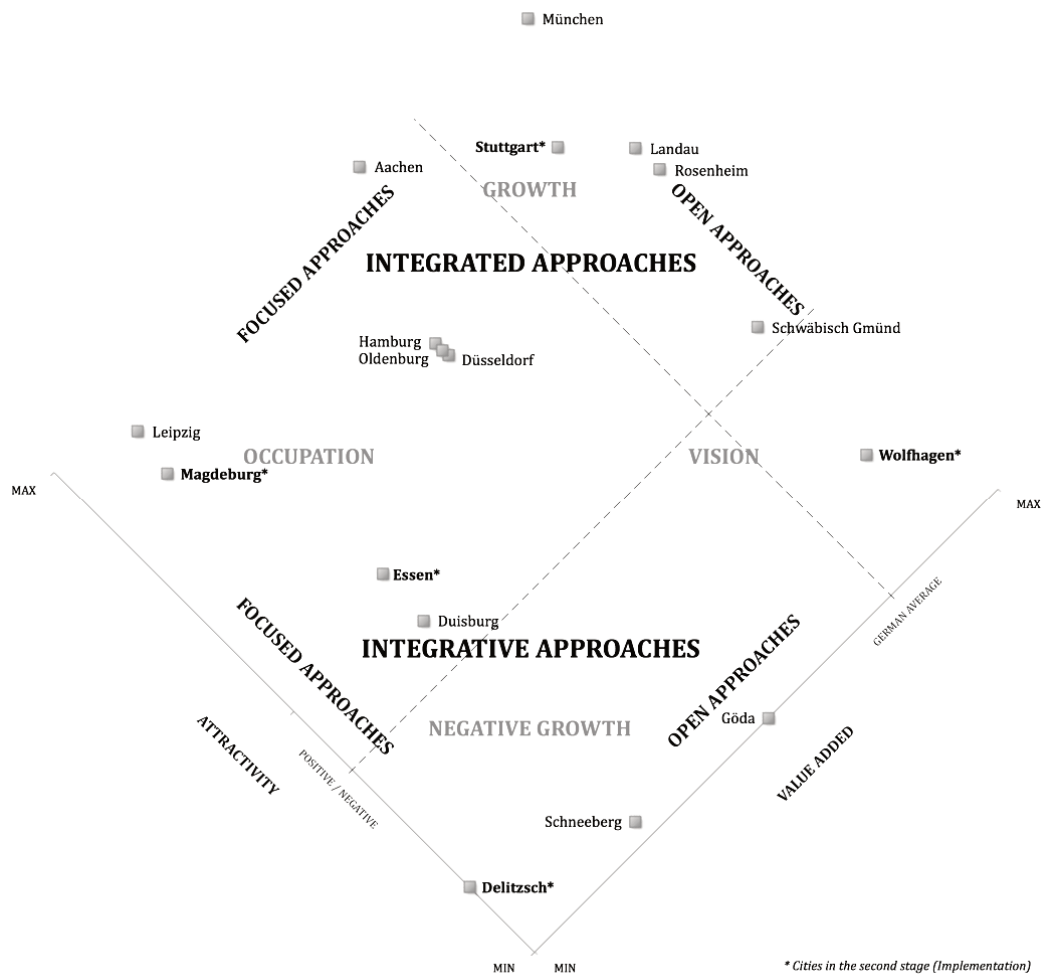


Figure 3: The Field of Integral Planning Approaches regarding different Dynamics

In direction of the vertical distribution, the dynamic of growth (top) requires an efficient use of limited spatial capacity, what means a sophisticated coordination for example of infrastructure, density, quality of build and green spaces, and cost of living. Integrated approaches will take a broad range of topics into account. In contrast, the dynamic of stagnation or negative growth (down) effects public budgets and services, what means losses in many parts of the former level of living. Inevitable changes and necessary measures have to be based on a common awareness by the local actors. Integrative approaches aim for an openness from the beginning and try to include private engagement.

In direction of the horizontal distribution, a vision (right) that is necessary for a realignment needs an open minded process in many ways. In the foresight it cannot be excluded that initially unimposing ideas make an important contribution to the further development. Open approaches concerning the range of issues and actors are necessary. In contrast, a limited occupation (left) forces to focus all efforts to generate a basis of existence for businesses and inhabitants in an accessible distance. Focused approaches are an appropriate way.

## 6 CONCLUSION

The model points to a field (middle right section) where the ideal of an Integral Planning really makes sense for local administrations, based on the general dynamic and independent from individual or political preferences. Further the model also points to fields where related but more limited or focused configurations of planning approaches are appropriate to the respective dynamic situation. But these suggestion should

rather be understood in a heuristic manner, because it bases on a relative valuation of dynamic characteristics. The common local traditions, experiences and interests have also to be considered.

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