

Dissertationen an der  
Fakultät für  
Architektur der RWTH Aachen

Herausgegeben von  
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Michael Jansen

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## **The Urban Matrix**

Towards a Theory on the Parameters of Urban Form  
and their Interrelation

I. Architektur und Planung, Nr.2

Die Reihe der Dissertationen an der Fakultät für  
Architektur der RWTH Aachen:

I. Architektur und Planung

Herausgegeben von Prof. Dipl.-Ing. Wolfgang Döring

II. Ingenieurwissenschaften

Herausgegeben von Prof. Dr.-Ing. Wilfried Führer

III. Geisteswissenschaften

Herausgegeben von Prof. Dr.-Ing. Michael Jansen

Für die Fakultät für Architektur  
Freunde des Reiff e.V. Aachen  
Schinkelstr.1, 52062 Aachen

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ISBN 978-3-936971-20-0 (Dissertationsdruck)  
ISBN 978-3-936971-25-5 (Buchhandelsausgabe)  
ISSN 1436-7904

"D 82 (Diss. RWTH Aachen), 2009"

**The Urban Matrix.**  
**Towards a Theory on the Parameters of Urban Form**  
**and their Interrelation**

Die urbane Matrix.  
Zu einer Theorie über die Parameter städtischer Form  
und deren Wechselbeziehungen

---

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Aachen, August 2008 / March 2009





## Part 0 Preliminaries and Contents

### Preliminaries

The present employment, which is performed by an author educated in architecture and urban design, seeks to approximate the city as a specific anthropogenic transformation of the biosphere as well as a distinct reflexive human design approach towards the environment – ultimately as "culture and geography's largest artifact, the product of a very complex play of greatly varied forces" (Vance Jr 1990: 4). In short, this statement by the geographer James E. VANCE Jr not only points out the object of research to be covered but also enfold its quandary: What makes us characterize so diverse entities, such as Rothenburg, Ur and Mexico City, which originated in topographically completely unlike settings at a time difference of well more than 3000 years, with the same term – city?<sup>1</sup> And what allows us to draw one transition line from our contemporary urban forms back to the Bronze Age, in which – to common knowledge – the city has its origins?

Exactly for its variety and constant transformation the *city* is hard to grasp, why most researchers abide by functional aspects for a general understanding and focus formal aspects only in a historical perspective.<sup>2</sup> Moreover, even this agreement on general functional categories usually refers to a particular period of time, trying to distinguish urban from non-urban entities; along these lines researchers deal with the idea of an *Urban Revolution* in the Bronze Age, the notion of a *Great Urbanization* in the Middle Ages, or within the present-day development discuss *Edge-* or *Generic Cities*. Still, in addition to this variety of functional assessments there also persists the notion of a formal urban continuum, which appears to be only partly explained by the diverse functional definitions. But, what is *urban form*, how does it determine *urbanism*, and what effect does it or can it have onto the differentiation between cities, villages, and settlements?<sup>3</sup> *This present thesis thus shall add to the according manifold functional examinations and ratiocinations, an approach to the city by means of considering the significance of its continuing form and investigating the general factors that determine this form.* With regard to the vast research on the city that well illuminates the functional implications, of course, these considerations and investigations have to be understood as a mere initial occupation with this task, why they should be understood as an employment TOWARDS A THEORY ON THE PARAMETERS OF URBAN FORM AND THEIR INTERRELATION, that relies on further elaboration and discussion.

Obviously, such basic research yields no immediate practical benefit. It is more of gaining additional general cognition, notably for the specialist, who takes the consistency of his domain often for granted while engaging in particular issues. Yet, today the architectural and urbanistic profession faces two major developments: the ongoing suburbanization in the Western World on one side and the ongoing metropolization in the developing countries on the other; already today some 50% of the world's population live in cities – in 2050 presumably 70%;<sup>4</sup> reason enough to examine, scrutinize, and re-develop not only the different urban living-models but also the concurrent urban forms and their underlying attributes.

---

<sup>1</sup> This represents a key-question for the teaching in and research on the History of Urbanization, as it has been raised by Michael JANSEN in his university lectures and the discussions with the author.

<sup>2</sup> see for instance (Kostof 1991: 9)

<sup>3</sup> compare the discussion with (Osborne et al. 2005: 1f.)

<sup>4</sup> In addition this ratio refers to an increasing world population from over 6.5 billion people today to an estimated 9.2 billion in 2050; see (UN/DESA 2008).

Despite these eminent developments, however, those professionally engaged in planning and designing cities in the recent years more and more back out from the original vanguard role that over decades characterized their scope. After several urbanistic failures, especially in the 1960s, and with the immense change through information-technology, today the professional self-conception is confined to moderating interests, mentoring stakeholders, and squiring processes – important activities indeed, yet often avoiding the urbanistic subject itself. In the preface to Jörg SEIFERT's report on the Symposium *Urban Research: The Individual and Density* on January 19, 2002 at the Vienna Center for Architecture (Az W) Bart LOOTSMA stated that the urban change resulting from the second phase of modernization forces us to again analyze historically, sociologically, programmatically, typologically, and morphologically those processes leading to urbanism.<sup>5</sup> In this context, the considerations of this thesis represent an according attempt that shall also embody a pleading for comprehensively addressing the city as well as its planning and design, rather than supporting a potentially precarious incrementalism, in which architects and planners refrain from a substantially provident involvement.

Against the background of this plea, the contribution of the present employment refers to a general *urbanistic* approach towards the city that builds up on two basic thoughts, which also address the difficulty of approximating the formal urban continuum:

The first comprises a phenomenological reasoning, that suggests a differentiation and yet intrinsic relation between factual cities and a theoretical concept that serves as an ideal perception of how a city should be; this ratiocination, which was well established by the art historian Giulio ARGAN (1909-92) in his "Storia dell'arte come storia della città", forms the starting point for the suggested perception of an abstractum *urban form* that consequently allows for an examination of its constitution and characteristics.

The second involves a systemic understanding, that implies a distinct interrelation of various factors that yet erratically afford cities; this ratiocination goes back to the sociologist Niklas LUHMANN (1927-98), and allows explaining the variety as well as the unpredictability of factual urban forms in course of the diversity of opinions and interests involved, while he concurrently insinuates the investigation for, evidently abstract, conditioning and contingency formulas that determine the process of interrelation.

Urban planners and architects, as the urbanist Francis FERGUSON said, can be "viewed in a somewhat traditional sense as those interested in the city as a physical system or artifact. They do, of course, perceive the city as a container of social, economic, and political phenomena, and they appreciate the significance of these activities in giving physical form to the city, but their primary concern is for the artifact itself – the process of giving form to this artifact" (Ferguson 1975: 4). Acknowledging this statement the present thesis shall stress the notion of the artifact as an *abstractum* that is likewise dissociated from any phenomenal demand, but still subject to constant principles. Arguably such an urbanistic reasoning affords the formal urban continuum, eventually leading to the present proposition of interrelating parameters of urban form within a perpetual *Urban Matrix*.

---

<sup>5</sup> The German original reads: "Diese Veränderungen [innerhalb der Städte aufgrund der zweiten Phase der Modernisierung; the author] [...] zwingen dazu, die Prozesse die zum Städtebau führen (historisch, soziologisch, programmatisch, typologisch und morphologisch) erneut zu analysieren [sic!]" (Seifert 2003: 11).

These thoughts imply that the suggested approach is primarily a theoretical-normative occupation, dealing with abstract concepts rather than the actually built environment. Thus, the reader will be confronted with a search for preferably simple and yet copious wordings that shall explain the features of the different conditioning parameters as well as their interrelation within the *Urban Matrix*. Still, for the purpose of unambiguousness, this endeavor effects a demonstration of complex circumstances, from which sometimes suffers a convenient readability, as well as familiar expressions have to be put in another context and, where necessary and appropriate, neologisms have to be introduced. Likewise, the argumentation at times has to revert to other disciplines that obviously feature their own language use, which might at first appear to be alien to an urbanistic approach. Notwithstanding this conceptuality, however, the thesis comprises a wide range of illustrations, charts, and plans, while especially the presented urban examples do not form a consistent body for examination and interpretation; this means, that there is no morphological town plan analysis – on the contrary, all plates merely seek to support the according thread. The explanatory illustrations therefore only attend the text without further lettering.

Moreover, this elaboration shall not be misunderstood as a manual for urban design or planning: the eventually proposed *Urban Matrix* offers no injective, surjective, or bijective relations (Eineindeutigkeit), nor any other mathematical formula that insinuates a calculatory approach towards urban form. Yet, it seeks to give an anticipatory assistance through its general considerations, which shall allow for a wide applicability also in changing conditions rather than a mere intensity of conclusions. Similarly, this thesis is no historical employment, even though it comprises substantial historiographic elements that, as the historian Jürgen REULECKE stated, nevertheless "must of necessity result in only a rough sketch and blurred outlines" (Engeli et al. 1989: 53). These elements, however, are indispensable for the elaboration of the present approach for their illustration and explanation of the current status in urbanism as well as to explicate the broad dimension of every urbanistic task, following the assertion by Clemens STEENBERGEN and Wouter REH: "Perhaps studying history does not teach one how to design, but without knowledge of history one cannot design" (Steenbergen 1996: 10). As well, they shall allow for forestalling potential opposition as regards the necessary confinement of the work's scope and the resulting inevitable constraints by disclosing the author's perspective onto urbanism and the evolving urban development.

This will be due especially in the first part of the present employment, which INSTEAD OF AN INTRODUCTION shall establish the urbanistic incentive and scientific background for the elaboration of another approach; yet, as because of the so far hardly defined scope of this research there cannot evolve a conventional introduction to the subject including a proper research history. The second part comprises the development of A SYSTEMATICAL APPROACH that shall explicate the theoretical background for the induction of parameters of urban form and already prepare for the introduction of the *Urban Matrix* as a conditioning system of interrelated factors. A COMMONSENSICAL CATALOGUE constitutes the third part, suggesting several parameters according to the systematical reasoning, while this catalogue shall be neither understood as conclusive nor as unamenable for further discussion. The fourth part ultimately presents A CONSEQUENTIAL METHODOLOGY, which sets up the *Urban Matrix* and proposes two potential tools for an application in urbanistic research as well as in urbanistic practice.

As mentioned before and beyond all scientific diligence, which is sought to be achieved, the author should like to submit with the present thesis a consistent thought-model and not a full theory. And even though this particular approach must be considered as novel within the hitherto body on urbanistic research, it altogether bases on manifold thoughts and elaborations, which are often merely brought into another context, while at times taking an extreme or unorthodox position – especially with theories from outside the urbanistic field. The considerably large bibliography in the appendix, which still is not at all exhaustive, gives evidence to a broad coverage of readings, which can be consulted for such an endeavor and which should stimulate for more occupations with urban form, and the city altogether – aside the familiar paths.

"nanos gigantum humeris insidentes"

Bernard of Chartres

after John of Salisbury, *Metalogicon*, 1159

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### *Acknowledgements*

For his constant support of and great confidence in the present elaboration of another approach towards urbanism and the city, I should like to first of all sincerely thank my Doktorvater Prof. Dr. MICHAEL JANSEN, who allowed me become acquainted with manifold new insights and ideas about the origin and development of cities, as well as he afforded a fruitful academic guidance and friendly personal collaboration in the Lehr- und Forschungsgebiet Stadtbaugeschichte and the RWTH Aachen Center for Documentation and Conservation.

Likewise obliged I am to Prof. KUNIBERT WACHTEN and WILLIAM LESLIE FORSYTH, who both as urban planners and designers, yet from different language angles, countenanced the endeavour of translating German thoughts into English writing; many thanks for their constructive attendance to and patience with the complex «Gedankenwelt» (and bulky sentences) of this thesis.

Furthermore, I am indebted to OStR WILHELM BUSCHULTE for his straightforward support with and interesting discussions about the philosophical implications of the topic, especially in specifying the hermeneutic predicament, and to PD Dr. HANS-GEORG BARTEL for his consummate and enlightening help with the mathematic and natural scientific issues that had to be addressed during the elaboration, especially in introducing me to formal concept analysis.

Many thanks to Dr. SABINE BARTEL, Dr. ANDREAS GORMANS, Dr. HEIDE KLINKHAMMER, ROBIN MINARD, KARLA SCHILDE, Dr. CHRISTINE WEHLE, Pfr.i.E. MAREN WISSEMAN, and in particular to GEESCHE INTVEEN for their good advice, helpful suggestions, and appreciated corrections, while proof-reading the text and checking the illustrations.

Last but not least I wish to cordially thank my family and friends for their overall support and sympathy, especially my mother KÄTHE LEY, my sister BARBARA RÖPER, and my aunt MARGRET WIENER; to my wife Dr. JUDITH LEY, who, above all, mainly procured the lay-out of the illustrations as well as she overtook a significant part of the correction, I cannot appropriately express my appreciation and fondness. Vielen, vielen Dank!





*country*

Germany / Bavaria

*coordinates*

49° 22' 38" N – 10° 10' 44" E

Market square

*elevation*

430 m

*population*

11,226 (2006)

*size*

41 km<sup>2</sup>

*density*

271 /km<sup>2</sup>

*foundation / rst citing*

ca. 970

*source*

[http://de.wikipedia.org/wiki/Rothenburg\\_ob\\_der-Tauber](http://de.wikipedia.org/wiki/Rothenburg_ob_der-Tauber)  
(20.04.2008)



300 m



Rothenburg o.d. Tauber  
Image © 2007 GeoContent

**plate 1**



## Part 1 A Western Reflection of Western Urbanism.

### Instead of an Introduction

Since the beginning of a theoretical occupation with *the 'city'*, and we are able, of course, to very much argue when and with whom this occupation started,<sup>6</sup> there is a large uncertainty in defining what a city is and what it consists of. Until today we do not find considerable comprehensive definitions, which cover all its aspects – without being so universal that they concurrently define various circumstances of human life other than the urban. At the same time we find plentiful statements on different urban aspects, depending on the discipline the author is affiliated with: archaeology, economy, geography, history, law, sociology etc.<sup>7</sup>

Georg von BELOW (1858-1927), for instance, apostrophized only four urban attributes: market, fortification, local jurisdiction, and civic autonomy to distinguish cities from other settlements and the countryside.<sup>8</sup> As valid as these might have been for his purpose dealing with medieval German cities and towns, they prove useless as soon as we apply them to other cities – without extensive interpretation of the original terms.<sup>9</sup> Moreover, BELOW's legitimate observation that urban institutions are more elaborate than rural ones, producing a hierarchy in which the countryside is subordinated to the urban nuclei, is untenable e.g. not only for our

---

<sup>6</sup> Without much research we encounter an employment with the city already in ancient times, describing its functions and forms as well as its importance for human living together. PLATO (427-347 BCE) dealt with the city in his works on political philosophy, here after all in his Πολιτεία (Politeia) – yet from a definite socio-political point of view. Urban form and layout, however, play an important role in his report on Ur-Athens and especially Atlantis, which he laid down in Τιμαίος (Timaios) and Κριτίας (Kritias); a detailed description of Atlantis is accounted for in (Plat.Kritias 115c4-116c2).

ARISTOTLE (384-322 BCE) gave instructions for the city in the seventh book of his Πολιτικά (Politika); so its relation to the sea; its disposition and political structure; as well as on the architectural features (Arist.pol. 1327a10-1327b16; 1330a34-1331b19).

MARCUS VITRUVIUS POLLIO (ca. 84–25 BCE) depicted various urbanistic circumstances in the first of his ten books on architecture, i.e. the choice of healthy places, the construction of city walls and the disposition of streets and public spaces (Vitr. 1, 4-7); in the following books he recurred to urban matters, i.e. the disposition of public buildings, and the disposition of private buildings (Vitr. 5; 6).

<sup>7</sup> Obviously, not all of these statements can be enclosed in this argument. Especially the vast research on the legal status of cities and settlements cannot even rudimentary be summarized in this employment, even though they play an important role dealing with antique and medieval cities; for some, also historic literature on the first see (Kuhn 1864; Taddei 1887; Abbott 1926; Rudolph 1935; Vittinghoff 1951; Lorenz 1987; Robinson 1992), on the second (Lambert 1865; Below 1892; Tait 1936; Stooß 1970; Haase 1972; Patze 1977; Isenmann 1988; Dilcher 1996).

Regarding our argumentation, we shall include four authors with their major contributions to the task, having an economic-historical, an archaeological, a sociological, and a geographical background. Two definitory approaches were given before World War I and its cultural-political impact, the other two afterwards.

For an interesting account on contemporary interdisciplinary research on the term *City* see the anthology resulting from the spring conference of the Kuratorium für vergleichende Stadtgeschichte, 3-5th April 2000 in Münster (Johanek et al. 2004), there especially the contribution by Alfred HEIT "Vielfalt der Erscheinung – Einheit des Begriffs?" (Heit 2004).

<sup>8</sup> The constitutional- and economic historian BELOW wrote several books dealing with the city and its importance for the constitutional development in Germany (Below 1892; Below 1898; Below 1900). The cited urban attributes often occur in BELOW's work, for instance (Below 1898: 3f.) and (Below 1909: 412).

<sup>9</sup> BELOW's contemporary adversary Gustav von SCHMOLLER (1838-1917), consequently, gave a more universal definition, however, focusing technical, economic, and institutional aspects (Schmoller 1900: 259)



country  
Iraq  
coordinates  
30° 57' 46" N – 46° 06' 11" E  
Great Ziggurat  
elevation  
50 m  
population  
0 (today)  
size  
ca. 1 km<sup>2</sup>  
density  
0 /km<sup>2</sup>  
foundation / rst citing  
ca. 4000 BCE  
source  
<http://en.wikipedia.org/wiki/Ur> (28.07.2008)



Ur (Tell el-Muqayyar)  
Image © 2007 DigitalGlobe

**plate 2**

contemporary "edge cities",<sup>10</sup> but also for the ancient Greek poleis with their concept of integrating city and countryside into one entity.<sup>11</sup>

Vere Gordon CHILDE (1892-1957) concentrated on the early urbanization seeking to investigate the factors that determine the concept of *the 'city'*.<sup>12</sup> His ten criteria deriving from archaeological data,<sup>13</sup> however, remain static as those seen with BELOW. A major objection against his delineation is the equivalence of the proposed criteria among one another, which in addition produce no functional relation to each other.<sup>14</sup> Yet, they represent as a set another threshold within his sound evolutionary model explaining the development of mankind by means of its sedentation, urbanization, and industrialization (Childe 1936); but do they seem to be sufficient to fully describe other cities than the ones he relies on for his argument,<sup>15</sup> let alone *the 'city'* itself?

Max WEBER (1864-1920), presented a widely renowned approach towards the task, taking up a whole chapter in one volume of his considerations on economy and society.<sup>16</sup> He notices that the lowest common denominator of all varying definitions is that the city does not simply consist of a collection of one or more

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<sup>10</sup> compare (Garreau 1991), and the short summary in chapter 1.1.

<sup>11</sup> The fundamental feature of the Greek polis is the organic conjunction of the central settlement with the appropriate territory, i.e. the entity of the city, the countryside, and, if access to navigable waters, the harbor (Audring 1989: 5) and (Hansen et al. 2004: 55ff.), or as a "City with a Hinterland" (Hansen 2006: 101 ff.); compare also (Starr 1957; Gschnitzer 1971). In addition, there is still discussion about the importance of a fortification within the Greek polis. Doubtless the existing of a city-wall has no significance for the urban status, but represents a secondary phenomenon (Gerkan 1924: 18) and (Wokalek 1973: 27f.); we derive this already early from PLUTARCH's description of the wall-less Sparta (Plut.mor. 210e9-f2; 217e7f.).

<sup>12</sup> The archaeologist CHILDE dealt with the question of urbanization predominately in three works: (Childe 1934), here especially chapter 7, and (Childe 1936; Childe 1950).

<sup>13</sup> The functional abstraction of archaeological findings logically leads to urban characteristics: The evaluation of the excavation in Ur, for instance, led to several equations: *tenemos* = political power; port and channel = trade and traffic; house and palace = differentiated social structure; city wall = high population density (Hotzan 1994).

CHILDE's more elaborated ten-point delineation of an urban settlement (Childe 1950: 9ff.) has been summarized by Robin OSBORNE as follows: 1. concentration of a relatively large number of people in a restricted area; 2. craft specialization; 3. appropriation by a central authority of an economic surplus; 4. monumental public architecture; 5. developed social stratification; 6. use of writing; 7. emergence of sciences; 8. naturalistic art; 9. foreign trade; 10. group membership based on residence rather than kinship (Osborne 2005: 6).

<sup>14</sup> see (Wheatley 1972: 612) and (Osborne 2005: 6)

<sup>15</sup> The geographer Paul WHEATLEY (1921-99) already stated that CHILDE's ten points, even focusing on early urbanization, leave out the urban development in the Inca culture.

<sup>16</sup> The social economist and sociologist WEBER started in 1909 editing a new "Handbuch der politischen Ökonomie" (Manual of Political Economy), which due to several circumstances he never finished until his death. Within the immense project, WEBER chose to write several articles, after all the chapter "Wirtschaft und Gesellschaft" (Economy and Society). An employment with the city was from the start meant to be an integral part of this chapter, bearing the title "Die nichtlegitime Herrschaft. Typologie der Städte" (The Non-Legitimate Domination. Typology of Cities). The manual was never fully published and most of WEBER's contributions including his writing on the city remained manuscripts when he died. His wife Marianne soon took care of publishing the material; "Die Stadt" (The City) first as an self-contained essay in 1921 (Weber 1921), before it then became part of a stand-alone volume "Wirtschaft und Gesellschaft". As there was no authorized final edition plan, WEBER's texts were often revised and differently compiled always using the same title. Today we have a complete commented edition of WEBER's work, in which the writings on 'economy and society' take up seven volumes. "Die Stadt" represents the fifth volume.





country  
Mexico / Mexico State  
coordinates  
19° 23' 55" N – 99° 00' 47" W  
Centro Social  
elevation  
2,220 m  
population  
1,140,528 (2005)  
size  
63 km<sup>2</sup>  
density  
17,978 /km<sup>2</sup>  
foundation / rst citing  
1956/63  
source  
[http://en.wikipedia.org/wiki/Ciudad\\_Nezahualc%C3%B3yotl](http://en.wikipedia.org/wiki/Ciudad_Nezahualc%C3%B3yotl)  
(01.07.2008)



Nezahualcoyotl (ZMCM)  
Image © 2007 DigitalGlobe

**plate 3**



separate dwellings but is a relatively closed settlement, an "Ortschaft",<sup>17</sup> which in addition has merely quantitative features.<sup>18</sup> Giving many further geographical, economic, and legal clues,<sup>19</sup> we derive from it predominantly the incongruence of the different criteria, which we have to consider while talking about cities – he deliberately refused to give a true definition. Compared to this elaborate employment, shorter definitions, as mentioned above, have to fail of necessity, when they are evaluated apart from their academic embedment or according to cities of different times, regions and cultures.

Friedrich RATZEL (1844-1904), and subsequently the geographic disciplines defined the city as a permanent aggregation of human beings and human dwellings of a considerable size, which cover a significant area and locate centrally within major traffic routes.<sup>20</sup> Out of a historic geographical definition, which included the presence of a mural boundary, a traffic node (e.g. market square), the subdivision of the city into quarters, and the exceptional position in legal terms, slowly developed the current geographical definition, which assumes the arrangement of the city around a center, a central-peripheral gradient, a relatively closed and bulky building development, and a physical and/or administrative subdivision. Here, RATZEL recognized 100 years ago the importance of traffic routes for the development of urban shapes and the transition of the city into the surrounding landscape, as well as the significance of the *skyline* (Ratzel 1903: 38ff.).<sup>21</sup>

Contrary to these theoretical approaches, today the status *city* is assigned foremost due to statistical considerations, mainly according to the size of a settlement and the effective administrative structure of a region or state. Accordingly Danish authorities already consider settlements with 200 inhabitants as an *agglomeration*, whereas the Japanese threshold lies with a population of 50,000; in Germany and the U.S.A. the corresponding sizes are 2,000, respectively 2,500 (Lichtenberger 1986: 32). In addition we find many different classificatory approaches towards the city, distinguishing them due to size (population and/or surface – quantitative classification), or due to the predominant function

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<sup>17</sup> There is no proper English translation for this term. The defining feature of an "Ortschaft" is the locale rather than the function as in *settlement* or *dwelling*, respectively the size as in *village*.

<sup>18</sup> WEBER states that a city is predominately larger than other settlements, a big "Ortschaft" (Weber 1921: 59).

<sup>19</sup> Also WEBER uses – in a retrospective analysis – categories, which are similar to BELOW's: 1) a fortification, 2) a market, 3) a court of its own and at least partial autonomous law, 4) a related form of association, and 5) at least partial autonomy and autocephaly (Weber 1921: 84) – here using the wording of the English standard translation (pg. 81).

<sup>20</sup> The geographer RATZEL originated the "Anthropogeographie" (anthropogeography) and the "Politische Geographie" (political geography), including human existence and behavior into the extant geographic discipline and examining the interrelation between earth, nature and human beings and societies.

The original quotation reads: "Für den Geographen ist eine Stadt eine dauernde Verdichtung von Menschen und menschlichen Wohnstätten, die einen ansehnlichen Bodenraum bedeckt und im Mittelpunkt größerer Verkehrswege liegt [...]; zu Städten werden solche Zusammendrängungen erst, wenn sie eine gewisse Größe überschreiten und wenn sie ebendeswegen nicht mehr in der Lage sind, sich unmittelbar von ihrem Boden zu ernähren, wodurch dann die Verkehrswege nötig werden, die von der Stadt aus- und auf die Stadt zusammenstrahlen" (Ratzel 1903: 37).

Also, RATZEL refers to the city as one form of 'close space of political impact' (Ratzel 1897: 276ff.).

<sup>21</sup> For further overview writings on urban geography see (Schöller 1969; Lichtenberger 1986; Heineberg 2000; Fassmann 2004; Bähr et al. 2005).

(qualitative classification).<sup>22</sup> Yet, the numbers of inhabitants within a randomly drawn political boundary as well as the percentages of labor in a specific branch still present weak criteria to give comprehensive descriptions.

Obviously, all these employments present different viewpoints onto the phenomenon city, yet none of them comes to a true universal but still applicable statement. More interestingly, hardly any of them consider urban form as a primary source – even the evident function-form relation is under-represented.<sup>23</sup>

Moreover, we hardly find approaches of comprehensive definition by those who professionally deal with the planning or design of cities – neither in theory nor in practice.<sup>24</sup> Ernst EGLI (1893-1974) reduces the 'idea of a city' to its built order (Egli 1959: 11).<sup>25</sup> Charles DELFANTE (\*1926) confines it to an 'urban composition'

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<sup>22</sup> Prevalent classification methods represent the *monothetic taxonomy*, which derives from the establishment of thresholds for the functional specialization within cities (Harris 1943), the apostrophizing of a 'normal city' within a state, including a diversification-index (Ullman et al. 1962) or a specialization-index (Matilla et al. 1955), and the multivariate statistic urban classification including factor-analysis and cluster-analysis (Bahrenberg et al. 1985).

<sup>23</sup> Form-function relations are present after all in cultural historic considerations, classifying fortified, planned, colonial, civil, long distance trade/fair, trade, farming/agro, and so-called «minor cities»; compare (Lichtenberger 1986: 34ff.). These considerations, however, reflect the form-function dichotomy merely as an immediate one-directional relationship: the predominant function of the city as a whole is affecting the urban form; neither do they take into account the multiplicity of urban functions expressed in form, nor the impact of specific design considerations onto the cities' functions – not to mention more abstract functional motives, such as prestige, belief, ethics etc.

<sup>24</sup> A rare account from side of architects working in civil planning institutions gives Rudolf HILLEBRECHT (1910-99): "[Bezug ist; the author] die Stadt als Ganzes, als ein 'Gefäß', das den Bedürfnissen und Wünschen materieller und immaterieller Art einer vielschichtigen Bürgerschaft Erfüllung bietet, das sozialen und wirtschaftlichen, kulturellen und politischen Verhältnissen der jeweiligen Generation Entsprechung gibt, das auf Grund der lokalen Bedingungen von Standort und Klima seine Eigenart besitzt, das mit den technischen Mitteln der Zeit geschaffen wird und das schließlich in der Darstellung seines Sinngehalts durch Gestalt und Form ein Kunstwerk sein sollte. Dieses alles ist unter 'Stadt' verstanden ein Ganzes, und das Ganze nur kann Bezugspunkt für die Aufgaben des Städtebaus sein" (Hillebrecht 1962: 49).

'[The reference is] the city as a whole, as a 'container', which allows all material and immaterial demands and desires of a multilayer citizenry to be met, which refers to the social and economic, the cultural and political circumstances of the according generation, which has its own features on ground of the local conditions of locale and climate, which has been produced with contemporary technical means, and which should ultimately represent a piece of art, through the display of its meaning in 'Gestalt' and form. This all, understood as 'city', is a whole, and only this can be the point of reference for the tasks of urban design and planning', (author's transl.). Again, this account is in broad approach too vague for possible useful deductions.

Furthermore, there are design and planning instructions by other authors, which, of course confine an urban program for the future, mostly trying to resolve current malformation, and not specifying the essence of cities.

From side of architectural historians Spiro KOSTOF (1936-91) did give several premises for a comprehensive understanding of a city that, however, also mainly adhere to non-urbanistic considerations and moreover feature a distinct historical retrospectivity; see (Kostof 1991: 37 ff.).

<sup>25</sup> "Die Idee einer Stadt liegt vor allem in der Ordnung, die Haus, Straße, Platz, öffentliche Gebäude zu einem Ganzen verbindet, d.h. in der Art und den Anordnungen und Beziehungen ihrer Teile, die miteinander den Gesamtbau der Stadt bilden" (Egli 1959: 11).

'The idea of a city lies predominantly in the order, which combines house, street, square, public buildings to a whole, e.g. in the manner and the arrangement and relations of its parts that altogether present the built totality of the city', (author's transl.).

The Austrian architect and urban planner EGLI was the assistant to Clemens HOLZMEISTER at the Vienna Academy of Arts and later his colleague during the planning for Ankara, Turkey. From 1942-63 intermittently he taught at the ETH Zurich University, first as lecturer and then as professor of urban design.



that is equivalent to a piece of music or a stage plan.<sup>26</sup> The growing uncertainty of how to plan and design cities today eventually aggravates the assignment; from most architects' and planners' perspectives the city is seen as a "field of forces in movement" (Seifert 2003: 33), difficult to grasp and difficult to predict and consequently in its entirety an unpleasant object of research.

The present thesis cannot and does not want to resolve the issue of defining *the 'city'*, a task more prominent and adept researchers already worked on;<sup>27</sup> some of the statements, which shall be made in the following, will be valid for either kind of settlement – urban or not-yet-urban – and thus necessarily fail to exemplify a true definition. Nonetheless, it wants to investigate whether a more intense but abstract analysis of urban form might help to identify another approach within urban research: a comprehensive architectural and urbanistic reflection and a search for the constitutive factors or parameters of urban form. To proceed on this imponderable field, however, we should set some premises, which are inherent in the title of the current part, but could also serve as a superscription for this whole thesis:

1. This employment shall be called *Western*, as its intellectual background originates from a Western academic education and a Western cultural understanding. Thus, there is of course a hermeneutic predicament in claiming an exceptional right of interpretation or in proposing universally valid arguments; consequently this argumentation shows one specific self-contained approach and thesis.

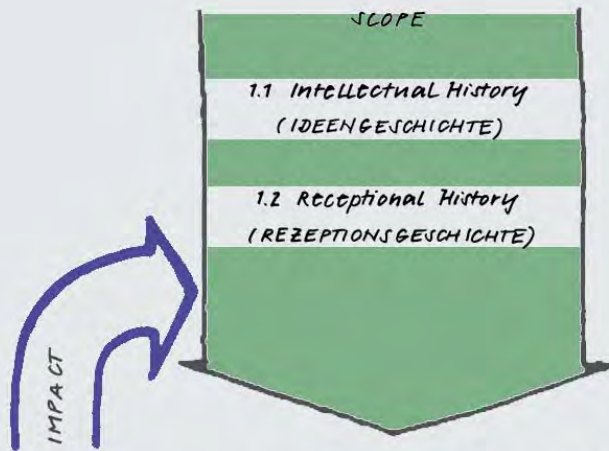
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<sup>26</sup> "[...] entendant la cité comme l'expression d'une société déterminée ou plus exactement d'une société formée de communautés, j'estime qu'il ne peut y avoir de cité harmonieuse que dans la mesure où ces communautés fondent la conception et la réalisation de leur cité sur des pensées philosophiques ou théoriques, voire des doctrines, dans la mesure où elles demeurent dans le limites que sauvegarde de la liberté individuelle exige. Ces pensées, théories, doctrines, etc., ne peuvent se traduire en faits urbains significatifs que si elles permettent l'élaboration d'un corps de règles (et non d'un règlement) que je qualifie, avec d'autres, de 'composition urbaine', par analogie avec la composition musicale ou toute autre organisation impliquant un 'art de faire'. [...] C'est la raison pour laquelle je pense que le résultat d'une composition urbaine apparaît conçu comme un plan scénique, qu'il est interprété comme un parcours parce que la géométrie disparaît derrière la structure pratique et qu'enfin, il est une rhétorique de l'anonymat, organicisme casuel dans lequel apparaît la reconnaissance historique" (Delfante 1997: 7f.).

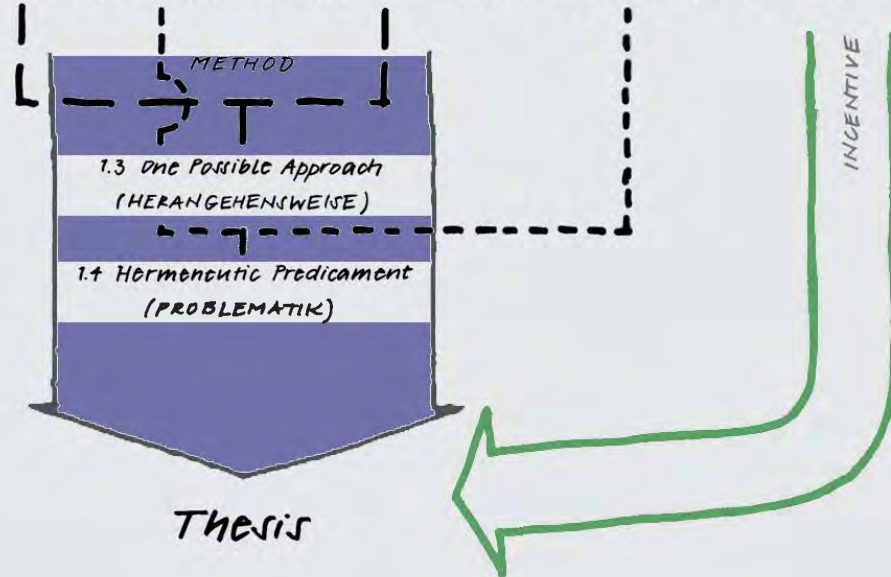
'[...] understanding the city as an expression of a certain society or more accurate as a society built up by communities, it can be a harmonic city only, due to my opinion, when these communities base the conception and realization of their city on philosophical and theoretical thinking or even on doctrines, within the limits of safeguarding individual freedom. This thinking, these theories, doctrines etc. can only manifest themselves in famous *faits urbains*, when they allow for the elaboration of a set of rules (not of commandments), that I, as others, qualify as "urban composition", analogue to musical compositions or any other organization that imply an "art of creation". [...] That is the reason why I believe that the result of an urban composition is meant to be a stage plan, which can be interpreted as a passage, as the geometry is disappearing behind the practical structure, and not least, it is a rhetoric of anonymity, an accidental organicism, in which the historic acknowledgement is emerging', (author's transl.).

The French architect and urban planner DELFANTE was from 1961-78 director of the Atelier d'urbanisme in Lyon and Vice-president of the Association internationale des Urbanistes. For more urbanistic definitions on the city see for instance the following books on urban history (Mumford 1961; Jaspert 1961; Benevolo 1975; Hofrichter 1982; Vance Jr 1990; Kostof 1991; Kostof 1992; Hall 1998).

<sup>27</sup> WHEATLEY even believes that "as far as morphology is concerned ancient and modern cities share only traits of so general a character that they are virtually useless for classificatory or analytical purposes" (Wheatley 1972: 601). As far as classification is concerned we do not want to object; still, a worthwhile question raised shall be, whether there are no analytical potentials.



### A Western Reflection of Western Urbanism



2. We shall call this employment a *Reflection*, as its cause derives from a review of the current urban development and the later model results in an analysis and abstraction of built urban form. Both matters imply an intellectual rather than a practical operation.

3. During this employment we shall focus on the *Western* development, not only to delimit the object in examination for this thesis, but also due to the already mentioned hermeneutic difficulties. Non-Western examples, e.g. early and ancient developments, will be included in the third part of this thesis as far as their influences on the Western development are provable or we can observe congruent circumstances there more easily.

4. This employment focuses on urban form, which is, however, generated due to societal, economical, and political developments and similarly affecting these developments. *Städtebau* in the German language offers a flexible term to describe also this interrelation between form and function, the reasons for a certain form and its actual formation process, but also the built city as an abstract concept. As there is no adequate English translation, we shall use the term *Urbanism* accordingly.<sup>28</sup>

As just mentioned, the recent urbanistic debate gives one incentive for the present thesis. Obviously, here we encounter some difficulty of self-positioning and loss of direction – we sensed this already with LOOTSMA's verdict on the second phase of modernity and his claim for a new analysis of the processes leading to urbanism.<sup>29</sup> The following two chapters, thus, shall give one rough sketch of the developments that result in the current urban situation. This is a short review of the industrial and postindustrial development,<sup>30</sup> firstly by giving one account on the intellectual urban history of that time (*Ideengeschichte*) and secondly by outlining the receptional history of the different approaches in naming main discussants and their critical perspectives (*Rezeptionsgeschichte*). The succeeding chapter then will introduce the basis for the elaboration of another method of describing and understanding urban form (*Herangehensweise*), followed by a closer account on the hermeneutic predicament of this endeavor (*Problematik*).

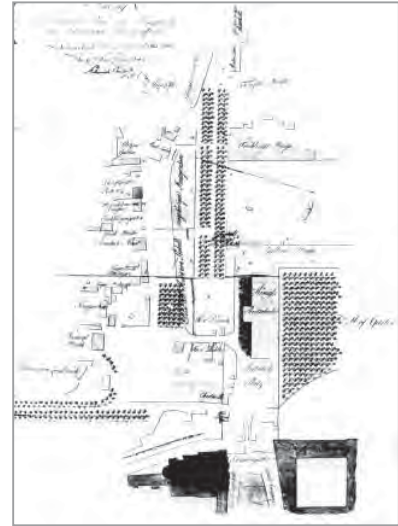
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<sup>28</sup> The terminological dilemma exists since Camillo SITTE introduced the term "Städtebau" into the urbanistic debate in 1889 to reflect not only his contemporary design enterprises but also to plea for the integration of the extant cities into the design considerations ('Städtebau' as Academic Discipline – see discussion on page 31). At the same time there is a fundamental difference between urban planning and "Städtebau", as Gerd ALBERS already plausibly remarked: urban planning shall be a non-technical discipline, detached from the actual construction process and dealing predominantly with the socio-economic framework for urban form and function; the actual form-function relation of the city is considered only retrospectively (Albers 1975: 10). In this thesis we shall neglect a possible strict dichotomy between urban design and urban planning – in addition to the term *urbanism*, we will also use the adjective *urbanistic*; *urban planning* and *urban design* will be used only, when a differentiation is necessary and intended.

<sup>29</sup> see discussion on page 5 f.

<sup>30</sup> The author is aware of the manifold divisions and subdivisions that have been introduced to deal with this extremely dense part of history; as a matter of fact, we also shall suggest phases for the industrial urban development. Yet, for this introductory occupation it does not seem conducive to go into much detail of contemporary (and still controversial) epoch classification. Thus we gladly adopt the somewhat blurring CHILDEan verdict on the three major paradigm shifts affecting the cities, of which the industrial revolution – in the logic of his argument – affects society still more thoroughly than the advancements in communication technology or computerization.





Excerpt from the General Plan for the Redesign of the Area in front of the Schwabingertor in Munich, 1815, by Ludwig Sckell [Stadtarchiv München] cf (Kieß 1991: 79)

country  
Germany / Bavaria  
coordinates  
48° 08' 30" N – 11° 34' 38" E  
Feldherrnhalle  
elevation  
519 m  
population  
1,294,608 (2006)  
size  
310 km<sup>2</sup>  
density  
4,170 /km<sup>2</sup>  
foundation / rst citing  
1158  
source  
<http://de.wikipedia.org/wiki/M%C3%BCnchen> (31.05.2008)



Munich – Ludwigstraße  
Image © 2007 AeroWest

**plate 5**



*Land Division and Feudal Representation*

Until the 19th century it was land surveyors and military architects who pursued the urban development. The first looked after the division of land, either according to the princely or civic stipulations; it was the determination of public and private property, the assignment of building sites and sites not to be built on – and subsequently the creation of an urban infrastructure. The second took responsibility for the military organization and fortification of settlements as well as for the formal expression of the hierarchic structure of the state – after all in the heydays of feudal reign through the construction of vast and magnificent princely buildings and palaces as well as through the set-up and design of streets and places.<sup>31</sup> Both groups were occupied at first with the technical-functional aspects of urbanism, the latter more and more also with the artistic-formal aspects. The fundamental feature, yet, to all urban development was an intrinsic incrementalism due to the scarcity of resources and limitation of technical equipment.

*Industrial and Political Revolutions*

The 19th century itself brought radical changes with its industrial and political revolutions: rationalized and mechanized production processes, evolving of working-class and bourgeoisie, broader political participation etc. The city became the nucleus of all these developments, its planning and maintenance hence more elaborate. The creation of urban form was no longer merely the expression of solely aesthetic, political, or pecuniary interest, but all these interests likewise imposed claims onto the city and provoked new issues, however, often by their interfering competition. Yet, in addition to new multifold demands in terms of quality we encounter an enormously new quantity of urban development. A rural exodus led to an explosive increase of urban population, bursting the extant – more or less still medieval urban structures and calling for urban expansions outside the existing city limits. The former authorities executing and monitoring urban development soon were overtaxed, predominately due to the fact that they had no economic basis for such an expansive and expensive employment. Neither were they administratively prepared (nor willing) for the new task.<sup>32</sup> It was the upcoming societal stratum of the bourgeoisie, who ultimately took over – similar to the manner of industrial production they were acquainted with, they soon produced vast urban developments, not only for their workers within the paternalistic urban approaches<sup>33</sup> but also as a financial investment. Mechanized urban design

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<sup>31</sup> A full review of princely urban design, which initiated with manifold concepts for ideal cities in early modern times, would exceed the scope of this introduction by far. In this context, however, the conversion of Corsignano into Pienza under Pius II by Bernardo Gambarelli known as ROSSELLINO, (from about 1459 on) and the transformation of Rome mainly under SIXTUS V by Domenico FONTANA (from about 1585 on) have to stand for the first built milestones of this development.

<sup>32</sup> The German socialist Ferdinand LASSALLE (1825-64) polemically characterized the states at the times of the Manchester-liberalism as "Nachtwächterstaaten" (night-watchman states), only looking for the internal and external security but neglecting the social and economical impact of the industrialization (Pollert et al. 2001).

<sup>33</sup> Large corporations, after all in the flourishing coal-and-steel industries, early sought to face the social problems for their own workers in establishing large housing programs. In Germany for example Alfred KRUPP (1812-87) and Friedrich Alfred KRUPP (1854-1902) adjoined their economic success with the building of various workers' colonies close to their factories. Mostly furnished with various hygienic and social amenities, still these developments were very rationally laid out and without main impact (functionally nor formally) onto the adjacent towns.





Design for the Extension of Barcelona,  
1859, by Ildefonso Cerdà  
[Arxiu de la Ciutat, Barcelona]  
cf (Kieß 1991: 176)

country  
Spain / Catalunya  
coordinates  
41° 23' 42" N – 02° 10' 33" E  
Plaça de Tetuan  
elevation  
9 m  
population  
1,595,110 (2007)  
size  
91 km<sup>2</sup>  
density  
17,452 /km<sup>2</sup>  
foundation / rst citing  
ca. 218 BCE / 1859 (Eixample)  
source  
<http://es.wikipedia.org/wiki/Barcelona> (20.04.2008)



Barcelona – Eixample  
Image © 2007 DigitalGlobe

**plate 6**



in combination with real estate speculation and housing market gained an important role of bourgeois pecuniary considerations.<sup>34</sup> Eventually the extant urban structures increased not only in size but also in volume.

#### *City Extension*

We recognize this new kind of urban transformation and extension well with the first coordinated urbanistic projects on the European continent – HAUSSMANNIEN Paris from 1853 on, the Vienna Ringstrassen- and the CERDÁ-Plan for Barcelona – both dating 1859, and eventually the Berlin grand extension by HOBRECHT from 1862 on.<sup>35</sup> The goals of these as well as other projects all over Europe were deliberately outspoken: renewal and reorganization of the still mainly medieval urban structure for largely military and economical reasons, and the architectural beautification for chiefly political and social reasons. The private hand, mainspring for most extension activities, could count on the state's sanctioning of their new assets, which formally were expressed in customary layouts of Renaissance and Baroque times – yet at that time commissioned by the monarchical authority. In addition to the well-approved Belle-Époque urbanism with its grand avenues and boulevards, squares and plazas staging the bourgeois way of life however, there accrued a vast amount of miserable and overcrowded housing quarters for the less-well-to-do, which ultimately accounted for the bulk of the 19th-century city and its economic attractiveness to the private developers. The city's extension mostly followed a concentric development around the extant cores,<sup>36</sup> yet soon extending alongside the main radial streets, incorporating neighboring villages and towns, and as a result producing fringes.<sup>37</sup> At the same time the manufacturing sector demanded more and more contiguous terrain and called for a functional segregation between working and living. Concurrently there evolved a new dimension of interregional as well as urban traffic, consuming additional space. Namely, the numerous private railways, which had to provide for the transportation of goods as well as for the commute of workers, but were built autonomously without strategic synergy, changed the cities' shape tremendously. Whereas, according to these lines, Europe was overcoming its feudal heritage, North America's vast undeveloped expanse, free enterprise and liberal policy presented chance and challenge at the same time. Here the Land Ordinance from 1785 and its rational land division plus the land grant practice laid ideal ground for the industrialized urban development by private promoters, later supported by the

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<sup>34</sup> Giorgio PICCINATO speaks about the "privatizzazione della città" (privatization of the city) (Piccinato 1974: 14 ff. and 33).

In the same context Gerhard FEHL's suggestion to understand this industrialized stage of urban development as a 'Production of City' is still an illustrative depiction (Fehl 1995), which was scribed already earlier by Alexander MITSCHERLICH (Mitscherlich 1965: 31).

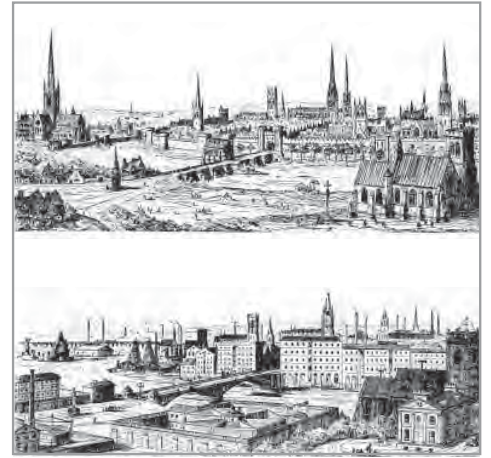
Another enlightening insight into the development of Berlin housing and the impact of mechanized layouts to the architectural style gives Karl SCHEFFLER (Scheffler 1913).

<sup>35</sup> The Belle-Époque transformation of Paris was executed by Georges-Eugène HAUSSMANN (1809-91) under the reign of NAPOLEON III. Authors of the three winning Ringstrassen-projects were Ludwig FORSTER (1797-1863), Friedrich STACHE (1814-95), and Eduard van der NÜLL (1812-68) together with August SICARD VON SICARDSBURG (1813-68). Ildefonso CERDÁ Y SUÑER (1815-76) signed responsible for the rationalized extension of Barcelona under ISABELLA II, James HOBRECHT (1825-1902) for the Berlin extension under WILLIAM I.

<sup>36</sup> Since this time we find more and more the term *old town*, *centro storico* in Italian, or *Altstadt* in German for the existing nucleus in contrast to the new districts. Still, this development scheme resembles the emergence of medieval faubourgs.

<sup>37</sup> For further information on German city extensions see for example (Hartog 1962; Fehl et al. 1983; Fehl et al. 1995).





A Random Catholic Town in 1440  
with its Condition in 1840,  
1836, by Augustus W. Pugin  
cf (Pugin 1836: Annex Fig. 1+2)

country  
Germany / North Rhine-Westphalia  
coordinates  
51° 30' 46" N – 07° 27' 52" E  
Hansaplatz  
elevation  
76 m  
population  
587,137 (2007)  
size  
280 km<sup>2</sup>  
density  
2,094 /km<sup>2</sup>  
foundation / rst citing  
ca. 880  
source  
<http://de.wikipedia.org/wiki/Dortmund> (20.04.2008)



Dortmund, the medieval city, the  
railway and industrial zones (acc.)  
Image © 2007 AeroWest

**plate 7**



Homestead Act from 1862.<sup>38</sup> The various gridiron cities of the Middle and Far West, mostly offspring of the private railway development, bear witness to this. But also some still European urban nuclei of the East coast early followed rationalized development patterns for their extension; most prominently New York City with the Commissioner's plan from 1811.<sup>39</sup> Ultimately, the rapid urban growth took place all over the industrialized countries, making small towns to large urbanized entities and causing former formal and administrative structures to fall into oblivion.<sup>40</sup> Quickly the traditional means of land-division and formal urban design as well as the refrain of the public authorities proved insufficient and called for professional competences at a wider range as well as for the moderation of the diverging interests.<sup>41</sup>

#### *Social Question and the Urge for Planning*

Early we find special attention for social and hygienic issues. Several publications of the mid 19th century dealt with housing shortage and overcrowding tenements, which were the result of the enormous exploitation in real estate and housing negotiations for best profits at minimal public control. In the German speaking countries Friedrich ENGELS' chapter on "Die großen Städte" from his book "Die Lage der arbeitenden Klasse in England" and countess DOHNA-PONINSKA's essay about "Die Großstädte in ihrer Wohnungsnoth und die Grundlagen einer durchgreifenden Abhilfe"<sup>42</sup> produced a wider understanding for the necessity of a new

<sup>38</sup> The Land Ordinance of 1785, with its spiritus rector Thomas JEFFERSON (1743-1826), and the subsequent Public Land Survey System determined the land division of the new Western territories of the U.S.A., which remained federal property until they were developed. Neglecting extant settlements and topographic disturbances the land was divided into a square grid of 6 to 6 miles. Subdivided sections of one square mile were sold to settlers and land speculators, often combined with land grants. Even though meant to cause an agricultural development, the Land Ordinance also destined the shape of the new towns and cities. The Homestead Act later institutionalized the land grant policy by relinquishing developed land of one quarter square mile to any at least 21-years old person after a time span of five years (Dick 1970; Gates 1996).

<sup>39</sup> for the American development see for example (Robinson 1916; Nolen 1916; Bridenbaugh 1938; Bridenbaugh 1955; Warner 1962; Reps 1965; Warner 1966; Warner 1968; Callow 1969; Warner 1972; Mann et al. 1972; Sutcliffe 1981)

<sup>40</sup> Major European industrialized areas (coal, steel, and textiles) in the mid of the 19th century were Central England, Belgium, in Germany the Ruhr-district and Upper Silesia, quickly followed by Southwest Germany, North Bohemia and Northwest Italy. In addition to the extant large port cities also the new national state capitals gained more and more economical importance. The administrative follow-up of the vast urban expansion continued till the 20th century: New York City 1898, Greater Berlin 1920, Siedlungsverband Ruhrkohlenbezirk 1920, Greater London 1965. For an interesting account on the relationship between housing, city development and metropolitan public transportation in Berlin see (Siewert 1978; Siewert 1988); similarly for New York City see (Plunz 1990).

<sup>41</sup> A remarkable approach to give the industrial city a new shape represents Arturo SORIA Y MATA'S (1844-1920) "Ciudad Lineal" (Linear City). In the years 1882 and 1883 he firstly published his ideas in a series of small contributions to the Madrid newspaper "El Progreso", whose co-editor he was. Only in 1892 he issued a booklet comprising the project of a 48 km long ring-railway in 10 km distance to Madrid, which sought to connect the villages in the city's hinterland. Along this railway SORIA suggested a 5-part linear development of approximately 3.500 m width: the railway and additional technical and social infrastructures being part of a central zone; on each side there followed zones for mid-density housing and in transition to the open land two zones for agricultural use. In addition to the functional design concept SORIA already discussed the possibility of an anti-speculative development, later on he proposed the connection of most Spanish cities and also some major European cities by linear cities. SORIA's plan has never been realized, only some five kilometres in the East of Madrid poorly follow his design guidelines, yet his concept got readopted in some planning of the 20th century (Fehl et al. 1997: 55ff.).

Similar thoroughgoing in employing functional guidelines is, of course, Ildefonso CERDA Y SUÑER'S 22 years older Barcelona project; compare plate plate 6 on page 26.

<sup>42</sup> 'The great cities in their housing famine and the basis for a radical remedy', (author's transl.)

approach towards the organization of the city (Engels 1845; Arminius [pseud.] 1874);<sup>43</sup> in England Benjamin RICHARDSON's "Hygieia. A City of Health" and in the U.S.A. Jacob RIIS' "How the Other Half Lives" did the same (Richardson 1876; Riis 1890).<sup>44</sup> Leonardo BENEVOLO concludes that the origin of modern urbanism is rooted in the attempts to answer the social question (Benevolo 1963), and, of course, the steadily growing underclass produced a recognizable political pressure to alter their living circumstances as well as several members of the higher classes acknowledged a moral responsibility.<sup>45</sup> A first, yet unsystematic approach towards an urbanistic discipline represents the lecture "Über Städteanlagen und Stadtbauten"<sup>46</sup> by Rudolf EITELBERGER that was published in occasion of the imperially decreed Ringstrassen-competition in Vienna (Eitelberger-Edelberg 1858).<sup>47</sup> He already raised the main issue: the interrelation of political, social and aesthetic aspects within the city, which ultimately should safeguard "morality"; in the typical language of his fellow educated bourgeois (Bildungsbürger) that meant the civilizing progress of mankind by means of urban cohabitation.<sup>48</sup>

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<sup>43</sup> ENGELS (1820-95) published a version in English language first in New York City 1887 followed by a British edition in 1892, both titling "The condition of the working class in England in 1844". Apparently due to her noble descent, DOHNA-PONINSKA (1804-78) used the pseudonym "ARMINIUS". Hence, the spelling of her name varies largely within the according literature (Lohrberg 2001: 13).

<sup>44</sup> RIIS' (1849-1914) book was preceded by a lecture with the same title on January 25, 1888 before the Society of Amateur Photographers in New York City. Subsequently he published three more volumes on the living circumstances of New York tenements (Riis 1892; Riis 1902; Riis 1903).

<sup>45</sup> We cannot go into detail of the wide ranging political chngement that took place at that time, after all the emergence of communism, which until today affects not only the nomenclature for that time. Likewise a close occupation with the evolvement of urban planning unfortunately would go beyond the scope of this thesis, which is focusing on urban form instead of its, yet crucial preceding socio-economic and political foundations. Though, we should not omit the significant housing and public health development, after all in Great Britain – the motherland of industrialization: Lodging Houses Act 1851, The Artisans' and Labourers' Dwellings Act 1868, Public Health Act 1875, Royal Commission on the Housing of the Working Classes from 1884 on (Ashworth 1954; Tarn 1971; Wohl 1977; Schütz et al. 1982), for a short summary on their impact on design see also (Broadbent 1990: 114 ff.), followed by similar developments in other Western states. For further general study see (Benevolo 1963; Piccinato 1974; Gaudie 1974; Cherry et al. 1980; Cherry 1980; Rodríguez-Lores et al. 1985; Hall 1988; Rodríguez-Lores et al. 1988; Kieß 1991; Zimmermann 1991; Rodríguez-Lores 1994; Albers 1997; Schubert 1997).

<sup>46</sup> 'Urban layouts and urban buildings', (author's transl.)

<sup>47</sup> The art historian EITELBERGER (1817-85) was the first full professor of that science in Vienna (1852) and also initiated the Austrian museum for art and industry in 1864.

The already mentioned development of the Vienna fortification area (Glacis) started in December 1857 with a letter from Emperor FRANZ JOSEPH I to his chancellor BACH, instructing him to advertise a urban design competition, the first of its kind. The combination from the three awarded contributions produced until 1859 a "Grundplan" (basic plan), on which ground the development was executed until 1918, yet subsequently slightly altered and never completely finalized (Mollik et al. 1980).

<sup>48</sup> "Diese Elemente [aus denen eine Stadt wird; the author] sind endlich sittlicher, ethischer Natur, und dieses in ganz vorzüglichem Grade. Sie sind das [...] auch dadurch, dass eben durch die Gemeinsamkeit des Lebens das Zusammenwohnen und Zusammengehören, ich möchte sagen, die Sittlichkeit sich gesteigert, höhere sittliche Aufgaben zur Erscheinung gekommen sind" (Eitelberger-Edelberg 1858: 5f.).

'These elements [which generate a city; the author] are eventually of moral, ethic nature, and this at an excellent rate. They are like this [...] also because the mutuality of life, the common housing and the belonging together increased morality and revealed higher moral tasks', (author's transl.). EITELBERGER's lecture also employs a short summary on the urban development from Greek to contemporary times to underline his argument. Hence, like many following authors, he stresses the importance of urban history for a theoretical occupation with the city.

### *'Städtebau' as Academic Discipline*

Gradually there evolved a stimulating climate for a scientific discourse on urbanism and likewise academically performed standards within building codification. The first main authors for this qualification of a new urbanistic discipline were Reinhard BAUMEISTER (1833-1917), Camillo SITTE (1843-1903), and Joseph STÜBBEN (1845-1936), who produced within the time-span of 15 years pioneering compendia on the technical, economic, legislative, and artistic issues of urban development.<sup>49</sup> In their work they sought to improve the enormous building activity within the cities – even though the peak was well transgressed, but thereby eventually gained the architectural profession main control for the execution of urban plans and urban designs.<sup>50</sup> A quite substantial number of layouts, drawn up by new civic planning departments, followed the new guidelines and enhanced the living quality within the cities;<sup>51</sup> yet hardly as many designs were produced until the First World War as there were until 1890 – after all in Europe. Apparently, main necessities had been satisfied and occasional interventions served predominantly as an improvement for the largest brutalities of the recent developments. In general, the new standards well tamed disproportionate economic interests yet still did not give original incentives; the formation of the city was rather more

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<sup>49</sup> BAUMEISTER gives the first widespread account on urbanism in his book "Stadt-Erweiterungen in technischer, baupolizeilicher und wirtschaftlicher Beziehung" (City-extensions in their technical, and economic aspects), where he summarized the implications of the new task in a very engineering manner: His whole book only shows 17 figures on 492 pages (Baumeister 1876).

SITTE follows up with an argument for the artistic aspects of what he is introducing as "Städtebau" (see footnote 28, on page 23). With him the new task is claimed by the architects' profession, orientating the development to the appearance of urban space (Sitte 1889). His treatise "Der Städtebau nach seinen künstlerischen Grundsätzen" ("City planning according to artistic principles") proved very successful, being published in various editions in short period: 2nd edition also 1889; 3rd edition 1900, and 4th edition 1909. The first English translation was published in 1945, titling "The art of building cities. City building according to its artistic fundamentals" – yet was heavily criticized as being cursory and misrepresenting (Wittkower 1947: 166). Today's standard translation by George R. COLLINS and Christiane CRISEMAN COLLINS dates from 1965.

The most comprehensive of the early urbanistic literature gives STÜBBEN with "Der Städtebau" (Construction of the City) comprising 561 pages (Stübben 1890). He reedited and enlarged his work twice in 1907 and in 1924.

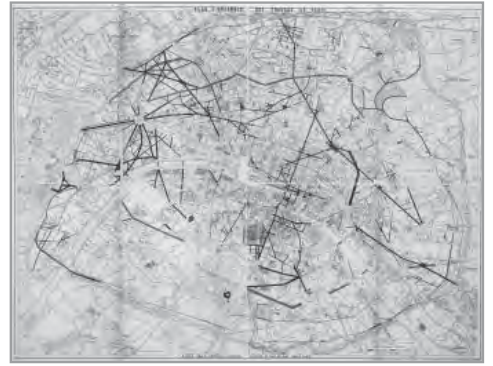
Until 1890 there had been only two more book publications within the field: CERDÀ using the term "urbanización" = urbanization, NACHENIUS introducing the term "stedebouw" = 'site-building' (Cerdà 1867; Nachenius 1880); both, however, appear to be less universally instructive (however voluminous) resp. comprehensive in comparison with the ones described above and also lacked their wide recognition (Albers 1997: 120 ff.); interestingly we cannot find authors from earlier industrialized countries, who comparably contributed to the new topic. For a comprehensive accord of early planning literature see also "Entwicklungslinien im Städtebau" (Albers 1975); for a short summary on the main features of BAUMEISTER'S, SITTE'S and STÜBBEN'S books see also "Il pensiero urbanistico in Germania" (Ley 2003), which also produced the basis for the introductory part of this chapter.

<sup>50</sup> EITELBERGER already emphasized the role of the architect in urban processes: "Diese Elemente [des gesellschaftlichen Gesamtinteresses; the author] konstituieren [sic!] in einer Stadt einen geistigen Organismus, den die Kunst, speziell die Architektur, zu durchdringen und zu klären berufen ist" (Eitelberger-Edelberg 1858: 14).

'These elements [of collective interest; the author] constitute an intellectual organism within the city, which art, especially architecture, is appointed to understand and to clarify', (author's transl.).

<sup>51</sup> Even though the implementation of the new academic considerations took time to find their way into legislation. A remarkable attempt to aerate the cities represents the so-called «Lex Adickes» from 1902 (Franz Adickes, 1846-1915, 1890-1912 lord mayor of Frankfurt am Main).





Plan des Travaux de Paris,  
1868, by Edmé Andriveau-Goujon  
[Bibliothèque Nationale de France, Paris]  
cf (Pinon et al. 2004: 111)

country  
France / Île-de-France  
coordinates  
48° 52' 25" N – 02° 17' 42" E  
Place de l'Étoile  
elevation  
33 m  
population  
2,166,200 (2005)  
size  
105 km<sup>2</sup>  
density  
20,433 /km<sup>2</sup>  
foundation / rst citing  
53 BCE / 1853 (Transformation)  
source  
<http://fr.wikipedia.org/wiki/Paris> (20.04.2008)



Paris – L'Étoile  
Image © 2007 The GeoInformation Group |  
InterAtlas

**plate 8**



tightened to real estate considerations.<sup>52</sup> Also therefore the birth of the new discipline firstly led more to an academic discourse than to actual projects. Many more authors and professionals in all Western countries succeeded BAUMEISTER, SITTE and STÜBBEN refining the idea of urbanism, meeting in congresses and editing academic journals.<sup>53</sup> Yet, from today's perspective three of them seem to be momentous for the further development: Otto WAGNER, Daniel BURNHAM, and Ebenezer HOWARD.

### *City Regulation*

With the "General-Regulierungs-Plan [sic!]" for Vienna in 1893 and his study "Die Groszstadt" in 1911 Otto WAGNER (1841-1918) laid ground for a planning attitude that believed in a more and more expanding city – and at the same for a conviction of solving this metropolis' problems through a general regulation.<sup>54</sup> Taking

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<sup>52</sup> "Die bürgerlich-kapitalistische Stadt des 19. Jahrhunderts ist, zum ersten Mal in der Geschichte, "eine völlig private". Seit diesem Zeitpunkt wird jeder gesellschaftliche und ästhetische Aspekt der Stadt gleichermaßen auf ein zweidimensionales Verhältnis reduziert: alles wird in Beziehung auf die Bodennutzung und die damit zusammenhängenden [sic!] Parzellierung verstanden. Grundbesitz ist die führende Kraft bei dem Aufbau der Stadt: es ist ganz verständlich, daß die "Stadt-Wissenschaft" sich auf ihn bezieht. [...] Als eine progressive Kraft, wie alle Wissenschaften des 19. Jahrhunderts, unterstützt auch die Stadtplanung die Erweiterung der gesellschaftlichen Basis der kapitalistischen Entwicklung. Tatsächlich kämpft sie von Beginn an gegen die Bodenspekulation – die die Marktgesetze verändert hatte – und ringt darum, jedem (präziser: jedem Grundbesitzer) die gleichen Profitchancen bei der Ausnutzung des Stadtwachstums zu geben" (Piccinato 1980: 32f.).

'The bourgeois-capitalist city of the 19th century is, for the first time in history, 'a complete private' city. Since then every social and aesthetic aspect is similarly reduced to a two-dimensional relation: everything is understood to be related to land use and its coherent parcelling. Real estate property is the leading power at the construction of the city: it is perfectly understandable that 'city-science' is referring to this property. [...] As a progressive power, like all sciences of the 19th century, city planning supports within the capitalist development the amelioration of its societal basis. As a matter of fact it is from the start campaigning against real estate speculation – which had changed the principles of the market – and is struggling to permit to all landowners same profit-chances at the exploitation of the cities extension', (author's transl.).

In addition, Lewis Mumford traced the for us very familiar financial approach towards the city back to the proto-capitalism of the 15th century and the upcoming abstraction of marketable goods (Mumford 1961: 410-414). Ultimately, capitalism turned every part of the city into a negotiable commodity (Mumford 1961: 446).

<sup>53</sup> see for instance (Henrici 1904; Hercher 1904; Eberstadt 1909; Unwin 1909; Hegemann 1911; Fassbender 1912); journals and congresses in the urbanistic field until World War I:

1897 – Ciudad Lineal – later: Revista de urbanización, ingeniería, higiene y agricultura (1902)

1903 – 1st German exhibition on urbanism in Dresden

1904 /January – Der Städtebau (Urbanism)

1904 /October – The Garden City – later: Garden Cities and Town Planning (1907)

1906 – Principles of urbanism (Association of German architects' and engineers' societies)

1906 – 7th International congress of architecture (RIBA) in London

1908 – Urbanistic lectures, Technical University Berlin-Charlottenburg

1908 – 8th International congress on housing in London

1910 – Town Planning Review

1910 – Exhibition on urbanism in Berlin, reported by Werner Hegemann (Hegemann 1911)

1910 – Exhibition on urbanism and congress (RIBA) in London

1910 – 9th International congress on housing in Vienna

1912 – Exhibition on urbanism and congress in Düsseldorf

1913 – International congress on architecture in Leipzig

1913 – Exhibition "Cité Moderne" in Nancy

1913 – 10th International congress on housing in The Hague

1913 – 1st International congress on urbanism and exhibition in Gent

1914 – Exhibition on urbanism in Lyon

<sup>54</sup> The explanatory report to WAGNER's general regulation plan for Vienna in 1893 was one year later published in book-form (Wagner 1893); the study from 1911 was published in English one year later, titling "The Development of a Great City" (Wagner 1911).

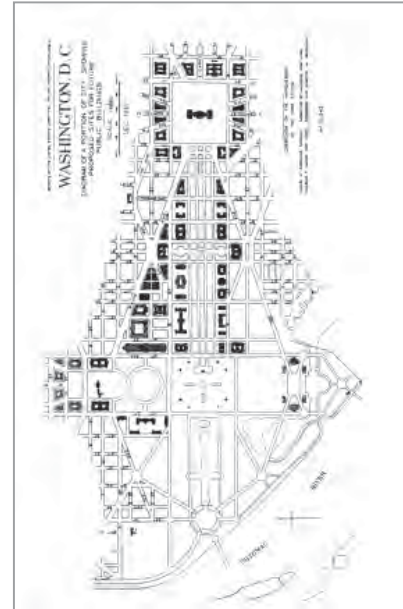


Diagram [...] Showing Proposed Sites for Future Public Buildings, 1901, by Daniel H. Burnham et al. for the Senate Park Commission [Fine Arts Commission, Washington. D.C.] cf (Reps 1965: 509)

country  
USA / District of Columbia

coordinates  
38° 53' 22" N – 77° 02' 07" W  
Washington Memorial

elevation  
0 to 125 m

population  
588,292 (2007)

size  
177 km<sup>2</sup>

density  
3,481 /km<sup>2</sup>

foundation / rst citing  
1790 / 1901 (Mall)

source  
[http://en.wikipedia.org/wiki/Washington\\_D.C.](http://en.wikipedia.org/wiki/Washington_D.C.) (20.04.2008)



Washington D.C. – Mall  
Image © 2007 Sanborn

**plate 9**

Vienna as paradigm he suggested "die freie Entwicklung für immerwährende Zeiten" (Wagner 1911: 17),<sup>55</sup> by successively attaching more and more districts to the limited central city, which should serve as sub-centers with equally high density and population avoiding fringes. The transformation of extant quarters, however, should have been executed only where urgently needed.<sup>56</sup> Yet, special notice was given to the urban infrastructure, a sensible radio-concentric urban system, and metropolitan mass transportation, which all were seen as a fundamental means for the urban reorganization and further development.

#### *City Beautiful*

Daniel BURNHAM (1846-1912), following a similar metropolitan approach, however focused more on the spatial elaboration of the city and the magnificent representation of its civic buildings. Being responsible for the *World's Columbian Exhibition* in Chicago 1893 he laid ground for the City Beautiful movement: In best Belle-Époque manner beautification and monumentalization was thought to similarly impress and educate. His later "Plan of Chicago", jointly drawn up with Edward H. BENNETT, epitomizes these ideas (Burnham et al. 1908).<sup>57</sup> The city should be transformed into a well organized and well looking entity, which is at the same time reflecting and provoking the urban society living in it. BURNHAM's concept led to a last flourish of architectural historicism and eclecticism, yet the concept itself, separated from its building style, proved to be fundamental for various ensuing urbanistic models and conceptions – after all for the planning of new capital cities.

#### *Garden City*

Not immediately dealing with metropolis itself Ebenezer HOWARD (1850-1928) introduced a differing direction. His proposition for "Garden cities of tomorrow" rather sought to reconcile town and landscape, which until then were felt to be antagonistic realms of human dwelling – both comprising advantages and obstacles (Howard 1902).<sup>58</sup> Apart from some socio-economic features, which today we might consider quixotic, the garden city concept was meant to be part of a regional urban system, taking pressure off the congested centers by diluting peaks of population density into spatially defined subordinated nuclei. However, those garden cities, some 50 to 100 miles distance to the great center (in HOWARD's mind certainly London), should have been full cities in economic autarky from the core, yet, in terms of regional traffic tightly attached to it. Thence, the garden city idea with its great appeal to the middle class became a motor for suburban housing development and social segregation, omitting the cooperative and socio-economically balanced objectives and, after all, contradicting HOWARD's appeal for open spaces in-between developed areas and his outspoken anti-suburban approach.

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<sup>55</sup> The English translation in its context reads: 'The carrying out of the proposals herein set forth insure to every city, through systematized regulation, an untrammelled development for all time, and the ominous "too late" vanishes from view', (pg. 494).

<sup>56</sup> For a short summary on the works of WAGNER and the idea of the unlimited city see "Otto Wagner, 1841-1918" (Geretsegger et al. 1964).

<sup>57</sup> Recently Kristen SCHAFER seeks to re-examine the current BURNHAM interpretation with regard to his social and economic exigencies towards the beautiful city (Schaffer 2003a; Schaffer 2003b).

<sup>58</sup> First published four years earlier as: "Tomorrow. A peaceful path to real reform" (Howard 1898).





Site Plan of Welwyn Garden City,  
1920, by Louis de Soissons  
cf (Purdom 1925: 207)

*country*  
United Kingdom / Hertfordshire

*coordinates*  
51° 48' 07" N – 00° 12' 31" W  
Parkways Fountain

*elevation*  
94 m

*population*  
43,252 (2001)

*size*  
18 km<sup>2</sup>

*density*  
2,356 /km<sup>2</sup>

*foundation / first citing*  
1920

*source*  
[http://en.wikipedia.org/wiki/Welwyn\\_Garden\\_City](http://en.wikipedia.org/wiki/Welwyn_Garden_City) (20.04.2008)  
(Purdom 1925: 187 ff.)



Welwyn Garden City  
Image © 2007 Infoterra Ltd & Bluesky

**plate 10**



### *Survey Before Plan*

Even though not suggesting main urbanistic plans or concepts in the manner WAGNER, BURNHAM and HOWARD did, another author should be added to this short chronological sequence: Sir Patrick GEDDES (1854-1932).<sup>59</sup> His notions of "civics" and regional planning complied largely with HOWARD's approach, yet focused more on the systematic correlation of polity, culture and art (Geddes 1906). The precept *survey before plan* called for a particular occupation with the environment, ecology, and human response.<sup>60</sup> Altogether, professional sociology and ecology as well as a first system theory<sup>61</sup> entered the urban discourse and broadened the design and planning prospective.

### *Politicization of Urbanism*

The turning point of the early 20th century was the end of the World War I. It was the first thoroughly industrialized war, affecting all parts of societies – military and civilians – and catalyzed virulent political as well as economical, social and cultural processes. The struggle for broad participation of all societal strata led to political reforms if not revolutions and ideological confrontations to subsequent civil wars. This impact provoked more drastic approaches towards the city and its form and function, as the extant urban structures represented the overcome political systems. Hence, the city itself became the locale for socio-political utopias.<sup>62</sup> After all left-orientated architects and planners proposed an increase of functional considerations and rejected the antecedent «bourgeois» and somewhat picturesque forms, whose transitional lines they traced back not only to the fundamental changes of the 19th century, but to earlier, even medieval times. A new, supposedly egalitarian industrial society claimed an original unique urban form based on the functionality of the city. The industrial optimization processes, which already operationally determined the urban production of the Belle Époque, now became also a paradigm for urban form.<sup>63</sup>

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<sup>59</sup> Initially educated as biologist he later on focused on geographical and sociological aspects of urban planning.

<sup>60</sup> One of GEDDES predominant objectives was the understanding of "civics" as a fundamental approach towards the city and thereby also the ultimate basis for urban planning; see (Geddes 1904; Geddes 1905; Geddes 1906; Geddes 1908; Geddes 1915); for *survey before plan* see (Albers 1988: 69), (Hall 1988: 142 ff.) as well as (Geddes 1915: 124 ff.).

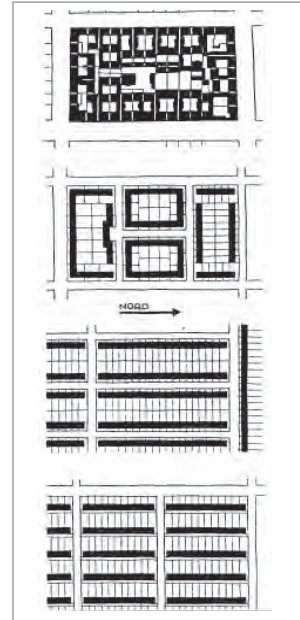
Thus, GEDDES also became a prominent advocate of the «vernacular» for the planning of colonial cities (see his travel to India 1914). Most colonial powers, albeit in their homelands struggling with the industrialized urban development, simply exported their highly exaggerated planning approach, inducing architectonic and socio-political issues, which often sustain until today (i.e. LUTYEN and BAKER's planning for New-Delhi); see for instance (Mairet 1957: 161 ff.).

<sup>61</sup> GEDDES himself never used this term; system theory as a defined concept was only suggested one generation later by the biologist Karl Ludwig von BERTALANFFY (1901-72) (Bertalanffy 1950; Bertalanffy 1969). Yet, GEDDES notion of the city can already be considered as a systematic theory comprising a true interdisciplinary approach.

<sup>62</sup> A prominent summary of the most momentous utopias of the 20th century gave Robert FISHMAN in 1977, reviewing HOWARD's Garden City as well as LECORBUSIER's and WRIGHT's urban approaches; ten years later FISHMAN focused on the suburban development, reexamining the urbanistic history from the 18th century until nowadays and eventually ascertaining another, yet bourgeois, utopia – of which shall be spoken later on (Fishman 1977; Fishman 1987).

<sup>63</sup> A pioneer of the functional city is Tony GARNIER (1869-1948) with his "Cité industrielle", completed in 1904 but published only 13 years later (Garnier 1917). In this industrial city, GARNIER not only delimited the functions of working, housing and leisure from each other (as did SORIA Y MATA earlier), but positioned them in secluded locales according to their different demands. In his ideal, hilly scenery, the housing quarters and neighboring social facilities are situated on a large plateau, the industry subjacent in a valley with access to a huge dam, supplying the city with water and energy. The theoretical background of *functionalism*, however, goes far beyond the 19th and 20th century.





Zeilenbauschema als konsequente  
hygienegeleitete Formreduktion  
(Zeilenbau-Scheme as  
Consequent Formal Reduction  
led by Sanitation),  
1930, by Ernst May  
[Das Neue Frankfurt]  
cf (Reinborn 1996: 103)

country  
Germany / Hesse  
coordinates  
50° 08' 17" N – 08° 36' 44" E  
Zille-/Egestraße  
elevation  
112 m  
population  
2,491 (2007)  
size  
0,7 km<sup>2</sup>  
density  
3,559 /km<sup>2</sup>  
foundation / rst citing  
1929  
source  
[http://de.wikipedia.org/wiki/Siedlung\\_Westhausen](http://de.wikipedia.org/wiki/Siedlung_Westhausen) (15.07.2008)



Frankfurt a.M.-Westhausen  
Image © 2007 AeroWest

**plate 11**



### *Functionalist City and Athens Charter*

Charles Edouard JEANNERET-GRIS (1887-1965), better known as LECORBUSIER, surely represents one most prominent character of this urbanistic avant-garde. As early as 1922 he introduced his first urban vision for a city of 3 million inhabitants.<sup>64</sup> The main features of this city, which did not alter principally with his following "Plan Voisin"<sup>65</sup> for Paris in 1925 or the "Ville radieuse" in 1930,<sup>66</sup> were a substitution of the dense and low rise city by an aerated high rise urban development, which allowed for a continuous greenery (supported by roof terraces and elevated buildings); and a thorough separation of pedestrian and vehicular traffic as well as a separation of functions (working, housing, leisure, and traffic).<sup>67</sup> The basic principle for the constitution of a city should be the serial production of optimized, viz functionally reduced buildings. Architectural considerations regarding single buildings or single urban spaces took a back seat opposed to the overall architectural order of a new urban structure – which largely mismatched the extant versatile and historically evolved cityscape. Thus, a reoccurring analogy in his work is that of the urbanistic surgeon, who has to produce a clear cut through the architectural body of the city instead of trying to only poorly remedy the «patient» for an adjustment to contemporary requirements.<sup>68</sup> This CORBUSIAN approach quickly attained supporters within the architects' profession;<sup>69</sup> the foundation of the Congrès Internationaux d'Architecture Moderne (CIAM) in 1928 and eventually the formulation of its Athens Charter in 1933 gave proof to its success – even though at first in planning intention only.<sup>70</sup>

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<sup>64</sup> French Original: "Ville contemporaine pour trois millions d'habitants"

The project was not published in book-form; however, several principles and clues were given in his "Vers une architecture" from 1923, actually a compilation of articles which were released in "L'Esprit Nouveau" 1920/21 (LeCorbusier 1923). His main theories on urbanism were published in 1924, thereon translated into German and English in 1929 (LeCorbusier 1924); specified in 1930 by his 'Precisions on the present state of architecture and city planning' (LeCorbusier 1930).

<sup>65</sup> The plan was named after the financial sponsor "Aeroplanes G. Voisin (Automobile)" with its director Eugène MONGERMON.

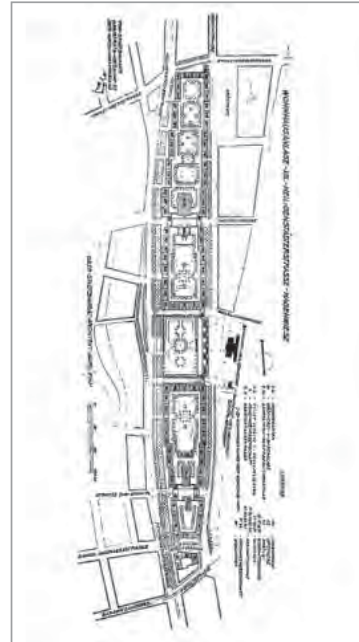
<sup>66</sup> The publication of the project dates five years later (LeCorbusier 1935); "The Radiant City" in English translation was published in 1967.

<sup>67</sup> For another concise summary see (Egli 1967: 366ff.).

<sup>68</sup> We find this comparison already with LECORBUSIER's main work on urbanism (LeCorbusier 1924: 258 ff.) and later in his precisions (LeCorbusier 1930: 168 ff.; fig. 179-182).

<sup>69</sup> Out of many more three important figures should not be omitted: Ludwig HILBERSHEIMER (1885-1967) and Cornelis van EESTEREN (1897-1988) used to be teachers for urbanism at the Bauhaus in Dessau, promoting the functionalist city and after World War II pursuing the rebuilding and transformation of European cities; Richard NEUTRA (1862-1970), after an early emigration to the U.S. in 1923 still in association with the Bauhaus presented another concept for the Rush City, reformed (1923-35) that was similarly elaborate as the new urban concepts of LECORBUSIER and HILBERSHEIMER (Hilbersheimer 1927; Hilbersheimer 1963; Hines 1982; Eesteren et al. 1997; Bollerey 1999). For an interesting contemporary comparison of LECORBUSIER's and Hilbersheimer's approaches see Hugo HÄRING's contribution in "Die Form" (Häring 1926).

<sup>70</sup> The charter was not published promptly after the fourth C.I.A.M. in Athens due to subsequent discussions by the participants and members of the congress. Only in 1943 LECORBUSIER issued his version of the text (not, as he himself later argued in 1941), preceded by a similarly altered text in the attachment of José Luis SERT's "Can our cities survive?" (Sert 1942; LeCorbusier 1943). For a full account on the Athens Charter including its editorial history see (Hilpert 1984). For a short account on the origins of functionalist theory see (Zurko 1957).



Plan from the Brochure on the Occasion of the Inauguration, 1930, by Stadtbauamt Wien cf (Wien 1930: 7)

country  
Austria  
coordinates  
48° 14' 58" N – 16° 21' 48" E  
12.-Februar-Platz  
elevation  
151 to 542 m  
population  
1,678,435 (2008)  
size  
415 km<sup>2</sup>  
density  
4,045 /km<sup>2</sup>  
foundation / rst citing  
881 / 1927 (Karl-Marx-Hof)  
source  
<http://de.wikipedia.org/wiki/Wien> (20.04.2008)



Vienna – Karl-Marx-Hof  
Image © 2007 DigitalGlobe

**plate 12**

### *Housing Development Outside the City Centers*

In reality there was after the war with its also heavy economic impact hardly any perspective to realize a comprehensive transformation of the extant city centers. Yet, millions of homecoming released soldiers demanded additional housing for them and their new families. The antecedent housing shortage worsened by the building ban during the war impaired even more and called for quick response. Seminal attempts to this problem represent communal housing estates<sup>71</sup> and the development of modern settlements – exemplarily executed after all in Frankfurt/Main. There Ernst MAY (1886-1970), Member of CIAM, sought to improve housing conditions by functional and economical suburbs such as Praunheim, Römerstadt and Westhausen, consisting of 2- to 4-stories apartment house buildings with optimized layouts and for its time outstanding facility standard.<sup>72</sup> In general, German architects and architectural schools experimented largely with this new urban feature (Karlsruhe, Stuttgart, Cologne, Berlin etc.)<sup>73</sup> concentrating on the urban periphery rather than on the cities' core, still producing a larger extension of the cities, yet less bulky and greener than the city of the Belle Époque. Within the suburban context there quickly evolved a focus on the optimization of the architectural object, associated with a simplification of urban contiguity and an increasing neglect of the urban space. This new kind of urbanistic "boom" (Reinborn 1996: 101ff.) obviously corresponded with the recovery of world economics in the 1920s but came to an abrupt end with the crisis of 1929.<sup>74</sup>

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<sup>71</sup> Prominent examples can be found in Vienna, where due to a restrictive rent control the private building activity disrupted. Consequently from 1925 to 1934 the Social democratic city authority built more than 60.000 apartments, which were rented out to workers at a subsidized rate. The housing estates, mostly in form of large courtyard-buildings, comprised kindergartens, club-rooms, and common laundry facilities, also stressing the collaborative living-together. The most famous of these "Gemeindebauten" are "Karl-Seitz-Hof" by Hubert GESSNER 1926-33 with 1.173 apartments, "George-Washington-Hof" by Karl KRIST and Robert OERLEY 1927-30 with 1.084 apartments, and "Karl-Marx-Hof" by Karl EHN 1927-30 with 1.325 apartments (Hautmann et al. 1980; Frei 1984; Bramhas 1987).

<sup>72</sup> The housing program from 1926-32, in which some 12.000 apartments were built, was programmatically named "Das neue Frankfurt" in dependence on the slogan "Neues Bauen", that epitomized the architects' principles of a social, constructive, and stylistic economy; see (Rodríguez-Lores 1977; Höpfner et al. 1986; Klotz 1986; Dreyse 1987; Prigge et al. 1988).

<sup>73</sup> Out of many developments we shall cite Berlin-Britz 1925-33 by Bruno TAUT (1880-1938) and Martin WAGNER (1885-1957) and Karlsruhe-Dammerstock 1928/29 by Walter GROPIUS (1883-1969); comprising a large variety of designs, the Stuttgart-Weißenhof exhibition of 1927 represented a showcase for "Neues Bauen", in which well-known architects, such as MIES van der Rohe, LECORBUSIER, Hans SCHAROUN, J. J. P. OUD, Hans POELZIG and many more demonstrated the new style; see (Haesler et al. 1929; Kloss 1982; Huse 1985; Joedicke 1989; Franzen 1997; Harlander et al. 2001).

<sup>74</sup> On October 24th 1929 ("Black Thursday") the New York stock exchange crashed and induced a world economic crisis, the Great Depression, which reached its deepest point only in 1932. Due to the time difference, the bad news reached Europe one day later exciting the common term "Black Friday" for this event.





Photo of the Reconstructed Original Mock-modell of Broadacre City, 1934-35/1990, by Frank Lloyd Wright Foundation, Scottsdale [Arizona State University, College of Architecture and Environmental Design] cf (Eaton 2001: 210)

*country*

USA / Minnesota

*coordinates*

44° 52' 35" N – 92° 51' 45" W  
Manning Ave S / 50th St S

*elevation*

246 m

*population*

30,582 (2000)

*size*

88 km<sup>2</sup>

*density*

348 /km<sup>2</sup>

*foundation / first citing*

1843

*source*

<http://www.city-data.com/city/Cottage-Grove-Minnesota.html> ,  
[http://de.wikipedia.org/wiki/Cottage\\_Grove\\_\(Minnesota\)](http://de.wikipedia.org/wiki/Cottage_Grove_(Minnesota))  
(19.07.2008)



East Cottage Grove MN  
Image © 2007 DigitalGlobe

**plate 13**

### *Mobility and Anti-Urbanity*

From the subsequent widespread government relief programs – notwithstanding the diverging political backgrounds of the governments and administrations – benefited the lower and middle classes after all.<sup>75</sup> Similarly, for example, the United States and Germany increased their volume of public works and put highway construction on their agenda. The support of automobilization of the population on the side of the National socialists' regime in Germany, however, remained predominantly an approach for post-war times;<sup>76</sup> the advertisement and production of a "Volkswagen" at this stage remained nothing more than an organized deception to technically and financially sponsor the war preparations – as the "Autobahnen" were seen also as an military infrastructure.<sup>77</sup> Still, to maintain the outrageous plan of a 'Germanized East' in its rural setting the fascists would have depended on the new highways as well as on the people's car. Until 1945, however, the steady indoctrination promoted the image of the economically (not politically!) independent family in single detached houses and "Zellendörfer",<sup>78</sup> discrediting the cosmopolitan multilayered urban societies (RHA 1938; RHA 1941). In the U.S. the vast ability of land in combination with the infrastructural advancements increased a voluntary trend to escape the city with its crime and pollution but also its public authority – a very virulent feature in North-American societies since their colonial days.<sup>79</sup>

### *Broadacre City*

Thus, interestingly comparable in its anti-urban gesture is Frank Lloyd WRIGHT's (1867-1959) urban vision "Broadacre City" from 1932/1935,<sup>80</sup> in which every American family should have obtained one acre of land, serving as building locale, garden and farmland. This imprescriptibly plot of land was meant to be the family's retreat, subsistence and center of life at the same time, freeing them from speculation and financial dependency and altering industrial and commercial businesses into additional or even voluntary occupation. Hence other, consequently subordinated economic and social functions were thought to be dispersed all over Broadacres, turning the countryside into a vast unlimited contiguity, which had to be accessed by the automobile. Car and telephone (later even individual aircrafts) became indispensable features of WRIGHT's utopia that sought to merge city and

---

<sup>75</sup> The governmental interventions during that time ultimately laid ground for the welfare state. Even though ideological antithetic, Franklin D. ROOSEVELT's (1882-1945) "New Deal" policy produced arguably similar results in the U.S.A., as did the National Socialists in Germany. There, however, the socio-economic ties between workers and industrials begun earlier with the Stinnes-Legien agreement in 1918. Antonio GRAMSCI (1891-1937) summarized this development, which sought to alienate the workers from revolutionary communist ideology, with the term "fordism".

<sup>76</sup> Yet, early steps were taken already in 1933 by leaving car- and motorbike ownership tax free (Ludwig 1974: 313ff.); see also Adolf HITLER's address on the occasion of the opening of the *Internationale Automobil- und Motorrad-Ausstellung Berlin*, 11.2.1933 (König 2004: 151).

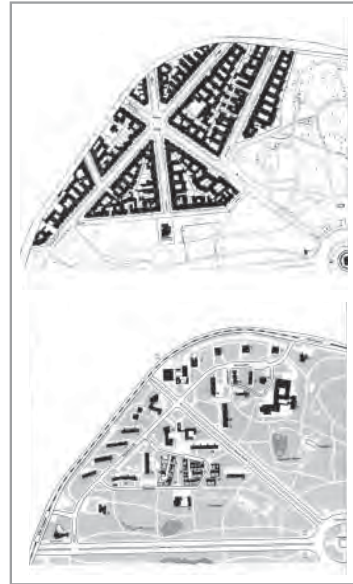
<sup>77</sup> For the military considerations of the *Autobahnbau* see (Ludwig 1974: 313ff.), (Zentner et al. 1985: 55, 391ff) and (Busch 2002: 27), as well as (Lärmer 1975: 81ff.). For the development of the "Volkswagen" and its military use see as "Kübelwagen" (BIOS 1947; König 2004; Taylor 2004)

<sup>78</sup> 'Cell villages', (author's transl.).

<sup>79</sup> For an overview regarding the suburban development in the U.S. see Lewis MUMFORD's "Suburbia – and Beyond" (Mumford 1961: 482-524) as well as (Schnore 1957; Teaford 1986; Sies 1996).

<sup>80</sup> WRIGHT presented "Broadacre City" in his publication "The disappearing city" (Wright 1932), followed by extensive studies and models in 1934/35. From then on this vision determined his urban and social theories until his death (Wright 1945; Wright 1958). Originally he named his vision "The Usonian City" after an alias for the U.S. he accredited to Samuel Butler (1835-1902), but probably made up himself (Wright et al. 1941: 100) (Fishman 1977: 121).





Comparison of the Hansaviertel before World War II and since the Interbau 1957, 1967, by Horst Becker & Joachim Ritter *cf* (BMBau 1967: 46)

country  
Germany  
coordinates  
52° 31' 04" N – 13° 20' 32" E  
Bartning Allee / Altonaer Straße  
elevation  
52 m  
population  
5,897 (2007)  
size  
0,3 km<sup>2</sup>  
density  
23,588 /km<sup>2</sup>  
foundation / first citing  
1957  
source  
<http://de.wikipedia.org/wiki/Berlin-Hansaviertel> (22.06.2008)



Berlin-Hansaviertel  
Image © 2007 AeroWest

**plate 14**



rural life (going beyond HOWARD by abolishing the cities) as well as combine living tradition and technical progress (disregarding LECORBUSIER's maxim of correcting living circumstances due to the new technologies). Ultimately, WRIGHT proposed a radical individualism and decentralization – opposing collective societal models – juxtaposing this with what he thought was true democracy and true capitalism (Wright 1958: 119).

### *The Structured and Aerated City*

World War II left Europe with considerable damage of urban structure and infrastructure, Germany moreover with an imprudent denial of its urban heritage and traditions.<sup>81</sup> Functionalism – as specified in the Athens Charter – with its promise of progress and universal validity, represented the ideal approach to eventually solve all industrial urban problems. After some inescapable reconstruction in the first post-war years these attitudes and the upcoming wealth in the Western world led to a thorough conversion of the cities – not only in those structurally affected by the war, but also in North America.<sup>82</sup> At large extant structures were replaced by «modern» buildings to reduce the ground area ratio and provide for contemporary functional standards; streets got adjusted to the increased automotive traffic, seeking for an undisturbed circulation of cars also by separating other modes of traffic from it (after all pedestrians).<sup>83</sup> Model became the 'Structured and Aerated City' (Göderitz et al. 1957) that was seen as an urban organism, in which streets represented veins, feeding the different and now distinctly separated functions (Reichow 1948); now the intrinsic hegemony of the architectural object over the urban space, which already manifested itself in the functionalist Leitbild and had been widely executed in the suburban development, got affirmed and extended. Gradually a functionalist city came into existence by an *urban renewal*,<sup>84</sup> seldom in the radical rational way it was envisioned in the 1920s and 30s,<sup>85</sup> yet resembling this modernism some thirty years after its innovation.<sup>86</sup>

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<sup>81</sup> For a very interesting account on the German post-war attitude towards its built heritage see (Koschar 1998).

<sup>82</sup> The U.S.-American financial support of the Marshall plan produced a quick economic recovery, especially in West Germany (eventually supporting the «Wirtschaftswunder», i.e. economic miracle).

<sup>83</sup> The development in West Germany founds its roots, however, not only in the Athens Charter, but also in the decisive planning of the 1940s. Remarkably, Hans REICHOW's (1899-1974) book on "Organische Stadtbaukunst", (organic art of building towns) which he prepared already in war times, turned out to be seminal for the post-war planning strategies (Reichow 1948). Before 1945 REICHOW was working together with Konstanty GUTSCHOW (1902-78) in the official staff for the reconstruction planning of German cities destroyed during the air raids ("Arbeitsstab Wiederaufbauplanung zerstörter Städte"). For an account on the biographic complications of German architects from 1900-1970 see (Durth 1986).

In 1959 REICHOW presented another book promoting the adjustment of cities to motorized traffic to achieve an "autogerechte Stadt" (Reichow 1959).

<sup>84</sup> Arguably the urban renewal process started in the U.S.A. already in 1934 with a Housing Act, allowing for a *redlining* practice that eliminated further investments in specially marked urban areas, which were meant to be slums. Subsequent Housing Acts in 1937 and 1949 established an immense Public Housing development and eventually the wholesale demolition of urban slums (Grogan et al. 2000). The first major city undergoing a thorough urban renewal process was Pittsburgh from 1950 on (Lorant et al. 1964).

For further readings see, for example (Duggar 1965; Wilson 1966; International Federation for Housing and Planning 1967; Albers et al. 1984; Reinborn 1996)

<sup>85</sup> Only originally new towns and cities, such as Chandigarh (1951-61 by LECORBUSIER), Brasília (1956-60 by Lúcio COSTA) and Islamabad (1958-67 by Constantinos A. DOXIADIS) show a comprehensive implementation of all functionalist requisitions. For information regarding the cited examples see e.g. (Doxiadis 1965; Sarin 1982; Fils 1988; Kalia 1999).

<sup>86</sup> For a vivid illustration of the belief in urban progress at that time see (Jaspert 1961).





Nürnberg-Langwasser,  
Stand der Bebauung 1986  
(Development Condition in 1986),  
1987, by Albin Henning  
*cf* (Henning et al. 1987: 61)

country  
Germany / Bavaria  
coordinates  
49° 24' 33" N – 11° 07' 43" E  
Eurocom Nürnberg  
elevation  
329 to 339 m  
population  
31,033 (2005)  
size  
5 km<sup>2</sup>  
density  
6207 /km<sup>2</sup>  
foundation / rst citing  
1957  
source  
<http://de.wikipedia.org/wiki/Langwasser> (22.06.2008)



Nuremberg-Langwasser  
Image © 2007 AeroWest

**plate 15**



Hence, the belief in progress that was epitomized by this new kind of urbanism grasped not only an intellectual avant-garde but most societal strata. At the same time the hinterland of the cities began to develop faster than the cities themselves, promising pleasant living circumstances for large parts of the populace.<sup>87</sup>

#### *Urbanity Through Density*

The disentanglement and consequent grouping of similar functions produced an immense daily traffic flow and periodic translocation of population. The city centers changed into true business districts with little housing functions and the periphery neighborhoods became dormitory towns: the latter deserted during day, the other at night. Beginning with the 1960s the growing loss of urban interaction was sought to be confined through a high population concentration within the housing developments and a new kind of qualification by means of social and entertaining facilities as well as commercial activity. In Germany, the slogan of this new Leitbild became "Urbanität durch Dichte" and was brought into play after a lecture by Edgar SALIN (1892-1974) at the Deutscher Städtetag in 1960, dealing with a possibly new urban society in post-war, post-industrial times (Salin 1960).<sup>88</sup> Within the following urban renewal many extant and still intact quarters fell victim to this desired new urbanity through massive accumulation employing high rise developments, while there was also an immense construction of peripheral satellite cities or *New Towns*, epitomizing a turn towards a "City of Towers", which was committed to the CORBUSIAN visions of the 1920s (Hall 1988: 203 ff.).<sup>89</sup> Yet, upcoming social issues through a progressive segregation and the failure of promoting and rehabilitating the infrastructures showed an insufficiency of planning at this large scale. The energy crises of the 1970s eventually added to a demotivation within urban planning that was hitherto based on a thorough belief in economic progress and technical feasibility.

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<sup>87</sup> In Germany statistically investigated for 1960 (Felderer et al. 1993); see also (Harlander 1998).

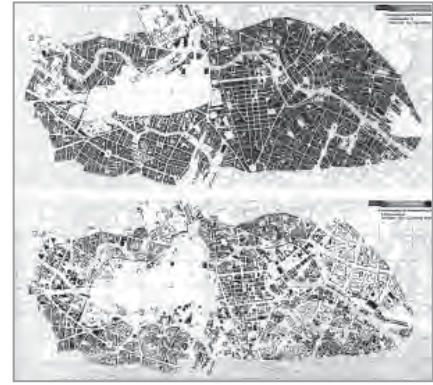
<sup>88</sup> As Eisinger pointed out, the economist and sociologist SALIN himself never drew an immediate relation between urbanity as a social occurrence and the built environment (Eisinger 2004). The slogan 'urbanity through density' and the subsequent urban planning endeavours, thus, have to be considered as based on a foul simplification.

<sup>89</sup> In this context we should remember successful as well as abortive developments of New Towns in Europe, such as for example:

*Neue Stadt Wulfen*, a new urban development close by the extant city of Dorsten in North Rhine-Westphalia planned for some 50.000 people on well 8 sqkm according to the winning competition project by Fritz EGGELE in 1961. It was meant to accommodate additional population employed in the Ruhr coal mining, while due to the decline of this industry the envisioned volume had to be concurrently minimized and today comprises only 11.000 people. The street layout is composed for traffic-calming purposes; the experimental architectural development of *Metastadt* from 1973, a prefabricated ferroconcrete construction with 100 apartments, had to be demolished in 1987 because of severe structural damages; (Rühl 1962; Zahn 1965; Auras et al. 1980; Theißen 1989); Milton Keynes, a completely new city in South East England comprising three older settlements which was planned for a target population of 250.000 on an area of some 100 sqkm by Derek WALKER and inaugurated in 1967. It was meant to be the largest city of a program to release housing pressure from Greater London, which was induced by the *New Towns Acts 1946*; today it accommodates some 200.000 people. The central city is based on a 1-km-grid pattern seeking to combine the functionalist approach with garden city theories, originally preferring a low-rise architectural development; (Galantay 1975; Theißen 1989; Toy 1994; Cullingworth 1999; Edwards 2001);

Marne-la-Vallée, a polycentric *Ville Nouvelle* comprising some 280.000 inhabitants on 152 sqkm initiated by Paul DELOUVRIER, deputy-general of the Région de Paris district, from 1961 on, whereas major construction work only commenced in the early 1970s. The French counter-example of British *New Towns* is still developed by the EPAMARNE public authority to exonerate Greater Paris, yet involving private corporations commissioning various architects for the different projects and thus lacking a coherent urbanistic approach, as we can well see with the 1987 neo-traditional project for Val d'Europe by Euro Disney; (Elissalde 1991; Dieudonne et al. 1992; Hellmayr 1994; Saoud 2004).





Excerpts from Analytical Maps of  
 „Physiognomy of a Metropolis“  
 - before 1940 and around 1989,  
 2000, by Tobias Nöfer  
 [Senatsverwaltung für  
 Stadtentwicklung, Berlin]  
 cf (Stimmann 2000: 67 & 78) /  
 (Scheer et al. 2000: 385)

country  
 Germany  
 coordinates  
 52° 30' 34" N – 13° 22' 35" E  
 Potsdamer Platz  
 elevation  
 34 to 115 m  
 population  
 3,415,742 (2007)  
 size  
 892 km<sup>2</sup>  
 density  
 3,820 /km<sup>2</sup>  
 foundation / rst citing  
 1237 / 1990 (Potsdamer Platz)  
 source  
<http://de.wikipedia.org/wiki/Berlin> (20.04.2008)



Berlin – Potsdamer Platz  
 Image © 2007 AeroWest

**plate 16**

### *Moderate Urban Renewal and Critical Reconstruction*

Consequently, we find a downsizing in urban development since the mid 1970s – not necessarily in the total volume, yet in the dimension of single scopes. The focus was turned back to the city centers, where a traditional urban scale and mixture of functions was sought to be reintroduced – hand in hand with a new consciousness for historic architecture and urban design; Rob KRIER's spatial considerations from 1975 shall be quoted *pars pro toto* for the new movement (Krier 1975). Also in 1975 the European architectural heritage year promoted the preservation not only of single landmarks but of whole neighborhoods, which had endured the antecedent radical renewal processes.<sup>90</sup> In this then moderated process, we also find the social issues to be addressed more incrementally, house-ownership and individual responsibility strengthened, and supposedly outdated patterns reconsidered.<sup>91</sup> The automotive traffic in historic centers became heavily regulated, if they were not completely turned into pedestrian zones; at times strengthening their old commercial functions, at times turning them into an open air museum.<sup>92</sup> Examples for the importance of historic structures or historic typologies for the new development can be found all over the Western world, the International Building Exhibition 1987 in West Berlin yet comprised both strands in a renowned way: the rehabilitation of the Belle-Époque quarters of Luisenstadt and Kreuzberg as well as the new, postmodern in style developments in Tegel, Tiergarten-South, and Friedrichstadt-South (Bauausstellung Berlin GmbH 1984; Guratzsch 1987).<sup>93</sup> This process found a consequent continuation in the reclamation of the Berlin's historical layout after the demolition of the wall, which was promoted as the Leitbild of the 'Compact European City' (Stimmann 1995).

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<sup>90</sup> see for instance (Petzet 1975)

The preservation approach of that time, however, also included a wide appeal against the governmental policy of solving urban problems at large, including the immense speculation within the renewal process and a negligence of historic heritage and individual welfare (Klotz et al. 1975; Kier 1976; Burckhardt 1977).

<sup>91</sup> Drawing conclusions regarding the concurrent political development, of course, is deviant to this argument; however, interestingly enough is the observation that most Western countries elected more conservative parliaments and governments at this time (i.e. Margaret THATCHER in the U.K. 1979, Roland REAGAN in the U.S.A. 1981, and Helmut KOHL in West Germany 1982/83).

<sup>92</sup> We should annotate that historic preservation at this time differed largely from our contemporary approach of preserving buildings as a historic source. The German term *Stadtbildpflege*, (the fosterage of an historic appearance of urban space) seems much more appropriate for what was intended at this time.

<sup>93</sup> A prominent German exponent for the revision of modern urbanism represented Josef Paul KLEIHUES (1933-2004), who apostrophized "identity through critical reconstruction" of the 19th century urban fabric with its perimeter blocks already before he became executing agent of the IBA 1987 and whose understanding of critical reconstruction was not "limited to existing urban structures or even inner cities, but include[d] future-oriented urban design" (Hesse 1996: 45); see also (Kleihues 1973; Conradi et al. 1987; Menges et al. 1996).

Of no less significance for this approach are other European architects, such as the Spanish born Ricardo BOFILL (\*1939) (Goytisolo et al. 1968; Bofill 1978; Bofill et al. 1984); the Luxemburg brothers Rob (\*1938) and Léon Krier (\*1946) (Krier 1975; Krier et al. 1980; Krier et al. 1989; Krier 1998); and, of course, the Italian Aldo Rossi (1931-97), who already in 1966 advocated a return from the modern functionalism and large-scale planning denying the historic traditional urban structures (Rossi 1966; Rossi 1975); from these authors stem also accordant urban projects, when especially BOFILL employs a postmodern architectural language (see Les Espaces d'Abraxas at Marne-la-Vallée from 1982 or Les Echelles du Baroque at Place de Catalogne in Paris from 1985).

Eventually, we shall come to the conclusion that the approach of critical reconstruction laid ground for what today is named *New Urbanism*, and what seeks to reinvent urbanity, publicity, and civiness through the urban block, street, and square; see (Eisinger 2006: 19) and for instance (Katz 1994; Dutton 2000; Bohl 2002; Duany et al. 2003; Krier 2003)



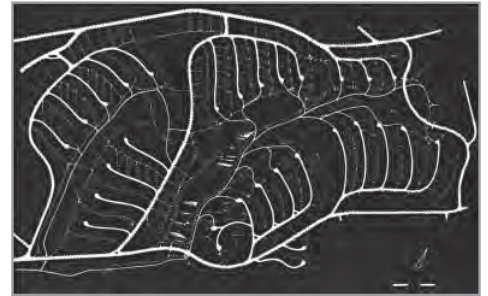


Schaubild einer organischen Stadtlandschaft  
(Chart of a Organic Townscape),  
1948, by Hans B. Reichow  
cf (Reichow 1948: 79)

country

USA / California

coordinates

33° 33' 25" N – 117° 42' 00" W

Aliso Creek Rd / Moulton Pkwy

elevation

121 m

population

2,959 (2000)

size

3,4 km<sup>2</sup>

density

468 /km<sup>2</sup>

foundation / rst citing

1842 / 2002 (San Joaquin Hills)

source

[http://en.wikipedia.org/wiki/San\\_Joaquin\\_Hills%2C\\_Newport\\_Beach%2C\\_California](http://en.wikipedia.org/wiki/San_Joaquin_Hills%2C_Newport_Beach%2C_California) (15.07.2008)



300 m



Laguna Niguel CA-San Joaquin Hills  
Image © 2007 NASA

**plate 17**



### *Suburbanization and Conurbanization*

If rail-, tram- and subways already enormously expanded the limits of urban development into the open landscape the growing automobilization of the population after World War II ultimately burst these limits. This new form and dimension of traffic, due to technological advancement, economic dynamics, and growing wealth also enabled for a similarly new form and dimension of decentralized housing,<sup>94</sup> which gradually filled up the 19th century urban fringes, and ultimately conurbanized formerly individual urban entities into unclear urban regions.<sup>95</sup> At the same time the old nuclei often lost importance to new synthetic subcenters, such as strip- or shopping malls, as well as office and amusement parks.<sup>96</sup> Starting in the United States with their vast land resources, soon all industrialized countries developed an immense suburbanization, which promised better living conditions in single detached family houses within wide open greenery at the periphery of the city – disregarding the time-consuming commute as well as the impossibility of the desired personal freedom in an individualism en-masse.<sup>97</sup> Additionally, having evaluated the effects of air raids to cities and towns and facing a previously unknown nuclear threat the U.S. authorities encouraged the emigration from the cities (Tobin 2002), at first in spite of the enormous infra-structural costs and later on regardless of the ecological impact.<sup>98</sup> The effect until today is an elimination of the city–countryside dichotomy, which had determined urbanism since its origin.

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<sup>94</sup> see (Sieverts 1997: 13) and (Jessen 2001: 316)

<sup>95</sup> This enormous consumption of open space in between the extant cities and towns by vast low density functions led to immense urbanized regions in Western countries. One of the largest represents «BosNyWash», the unofficial megalopolis that stretches some 750 km from Boston over New York City to Washington D.C. along the Northeast American seaboard and includes today more than 40 million inhabitants (Gottmann 1961; Swatridge 1971; Gottmann 1987; the population within the 32 consolidated metropolitan statistical areas, which are considered part of «BosNyWash», is 40.815.498, according to the U.S. census 2000).

In Germany, the Rhine-Ruhr region (MRR) is the largest agglomeration, yet with a size of 10.820 sqkm and 11,5 million inhabitants much smaller (Grier 2002; the population within the 31 counties, which belong to the MRR, was in 1995 11.526.219, according to Bezirksregierung Düsseldorf, Dez. 61); for the German conurbanization process see (Boustedt et al. 1968; Mönninger 1994).

In the United States the cities of Los Angeles and Atlanta epitomize another development, which we might call an urban implosion. There we do not find a conurbation of various sizeable urban nuclei, but a large land consuming dissolution of extant urban functions. Today's Atlanta, for instance, spreads over 9,855 sqkm with a population of 4,112,198 people resulting in a density of only 417/sqkm (see U.S. Census 2000). According to Rem KOOLHAAS, it is no more a city but a landscape, in which the "strongest contextual givens are vegetal and infrastructural: forest and roads" (Koolhaas 1995a: 835).

The process of conurbanization was already observed by Wilhelm Heinrich RIEHL (1823-97) in heavy industrialized Belgium (Riehl 1854: 104 f.); the scientific introduction of the term *conurbanization*, however, resulted from GEDDES (Geddes 1915: 34 ff.); see also precis on page 37 and (Hoffmann-Axthelm 1993: 26).

<sup>96</sup> Striking is the omnipresent use of the term *park*: office park, business park, retail park, amusement park, theme park, car park etc; likewise popular is *center*, sometimes even more programmatic in *new center*, for instance with CentroO, a large shopping and leisure center in the German Ruhr-area, which is also-called «Neues Zentrum Oberhausen».

<sup>97</sup> as observed by LECORBUSIER during his visit in the U.S.A. in 1936 (LeCorbusier 1937: 218); for more details on the automotive dependency see (Kenworthy et al. 1999; Bell 2001)

<sup>98</sup> To our knowledge there is no evidence for a similar reason to this support in other countries, yet there we also observe various kinds of encouragement; in Germany for instance the financial support for home-ownership, which over years predominantly addressed the building of family houses rather than the acquisition of inner-city apartments (Harlander et al. 2001: 494f.).



Neighborhood Unit,  
1929, by Clarence Perry  
[New York Regional Survey  
of New York and Its Environs]  
cf (Duany et al. 2003: 84)

country

USA / Florida

coordinates

30° 19' 12" N – 86° 08' 16" W

Central Square

elevation

12 m

population

2,000 (projected)

size

0,3 km<sup>2</sup>

density

6178 /km<sup>2</sup>

foundation / first citing

1979

source

[http://en.wikipedia.org/wiki/Seaside%2C\\_Florida](http://en.wikipedia.org/wiki/Seaside%2C_Florida) (20.04.2008)

<http://www.smartcommunities.ncat.org/success/Seaside.shtml>  
(18.07.2008)



Seaside FL

Image © 2007 The Florida Department  
of Environmental Protection

**plate 18**

### *Current Situation ...*

Neither HOWARD's co-operative Garden City nor WRIGHT's basic democratic Broadacre City society evolved out of this today ubiquitous urban sprawl.<sup>99</sup> On the contrary, the evolving suburban neighborhoods, which Herbert GANS detected in his evaluation of Levittown (Gans 1969), today still produce an individualization and, worse, a social separation if not a segregation according to age and status of the inhabitants – the establishment of gated communities and the development of "ghettos" to be named as the most obvious articulation of this process (Marcuse 1997b).<sup>100</sup> Moreover, the formal commutability within and the sheer mass of this suburban development apparently induces not only this demand for exclusion, but also for exceptional attractions and spectacles. The result is the development of new artificial places, what we «learned» already from Las Vegas,<sup>101</sup> as well as a so-called «festivalization» of already existing locales.<sup>102</sup> Spatial design, which originally represented one constituent of the cityscape, nowadays is randomly pursued as a lucrative accessory, disconnected from urban space. This review is not the place to illustrate all interdependencies within the current urban development, nor should we draw conclusions without validation by proper evidence; however, urban sprawl is similarly part of this postmodern urbanism in a globalizing world, as is a new historical eclecticism and new (traditional) urbanism, as well as gentrification, urban business development, and a new marketing for historical urban sites and centers (Ellin 1996). All these tendencies have to be conceived together with a prevalence of investment interest that in large part seeks to please consumers' demands to rapidly make profit. Ultimately, we observe today a decline of *urbanism* in favor of a so-called «urbanity»,<sup>103</sup> viz the acceptance of an "Edge City" (Garreau 1991), "Generic City" (Koolhaas 1995b), or "Zwischenstadt" (Sieverts 1997),<sup>104</sup> which has traded in the significance of distinguishable form to the staging of events and other protean 'urban attractors'.<sup>105</sup>

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<sup>99</sup> for more details on urban sprawl see (Jackson 1985; Duany et al. 2000; Bruegmann 2005)

<sup>100</sup> see also (Caldeira 1996; Blakely et al. 1997; Marcuse 1997a; Low 2003)

<sup>101</sup> see (Venturi et al. 1972)

<sup>102</sup> see (Häussermann et al. 1993; Frank 2003; Richards 2007)

<sup>103</sup> see (Koolhaas 1995c; Zijderfeld 1998; Grönlund 1999)

<sup>104</sup> All three authors acknowledge the fact that the western city today overcomes the traditional cityscape-landscape binary. Their conclusions lead to a new understanding of the urban catalysts, which are located within a new vast urban periphery (viz «on the edge» or «in between»), generating urbanity at different societal and functional levels in varying forms, which are finally containers for ephemerical urban processes.

<sup>105</sup> Focusing on the western development we excluded in this review the rapid metropolitan growth, which takes place in the so-called «second», «third» and «fourth world» – even though there are anticipations that this growth soon will affect also the so-called «first world», by means of new massive migration and another enormous extension of western urban nuclei; see for instance (Hoffmann-Axthelm 1993). This is until today a mere prognosis and does not yet result in greater evaluable facts; nevertheless, ultimately such a development ought not to change the underlying western mindset towards the western development as it expresses itself in this thesis.



This short review, as stated in the beginning, is not more than a quick personal glance at the industrial and post-industrial development of urbanism in the Western World, which cannot include all occurrences (neither all relevant literature) and is often focusing on only some prominent examples from a limited number of countries. However, it should produce a general overview over the Western development, arguably showing five main features – whose prevalence might serve also to distinguish different phases within the last two centuries:

*1. Privatization and Exploitation: the unrestraint development of cities*

From ca. 1800~1875 we encounter an immense urban development which was for the first time mainly sponsored and executed by the private hand and subdued predominantly to private economic considerations, that is the emphasis of ground, buildings and infrastructure as primarily negotiable goods. This led to an enormous urban aggregation and expansion supported by new means of mass transportation.

*2. Standardization and Legislation: the generation of planning tools*

From ca. 1875~1920 we find the public approach to regulate the private urban enterprise by setting up minimal standards and guidelines, that is the separation of planning processes from the actual formation of cities. This led to the production of a framework in which the urban development could take place, without intervening or directing the production of urban form immediately.

*3. Modernization and Transfiguration: the creation of ideal plans*

According to the extreme politicization of the post-World-War-I societies the development from ca. 1920~1950 is characterized by plentiful urban models, which sought to reflect desired societal structures, that is the depreciation of traditional urban forms in favor of a new unitary design. At the same time the urban form was undressed from its former ornament and rendered to basic functions and relations.

*4. Conversion and Suburbanization: the pursuit of planning ideology*

The societal and economic results of World War II caused a radical functionalist conversion of the extant urban form, that is the massive destruction of inherited urban forms. From ca. 1950~1980 main parts of the cities were adjusted to automotive traffic and exchanged by new building structures, extinguishing extant urban contexts and historic vestiges as well as entailing new dimensions and bulk.

*5. Retraction and Incrementalism: the aporia and randomness of planning*

Since the mid 1970s we experience a withdrawal from large projects and a conjectural agreement on the inevitable failure of comprehensive urban plans. At the same time we find the evolvement of a settlement continuum obliterating the dichotomy of city and landscape. As a result, planning authorities retreat in merely producing the necessary preliminaries for investment projects or infrastructural improvements, that is the renunciation of understanding urban form as a coherent scope.

As well, we might derive from this review three generalized statements for further discussion:

1. The economic and technological advancement since the industrial revolution allows for extensive and radical conversion of urban form at short time and at times causes a variety of similar extensive and radical urban endeavors, depending on their author's background, scope and ideology.
2. The emergence of a housing- and real estate market at large within this urbanization process produces a short-term orientation within the urban development that predominately reflects the satisfaction as well as a provocation of contemporary demands, ultimately serving the underlying payout-interests.
3. The development of urban planning within this urbanization process derives from a minimized public obligation to control the vast private enterprise of shaping the cities, eventually representing a retro- or follow-up action towards the extant city and urban society.<sup>106</sup>

Seemingly disconnected or even contradictory at first sight, these statements do not only in equal measure apply to all phases described above, but they produce stringent interdependencies. Whereas the first focuses on urban form, the second on urban policy, and the third on urban planning, all three of them base on the emergence of a remarkable private hand that, succeeding the political revolutions of the industrial age, proved to become the determining client within urbanization processes. From there, the formation of cities got easily subdued to primary utility considerations, may they result in radical societal visions, optimized economic profits, or minimal political effort. Until today, the economic success of the private hand sponsors the accelerating transformation of cities, as well as it evokes a public obligation for basic standards within this transformation. Again, the described radical endeavors of conversion throughout the industrial and post-industrial age would not have been possible with a stronger public commitment for the extant city, nor with the arisen ease, in which private demands are met by altering planning and design principles bound to the changeability of the market economy.

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<sup>106</sup> This notion complies with a statement Helmut GEBHARD gave, however, within the context of the *European architectural heritage year 1975* and hence altogether focusing on historic preservation: "Die Folgen des Ungleichgewichts zwischen Überfluß der Produktion und dem gleichzeitigen Mangel an koordinierten Zielvorstellungen der Industriegesellschaft zeichnen sich heute in der mangelnden Qualität der Neubauten ebenso ab wie in den bedrohlichen Verlusten an geschichtlicher Bausubstanz. Es gibt kaum einen deutlicheren Beweis dafür, dass die Industriegesellschaft mit dem naturwissenschaftlich-technischen Machtzuwachs noch nicht fertig wird, als die unbefriedigenden Ergebnisse der hektischen Bautätigkeit der jüngsten Vergangenheit in Stadt und Land" (Gebhard 1975: 103).

'The consequences of the imbalance between the abundance of production and the concurrent deficit of coordinated objectives within the industrial society today result likewise in a poor quality of new architecture as well as a drastic deprivation of historic buildings. There is hardly more explicit evidence for the industrial society's disability to cope with its increased scientific-technical potency than the disappointing results of the recent hectic building activity in cities and countryside', (author's transl.).





Beispiel einer Stadtregulierung nach  
künstlerischen Grundsätzen  
(Example of an Urban Arrangement  
according to Artistic Principles),  
1889, by Camillo Sitte  
cf (Sitte 1889: 177)

country  
Austria  
coordinates  
48° 12' 38" N – 16° 21' 29" E  
Rathausplatz  
elevation  
151 to 542 m  
population  
1,678,435 (2008)  
size  
415 km<sup>2</sup>  
density  
4,045 /km<sup>2</sup>  
foundation / rst citing  
881 / 1859 (Ringstraße)  
source  
<http://de.wikipedia.org/wiki/Wien> (20.04.2008)



Vienna – Ringstraße  
Image © 2007 DigitalGlobe

plate 19



The dramatic urban change resulting from the industrialization was early recognized; already in 1826 during his English journey Karl Friedrich SCHINKEL (1781-1841) remarked on Birmingham: "Höchst traurig der Anblick einer solchen englischen Fabrikstadt, nichts was das Auge erfreut [...]. Ganz uninteressante Häuser in rotem Backstein für 120 000 Einwohner konnten nur einen melancholischen Eindruck machen." (Riemann et al. 1986: 141 ff.).<sup>107</sup> Some ten years later Augustus W. N. PUGIN (1812-52) demonstrated the drastic transformation from medieval to industrial times in his well-known etching comparing a random catholic town in 1440 with its condition in 1840 (Pugin 1836: Annex Fig. 1+2).<sup>108</sup> Yet, whereas Schinkel generally encountered the industrial advancement openly and sought to translate some of its products and processes into architecture, Pugin pursued a backward argument about style.<sup>109</sup>

Looking at the development of urbanism as an academic discipline, we find criticisms of the industrial impact on urban form, as a matter of fact, already in its first scientific discourses in the late 19th century. Agreeing upon BAUMEISTER, SITTE, and STÜBBEN as three main characters of this discourse we shall argue that urbanistic discipline resulted from the necessity of newly directing the industrial urban formation processes and thus from a dissatisfaction about the current development.<sup>110</sup> If we cannot name this already a criticism, however, the contribution by SITTE represents a definite disapproval of the «industrial» urbanistic approach at his time.

Camillo SITTE (1843-1903) questioned the primacy of traffic planning and economical rectangular parceling – both deriving from the mechanization of urban development – versus a delicate spatial design of streets and places. Due to his opinion modern systems with their dominance of geometric patterns produced uniform and unappealing urban spaces;<sup>111</sup> with what he called "künstlerische Grundsätze" he sought to oppose this.<sup>112</sup> An analysis of medieval squares in North Italian and German cities determined his approach: The focus laid upon the creation of distinguishable urban spaces using the closeness of the built perimeters;

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<sup>107</sup> SCHINKEL's travel brought him to Paris, Scotland, and England, there to the industrial core of this time. His Journal gives testimony, of course, to a professional point of view of an architect, enthused by modern technology and building art. The English translation of the cited passage of the journal is: "The sight of an English industrial town like this is most depressing: nothing pleases the eye [...]. Quite unremarkable redbrick houses for 120,000 inhabitants create a very melancholy impression", (pg. 126).

<sup>108</sup> compare plate 7 on page 28; a similar comparison can be seen with the side-by-side of different churches and temples in front of smoking chimneys in a later work (Pugin 1841: plate I, fig. II.)

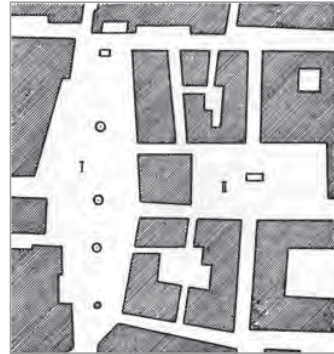
<sup>109</sup> PUGIN reasoned for a return to a medieval, i.e. gothic architectural style, what resulted from a deep devotion to the Catholic belief and a denial of Protestantism and what he called *pagan* (better: profane) artwork and *ecclesiastical* buildings (Pugin 1843).

<sup>110</sup> compare the discussion about the work of BAUMEISTER, SITTE, and STÜBBEN on page 31

<sup>111</sup> see (Sitte 1889: 92 ff.)

<sup>112</sup> 'Artistic principles' derives from the title of SITTE's book; later on there evolved the dichotomy geometric versus artistic urban design. Wolfgang SONNE recently raised a terminological issue of this translation into English. Instead of using 'artistic' he recommends the term *picturesque*, which should be less discriminating while refusing artistic properties with other design approaches; albeit forced to exclude from this denomination the wide-spread aesthetic theories on the *picturesque* at the turn of the 19th century (Sonne 2006: 58). Before exchanging one translation dilemma with another, we shall stick with the German wording or hallmark Sitte's artistic approach as this.





The Irregularity of Old Squares  
exemplified by the Piazze d'Erbe  
and dei Signori in Verona,  
1889, by Camillo Sitte  
cf (Sitte 1889: 60)

country  
Italy / Veneto  
coordinates  
45° 26' 35" N – 10° 59' 51" E  
Piazza delle Erbe  
elevation  
59 m  
population  
259,068 (2008)  
size  
207 km<sup>2</sup>  
density  
1,281 /km<sup>2</sup>  
foundation / rst citing  
89 BCE  
source  
<http://it.wikipedia.org/wiki/Verona> (20.04.2008)



Verona  
Image © 2007 DigitalGlobe

**plate 20**



the street system orientating along topographic lines, rarely having four way intersections, and thus producing an irregular net of curved streets linked with irregular shaped squares; streets and squares eventually producing a composition of interconnected spatial ensembles that should appear organically evolved – and not planned (Sitte 1889). In his "Beispiel einer Stadtregulierung nach künstlerischen Grundsätzen",<sup>113</sup> SITTE found fault also with the Vienna Ringstraße, which was meant to be a masterpiece of urbanism.<sup>114</sup> From the publication of his book in 1889 on we find a severe debate between those supporting SITTE's artistic principles and those, who elaborated a *civic design* on ground of the demands of the industrial society.<sup>115</sup> This debate ended only with the drastic impact of World War I, as stated earlier.<sup>116</sup>

Within most subsequent urban design approaches, of course, there is a use of critical arguments regarding the contemporary urban design practice to strengthen new or altered principles. Out of the various characters, some of which were mentioned already, we shall recall HOWARD, LECORBUSIER and WRIGHT.<sup>117</sup> However, after all since the 1960s we find more and more authors addressing a variety of nuisances within the mainstream urban development in the Western world. The following precis shall only highlight some of these critiques in a similar manner as the review before. Yet, instead of a chronological summary, we shall group them according prevailing systematic, societal, or physical issues, juxtaposing the evident similarities as regards content or approach; this is not to say that there is no overlapping, suggesting other groupings or compilations. Eventually, we shall have a look onto some current debates on Western urban development as again one possible approach with regard to the scope of this thesis.

### *Systematic Issues*

The first group includes those critics, predominantly addressing systematic issues of industrial and post-industrial urbanism, that is functional and/or formal deficiencies, which affect the city as a whole and have a significant impact on the dweller's, respectively user's approach towards the city. Even though their toe-holds vary, the issues raised remain on a general level of interaction between man and urban form.

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<sup>113</sup> 'Example of an Urban Arrangement according to Artistic Principles', (pg. 279)

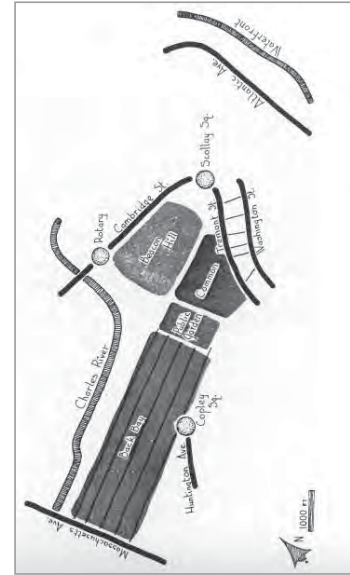
<sup>114</sup> A conclusion, which today we should acknowledge in spite of SITTE's verdict.

<sup>115</sup> The term *civic design* in the Anglo-American literature is probably as hard to grasp as the German 'Städtebau'. The use of the term occurs only shortly after SITTE's denomination, yet enlarges the actual building process to a socio-cultural realm, as we can see with BURNHAM and GEDDES.

<sup>116</sup> compare discussion on page 37 f.

<sup>117</sup> With his Garden-City concept HOWARD addressed after all the impact of the industrialization onto the city. With his vision he sought to return to or even idealize an idealized liberal, democratic, ultimately true civic society, which he held impossible to achieve in the dense, unhygienic, villainous urban environment of the 19th century with its economic hierarchy (see discussion on page 35). LECORBUSIER on the other hand experienced the ongoing industrialization as not radical enough to realize a true urban society, which is making use of all possible amenities of modern fabrication and innovation. These should enable a healthy optimized life with plentiful possibilities of excitement and retreat. In the extant urban form (and supposedly societal structures) he saw the biggest obstacle for this envisioned development (see discussion on page 39). Eventually, WRIGHT attended to the constraints of political and societal paternalism with its lacking of nativeness, individualization and self-actualization, all of which he saw resulting from traditional urban society. Within the increasing economic wealth through the industrialization he deemed possible a repatriation of man to an equally assigned plot of land, subsequent homeownership, free involvement into political and societal processes, as well as a true democratic constitution. Comparable to our current development, with Broadacre City urban form should have been replaced by an intangible urbanity (see discussion on page 43 and on page 53).





The Boston that everyone knows,  
1960, by Kevin Lynch  
cf (Lynch 1960: 21)

country / state  
USA / Massachusetts  
coordinates  
42° 21' 29" N – 71° 03' 49" W  
Beacon Hill  
elevation  
43 m  
population  
590,763 (2006)  
size  
232 km<sup>2</sup>  
density  
4,815 /km<sup>2</sup>  
foundation / rst citing  
1630  
source  
<http://en.wikipedia.org/wiki/Boston> (20.04.2008)



Boston MA  
Image © 2007 Sanborn

**plate 21**



Kevin LYNCH (1918-84) focused in his treatise from 1960 on "The Image of the City", which according to him results from the "identity", "structure", and "meaning" of an urban development (Lynch 1960: 8).<sup>118</sup> In several surveys he found out that the "legibility" of this image worsened in course of the industrial urban development,<sup>119</sup> causing insufficient orientation and uncomfortable feelings with the urban dwellers.<sup>120</sup> LYNCH's argument for "imageability" ostensibly addresses the lack of signs and elements for an intuitive reference. Yet, the major renunciation from normative modernist thinking about urban design consists in the return to a somewhat emotional observation of the city. Whereas the modernist city called for the rationalized city-machine, LYNCH claims a rational city-image, and hereby applies a reasonable model on the various sentiments of urban observers. He is not concerned with the issue of creating urban space, but the implications of its perception by the user. Thus his argument is an indirect imperative for the urban designer to reconsider these perspectives,<sup>121</sup> but moreover an underlying criticism of the declining understanding of urban form, with its integration of versatile emblematic spaces and objects.

In 1965 Christopher ALEXANDER (\*1936) put forward his "A City is not a Tree", in which he turns against the meanwhile common "pattern of thought" that a city is hierarchically organized in independent subunits, as a tree ramifies in branches (Alexander 1965: 1/58 ff.). He attributed this approach to the human incapability of comprehending complexity and a subsequent involuntary wish for simplification.<sup>122</sup> Accordingly, industrial planned cities, "artificial" as he generalized them, follow simple hierarchic orders, which contradict complex human behavior and consequently induce "extreme compartmentalization", internal "dissociation", and ultimately "destruction" (Alexander 1965: 2/61). ALEXANDER reasoned that the proper abstract ordering principle of towns, rather than the tree, is the semi-lattice, in which urban processes can be mapped according to their interrelations. Eventually, ALEXANDER's contribution proposes a fundamental change of thought, profoundly addressing the misunderstanding of city as a one-to-one-relational system, which denies the ambiguity and multiplicity of urban functions and forms.

A criticism, which is due to its pamphlet form firstly not obvious to clearly subsume within one of the present groups, represents the psychoanalyst Alexander

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<sup>118</sup> LYNCH's triade is based on fundamental phenomenology: The object, which we observe, has a certain identity (PLATO would say "existential properties"), which is related to it. However, it has to be in a certain spatial or pattern relation, i.e. structure, to the observer, to be able to be recognized. Essentially, now the observer recognizes the object, but only understands it by a practical or emotional interpretation — which is the meaning of the object. This argument — not outspoken — resembles the thinking of various philosophers, such as PLATO, KANT, or SARTRE.

<sup>119</sup> LYNCH introduced "legibility", "visibility", and "apparency" as complementing factors of the "imageability" of cities already in the first chapter of his argument (Lynch 1960: 9 f.), and inspects them in the following during three case studies in Boston, Jersey City, and Los Angeles; these cities show an increasing impact of suburbanization, respectively an urban renewal that more and more neglected traditional urban features in favor of a modern, industrialized urban form as summarized before (see on page 45 ff.).

<sup>120</sup> LYNCH talks about getting "lost", which "carries overtones of utter disaster" (Lynch 1960: 4).

<sup>121</sup> This, of course, is another difference to modernist urban theory, which sought to manifest the *new* opposing the *traditional* city. LECORBUSIER, for example, had a decisive and authoritarian way to «teach» his urban model, in contrast to LYNCH's «anti-authoritarian» education of the designer.

<sup>122</sup> "It is known today that grouping and categorization are among the most primitive psychological processes. [...] Study of the origin of these processes suggests that they stem essentially from the organism's need to reduce the complexity of its environment by establishing barriers between the different events which it encounters" (Alexander 1965: 2/60).





Ubiquitous Residential Development in 1966,  
by Bertelsmann Fachverlag/Bauwelt,  
cited by Alexander Mitscherlich  
cf (Mitscherlich 1971: 241)

country  
Netherlands / Noord-Holland  
coordinates  
52° 19' 17" N – 04° 58' 06" E  
Gerenstein  
elevation  
0 m  
population  
84,811 (2003)  
size  
22 km<sup>2</sup>  
density  
3,855 /km<sup>2</sup>  
foundation / rst citing  
1965  
source  
<http://de.wikipedia.org/wiki/Amsterdam> (20.04.2008)  
[http://nl.wikipedia.org/wiki/Amsterdam\\_Zuidoost](http://nl.wikipedia.org/wiki/Amsterdam_Zuidoost) (18.07.08)



Amsterdam-Zuidoost (Bijlmermeer)  
Image © 2007 Aerodata International

**plate 22**



MITSCHERLICH'S (1908-82) contribution "Die Unwirtlichkeit unserer Städte" from 1965.<sup>123</sup> There he addresses also a *paucity of identity* with the urban nuclei (Mitscherlich 1965: 13 ff. and 31 ff.),<sup>124</sup> which should be the prerequisite for the indispensable self-portrayal and self-reassurance of man and subsequently the major urban function of establishing one's *home*. He saw the reason for this not only in the lack of urban signs and poor commensurability of modern schematic urbanism,<sup>125</sup> but similar to what we shall discuss later, in the segregation of society and the separation of functions, and ultimately the limitation of adequate housing space in respect to its form.<sup>126</sup> The omnipresent limitation to quantitative (and ultimately financial) aspects, however, distinguishing only producers and users of the city,<sup>127</sup> that is the remarkable key issue of his pamphlet, addressing the contemporary system of establishing and continuing cities in form and function.<sup>128</sup>

Along these lines another author, not professionally dealing with the city, enfolded his argument. The journalist Gody SUTER presented in 1966 "Die großen Städte. Was sie zerstört und was sie retten kann".<sup>129</sup> Observing the same symptoms, dispersion and segregation of the individuals as well as of functions, combined with collapsing traffic (Suter 1966: 20 f. and 103), he proposed to acknowledge the ataxia of the great city, viz its complexity, out of which the city evolved. Rationalization processes, which accelerated during the industrialization, led to an overvaluing and generalizing of systematical approaches that mistake valuable methods of resolution at small scale for overall solutions and destroy the incremental particulate organization of urban nuclei, which represents its traditional cachet.<sup>130</sup>

#### *Societal Issues*

The second group includes those critics, predominantly addressing societal issues of industrial and post-industrial urban design, that is functional and/or formal deficiencies, which affect the inhabitants of a city in their individual, collective, and societal life. These issues epitomize problems of human interaction within and caused by a specific urban form.

With "The Death and Life of Great American Cities" from 1961 Jane JACOBS (1916-2006) epitomized a critique of, or as she said herself an "attack" against the functionalist city and its social and economical impact (Jacobs 1961: 5 ff.). She apostrophized a severe urban decay, which stems from the lack of "intricate mutual support" with the urban populace (Jacobs 1961: 14) itself predominantly resulting

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<sup>123</sup> 'The inhospitability of our cities', (author's transl.)

<sup>124</sup> compare LYNCH earlier

<sup>125</sup> For the term *commensurability* see also the glossary on page 273.

<sup>126</sup> see (Mitscherlich 1965: 27 ff.)

<sup>127</sup> see (Mitscherlich 1965: 20 ff. and 31 f.)

<sup>128</sup> MITSCHERLICH, being a psychoanalyst doing research in psychosomatic medicine, naturally argued about the impact of the contemporary city on the individuals and the society, also analyzing the interrelation between the individuals; e.g. (Mitscherlich 1965: 44 ff.). That could have led also to a juxtaposition with the authors addressing primarily societal issues. Yet his observation of the system immanent primacy of quantity, founded in the still current over-estimation of real estate and housing policy, with regard to our scope overbalances mere societal implications or effects. In addition, also his morphological and typological observations; e.g. (Mitscherlich 1965: 61 ff.) are more comprehensible to subsume under the key issue lined out, then carving them into single arguments.

<sup>129</sup> 'The Great Cities. What is destroying them and what can save them', (author's transl.)

<sup>130</sup> see (Suter 1966: 93 and 99)





Jane Jacobs (standing)  
on Hudson Street,  
1961, by New York Times  
*cf* (Stern et al. 1995: 43)

country  
USA / New York  
coordinates  
40° 43' 51" N – 73° 59' 51" W  
Washington Square Park  
elevation  
10 m  
population  
8,274,527 (2007)  
size  
1,214 km<sup>2</sup>  
density  
10,533 /km<sup>2</sup>  
foundation / rst citing  
1653  
source  
[http://en.wikipedia.org/wiki/New\\_York\\_City](http://en.wikipedia.org/wiki/New_York_City) (20.04.2008)



New York NY – Greenwich Village  
Image © 2007 Sanborn

**plate 23**



from the separation of functions and social strata that led to anonymity and inadequate social control. JACOBS encounters this not only in the newly developed suburbia, but also in the inner cities, where through urban renewal extant densely populated but socially integrated low rent neighborhoods have been redlined as *slums* and exchanged by dull and regimented housing projects.<sup>131</sup> Instead of focusing on formal appearance on one side and an assumed statistical predictability on the other side, she summons on addressing cities as "problems in organized complexity" (Jacobs 1961: 433); these should be tackled by allowing this complexity to evolve, from a planner's perspective, through concentrating on the varying catalysts of processes, working inductively, and evaluating local and somewhat inconspicuous clues rather than generalized statistics.<sup>132</sup>

Dieter HOFFMANN-AXTHELM (\*1940) transcends the societal impact of current urban form by claiming a new responsibility of the urban dweller towards the city. Addressing the dissolution of the city through its *peripherising* as well as its functional and social *segregation* he seeks for a new constitutional act on an ecological basis that comprises an ongoing urban renewal which improves communal synergy and efficiency without major physical transformation.<sup>133</sup> As quintessential he states the issue of real estate and housing property. By means of tackling the problems bottom up, in 1996 HOFFMANN-AXTHELM suggested an "Anleitung zum Stadtumbau",<sup>134</sup> which should enable and force the individual to participate in the development of the city on ground of his own property, viz the apartment or the building plot as a basic building block (Hoffmann-Axthelm 1996: 11 and 88 ff.). The envisioned outcome of this renewal eventually reveals his main critique concerning the current development, that is the lack of publicity, intermixture, local identity, and self-administration. Main scope for urbanists would then be, after an abolition of land-use plans, the mediating of the individual demands of investors, builders, and dwellers, supporting the incremental processes instead of reglementing and implementing large scale urban plans.<sup>135</sup>

As contribution to an extensive, mostly non-urbanistic discussion on *the 'public'*,<sup>136</sup> Peter G. ROWE presented his argument in 1997, tracing back the current urban issues to a liberation of the individual with its markets on the one and a weak state on the other side (Rowe 1997: 204). This oppositional binary understands urbanism as a mere background for urban actions and constricts the urban

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<sup>131</sup> see (Jacobs 1961: 4)

<sup>132</sup> We shall argue that today's common neighborhood or grassroot planning result from JACOBS' argument, indeed focusing on the social quality of streets (n.b. the "sidewalks") and parks (part 1), the diversity of functions within and the size of building blocks (part 2), historic preservation (chap. 10), and subsidizing (chap. 16 and 17).

Still, JACOBS contribution leaves out sociological issues other than those of the metropolis, and surely at the time of her writing she was not able to foresee the impact of suburbanization, as well as the decay of smaller and middle size cities.

<sup>133</sup> see (Hoffmann-Axthelm 1993: 129 ff.)

<sup>134</sup> 'Manual for Urban Renewal', (author's transl.); this urban renewal, however, shall not be mistaken with the large area replacement of extant urban structures in the 1950-70s.

<sup>135</sup> While summarizing the critiques of HOFFMANN-AXTHELM and MITSCHERLICH, there occurred a lot of similarities between both authors, that could have suggested their juxtaposition (viz importance of real estate considerations, proposal of land reform, societal implications of property, functional and formal deficiency of suburbanization, etc.). Still, comparing the scope of these two critics, HOFFMANN-AXTHELM's focus on the societal constitution of cities and the reverse angel of transforming cities through a new maturity of the urban populace, motivated for the present layout.

<sup>136</sup> see for instance (Arendt 1958; Habermas 1964; Lefort 1986; Habermas 1989; Young 1990; Cohen et al. 1992; Fraser 1993)



The Three Bridges in Ljubljana (1929-32),  
by Peter Krečič  
cf (Krecic 1993: 205)

country  
Slovenia  
coordinates  
46° 03' 04" N – 14° 30' 22" E  
Prešernov Trg  
elevation  
298 m  
population  
278,638 (2007)  
size  
275 km<sup>2</sup>  
density  
1,013 /km<sup>2</sup>  
foundation / rst citing  
14 CE  
source  
<http://de.wikipedia.org/wiki/Ljubljana> (20.04.2008)



Ljubljana  
Image © 2007 DigitalGlobe

**plate 24**



planner and designer to a vicarious agent of concurring interests.<sup>137</sup> Missing, according to his assertion, is an urban civiness that reconciles these interests and calls for settings, which are ennobling and dignified to produce spaces for a new "Civic Realism" (Rowe 1997: 202). Hence, the urban designer engages in a moral task of producing places of collective significance for the city's populace, which themselves are not staging civiness, but are integral and intrinsic part of it. Urban design should not be a responsive product but a tool that demands a critical approach towards a public discourse from the producer and the user of urban space, mediating governmental interest as well as private ones. P. ROWE, consequently, establishes an immediate relationship between societal operations and representational and constitutive spatial appearance, giving new dimension to the emblematical aspects of urban-architectural space.

#### *Physical Issues*

The third group includes those critics, predominantly addressing concrete physical issues, that are formal deficiencies, which affect the functional as well as the societal framework of cities. Usually we find these critiques with urban designers and planners, who take these deficiencies for the elaboration of a new practical approach, resulting either in morphological or typological considerations and producing a new Leitbild for the contemporary city.

One of the first is Gordon CULLEN (\*1914). Hardly arguably his "Townscape" from 1961/1971 lacks patent criticisms, which are so ubiquitous with his fellow writers, such as JACOBS, LYNCH, ALEXANDER, and MITSCHERLICH. In the preface to the 1971's edition, for instance, we only read that "The position [of the townscape, the author] may indeed have deteriorated over the last ten years" (Cullen 1961: 13); nota bene, CULLEN used the subjunctive. Few times he directly addressed nuisances;<sup>138</sup> still, all in all, his occupation with the formal urban elements that allow "serial vision", the sensation of "place", an organization of "content", and the understanding of a "functional tradition",<sup>139</sup> implies the necessity to sensitize those responsible for urban form for its impact onto the populace, and consequently a shortage of artistic consciousness in contemporary urban formation. Consequentially, his catalogue barely employs modern examples to illustrate the townscape, and most of these rare ones represent counter-examples. His argumentation seeks to systematize aesthetics,<sup>140</sup> allowing designers and planners to evoke an emotional relationship between the people and urban form, which is contrary to refusal or indifference. This commensurability, due to his records, starts from the urban physis itself, and is laid down in an urban vocabulary that is a prerequisite for an "art of environment" (Cullen 1961: 193).

More pamphlet than scientific employment, and definitely more denunciation than advice represents 1964's "Die gemordete Stadt" by Wolf Jobst SIEDLER (\*1926) together with Elisabeth NIGGEMEYER and Gina ANGREG.<sup>141</sup> In another similar line of

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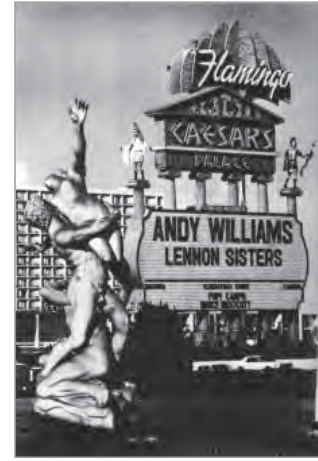
<sup>137</sup> This can be seen well with an additional contribution by Clare C. MARCUS and Carolyn FRANCIS, who base their design guidelines for public spaces on Mark CHIDISTER's assumption that public space "does not constitute a recurring interest in public life, [but] that plaza use is just an 'event' in the well-established private life" (Marcus et al. 1990: 22-24)

<sup>138</sup> for instance, he introduces us to a "victim of Steppen-Planung" (Cullen 1961: 136), including little more deprecative wording on the following pages.

<sup>139</sup> see (Cullen 1961: 17 ff., 21 ff., 57 ff., & 87 ff.)

<sup>140</sup> see (Cullen 1961: 197)

<sup>141</sup> 'The Murdered City', (author's transl.)



Caesar's Palace Signs and Statuary,  
1972, by Robert Venturi et al.  
cf (Venturi et al. 1972: 58)

country

USA / Nevada

coordinates

36° 06' 03" N – 115° 10' 23" W

Las Vegas Bd S / W Tropicana Ave

elevation

565 m

population

215,026 (2007)

size

203 km<sup>2</sup>

density

568 /km<sup>2</sup>

foundation / rst citing

1946

source

[http://en.wikipedia.org/wiki/North\\_Las\\_Vegas%2C\\_Nevada](http://en.wikipedia.org/wiki/North_Las_Vegas%2C_Nevada)  
(20.04.2008)



Las Vegas NV – The Strip  
Image © 2007 Sanborn

**plate 25**



attack as JACOBS, however, here predominantly the physical form of the city is examined, documented by photographs and interviews. The authors diagnose 'anonymity' and 'depersonalization', 'sterility' and 'aseptic orderliness' with what they call 'modern' urbanism and juxtapose traditional quarters in Berlin, which in all their presumable hygienic menace still produce an environment closer to the urban dweller and their demands (Siedler et al. 1964: 9 f.). The contribution apostrophizes the importance of back yard, trees, and facades for the spontaneous urban encounter that constitute urban life and cannot evolve in an over-functionalized environment with optimized time-tables. Ultimately, we observe the appraisal of the late 19th century Berlin urbanism and architecture, being the most traditional housing facilities left after the World War II; from there we shall assume the beginning of a *preservation approach*, which only in the 1970s found a legislative implementation.<sup>142</sup>

Starting from the architectonic object, Robert VENTURI (\*1925) developed with his 1966 treatise "Complexity and Contradiction in Architecture", followed by "Learning from Las Vegas" in 1972, a stance over the contemporary building processes, that identifies in the growing disconnected emblematic decoration of architecture and cities,<sup>143</sup> a false postulation of "either-or" (Venturi 1966: 23 ff. & 30) depriving the urban context of its diversity and complexity. The tactical separation of functions, which spuriously promised an undisturbed course of urban actions, transmitted itself to the architectural form, resulting in a boring formal uniformity. This again provoked an architectonical detached and changeable iconography of signs and billboards, that seeks to abduct the passerby into the "Interior Oasis" (Venturi et al. 1972: 49) and leaves the vast remaining public spaces for mere individualized traffic and parking lots. Summarizing his results, VENTURI comes to the conclusion that in abandoning ornament from buildings, the architect destroyed their ability to communicate and made unconsciously architecture itself an ornament, which fulfills no other demands than those of the architects' puritanical-moralistic modernity.<sup>144</sup> This architecture is no more a constituent of the city, once undressed from its juxtaposed emblematic counter-structure.<sup>145</sup> Only a new intrinsic significance of architecture, according to him, can resolve this issue and produce a necessary contradiction, which stimulates communication over and within architecture and cities.

In form of the literary and erudite essay "Collage City" from 1978, Colin ROWE (1920-99) disclosed the "intellectual pedigree" of the contemporary city, which he continuously correlated with urban examples (Rowe et al. 1978: 31). Here, he likewise addressed the "sterile scientific rigour" of the CORBUSIAN approach,<sup>146</sup> as well as the "perceptual world" of a picturesque townscape-approach (confronting JACOBS, LYNCH, and CULLEN at once) and the futuristic mega architecture – both having reported to resolve the dissatisfaction with contemporary urban form.<sup>147</sup> Employing various dichotomies, such as "science" and "people" or "nature" and "history",<sup>148</sup> he compiled the major regulatory obligations for the architects of the

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<sup>142</sup> compare the discussion on page 49

<sup>143</sup> compare "Picturessness" (Venturi 1966: 23 ff.) or the "decorated shed" (Venturi et al. 1972: 87 ff.)

<sup>144</sup> see (Venturi 1966: 23) & (Venturi et al. 1972: 162 f.)

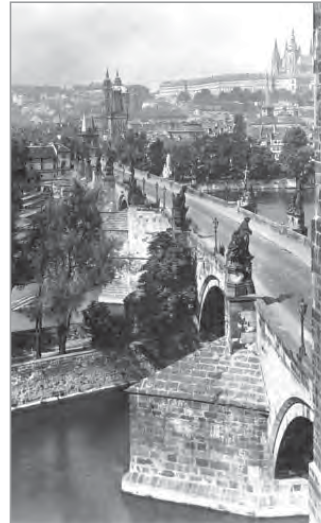
<sup>145</sup> see (Venturi et al. 1972: 18)

<sup>146</sup> see (Rowe et al. 1978: 6)

<sup>147</sup> see (Rowe et al. 1978: 36 & 38)

<sup>148</sup> see for instance (Rowe et al. 1978: 121)





Charles Bridge from above,  
[Bildarchiv Foto Marburg, Marburg Lahn]  
cf (Norberg-Schulz 1979: 82)

country  
Czech Republic / Hlavní město Praha  
coordinates  
50° 05' 10" N – 14° 24' 49" E  
Charles Bridge (oldtown)  
elevation  
177 to 399 m  
population  
1,212,097 (2007)  
size  
496 km<sup>2</sup>  
density  
2,444 /km<sup>2</sup>  
foundation / rst citing  
ca. 1230  
source  
<http://cs.wikipedia.org/wiki/Praha> (20.04.2008)



Prague – Coronation Passage  
Image © 2008 DigitalGlobe

**plate 26**



20th century, and ultimately addressed the universal pretension to follow either ideal totally. During the observation of the architectonic object within an urban texture he unveiled the necessity for accepting the given collage of various approaches towards the city and urban form and suggested a further development of this collage rather than transforming it beyond recognition or destroying it.<sup>149</sup> Consequently, he scrutinized the design responsibility of the architect for the urban form as a whole, demanding an attitude, which seeks to reconcile the past and the envisioned future within a complex presence.

Dealing with the very spatial impression of cities and architecture, in 1979 Christian NORBERG-SCHULZ (1926-2000) submitted his thoughts on the "Genius loci", the spirit of a locale. Ultimately there he addressed "La perdita dei luoghi" within modern urban development,<sup>150</sup> a corruption or loss of distinguishing qualities due to the lack of enclosure and density as well as architectonic character (Norberg-Schulz 1979: 189f.). Yet this observation is preceded by an elaborate examination of different places, that traditionally allowed orientating and identifying one-self, both existential conditions to obtain a 'foothold' in life.<sup>151</sup> According to NORBERG-SCHULZ only the distinct space becomes a place, and this distinction derives from its 'character', which is 'determined by material and formal constitution'.<sup>152</sup> In reverse, the 'character' determines the impact onto man and his dwelling at a locale. A mere analytical employment, thus, seems insufficient to fully describe and produce places, why he sought to introduce a 'phenomenology' that envelops a typology of different natural and man-made examples. In comparison to contemporary spaces, which accidentally or even seem wanting to produce ubiquity, he concludes that a true place shall reveal its significant character, which might be underlined or should be created by adequate architectonic structures. Altogether his approach set a new focus on the design of the urban physis.

#### *Current Approaches*

The last grouping presents some of the current approaches towards the city and its planning, which might as well have been juxtaposed to the previous groups. But they altogether represent also, yet in a fragmented way, the latest thoughts on our current situation and, consequently, testify best what contemporarily is considered its deficiencies. The authors are also practically involved in urban design and planning and partly take their critical view as a starting point for a proposed paradigm shift.

While asking "What Ever Happened to Urbanism", Rem KOOLHAAS (\*1944) comes to the conclusion that both modernism and the subsequent approaches to revert to a "classical city" failed to answer the urban issues, which evolved out of the ongoing and accelerating quantitative growth of cities (Koolhaas 1995c: 961 ff.). Today, urban sprawl on one side and drastic multiplication of the urban population on the other contradict thoroughly the imposed planning principles. Moreover, even though we experience a "pervasive urbanization" of the world,<sup>153</sup> urbanists are at withdrawal, being incapable of comprehensively controlling the development and escaping in mere single architecture, which appears easy to define and

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<sup>149</sup> see for instance (Rowe et al. 1978: 94 ff.)

<sup>150</sup> 'The Loss of Space', (pg. 189)

<sup>151</sup> see (Norberg-Schulz 1979: 5)

<sup>152</sup> see (Norberg-Schulz 1979: 14)

<sup>153</sup> see (Koolhaas 1995c: 963) & (Koolhaas et al. 2001: 2 ff.)



Aerial Photography of Gelsenkirchen-Bismarck and Environs in 1996  
[Stadt Gelsenkirchen, Amt für Stadtentwicklung und Wirtschaftsförderung]  
cf (Sieverts 1997: 84)

country  
Germany / North Rhine-Westphalia  
coordinates  
51° 29' 24" N – 06° 52' 44" E  
Centro  
elevation  
25 to 78 m  
population  
218,181 (2006)  
size  
77 km<sup>2</sup>  
density  
2,832 /km<sup>2</sup>  
foundation / rst citing  
1862  
source  
<http://de.wikipedia.org/wiki/Oberhausen> (20.04.2008)



Oberhausen – Centro  
Image © 2007 AeroWest

**plate 27**



elaborate, but otherwise surrender to an uncertain "aesthetics of chaos" (Koolhaas 1995c: 969). Logically he apostrophizes the end of the traditional image of "the" city, and the "death of urbanism", that does not enable "encoding civilizations in their territory" but is a mere ideology and maintenance of the achieved professional status (Koolhaas 1995c: 967). However, rather than to procrastinate this inescapable confession, KOOLHAAS demands to acknowledge the given uncertainty, discover "unnameable hybrids", and irrigate "territories with potential", which accordingly is the only opportunity to further pursue urbanism (Koolhaas 1995c: 969). Arguably he seeks to liberate a new kind of urbanist from his "atavistic" responsibility for the urban fate as a maker of cities, but to understand him as their supporter (Koolhaas 1995c: 971).<sup>154</sup>

With his essay on the "Zwischenstadt" Thomas SIEVERTS (\*1934) established a profound new view onto the low-dense urbanization in the industrialized countries (Sieverts 1997).<sup>155</sup> These 'cities without cities',<sup>156</sup> which have evolved out of a techno-rural system,<sup>157</sup> should no longer be seen as a periphery to the extant city centers implying a hierarchy of importance and intensity of engagement.<sup>158</sup> Even though not disapproving of the traditional European ideal of a compact city,<sup>159</sup> the reality forbids him to neglect the importance of this suburban and inter-urban development; it cannot be wiped away as from urbanists' side undesired

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<sup>154</sup> In issue 11/1995 of the journal of the German Federal Chamber of Architects we read accordingly from a 'benevolent neglect', which characterizes this attitude towards the development: "Es bedarf eines gedanklichen Gebäudes um zu begründen, warum ein Raum ordentlich oder unordentlich sei. Das gedankliche Gebäude kann fehlerhaft, zum Beispiel in sich widersprüchlich sein. Es kann, angesichts der Komplexität der raumbedeutsamen Prozesse und des unübersichtlichen Wirkens vieler Akteure, so aufgebaut sein, daß es scheinbar dazu zwingt, die gegenwärtige Ohnmacht der Planung anzuerkennen. Das erlaubt, sich von der Last der Entscheidungen zu befreien und sich im Chaos nach Belieben wohlig zu tummeln. Oder man kann die bestehenden Verhältnisse mißbilligen, den Betroffenen und Beteiligten wohlwollend begegnen und ihnen empfehlen, die Dinge breiter und tiefer zu erforschen, die verschiedenen Standpunkte und Möglichkeiten zu erfassen, die Konflikte zu erhellen, immer weitere Schritte des Untersuchens und Diskutierens vorzuschlagen und dabei konkrete Handlungen völlig vermeiden" (Maurer 1995: 634). 'It deserves a thought-model to justify why space shall be orderly or orderless. The thought-model can be inaccurate, for instance contradictory. It can force us to acknowledge the current aporia of planning because of the complexity of spatial processes and the unclear participation of various actors. This allows relieving from the burdens to decide and 'cavorting' ad libitum in chaos. Or, one can disapprove of the extant circumstances, benevolently encountering the persons concerned and participating, and recommend a wider and deeper research, gathering various viewpoints and possibilities, enlightening conflicts, suggest more and more examination and discussion steps, and ultimately avoid any concrete acts', (author's transl.).

<sup>155</sup> "*Zwischenstadt* [...] ist die Stadt zwischen den alten historischen Stadtkernen und der offenen Landschaft, zwischen dem Ort als Lebensraum und den Nicht-Orten der Raumüberwindung, zwischen den kleinen örtlichen Wirtschaftskreisläufen und der Abhängigkeit vom Weltmarkt" (Sieverts 1997: 7, accentuations as in the original text).

'The Zwischenstadt stands between the individual, special place as a geographical and historical event and ubiquitous developments of the global division of labour; between the space as an immediate living area and the abstract traversing of distance which is only measured in the consumption of time; between the mythical Old City which is very effective, and the Old Cultural Landscape which remains anchored deep in our dreams', (pg. 2).

<sup>156</sup> following the English title of his publication

<sup>157</sup> compare (Nicolin 1992: 59)

<sup>158</sup> Jacques Lucan already earlier asked for this change of perspective; see (Nicolin 1992: 58).

<sup>159</sup> see (Sieverts 1997: 7)





The Urban Plan: Phase II,  
1991, by OMA  
cf (Koolhaas et al. 1996: 39)

country  
France / Nord-Pas-De-Calais  
coordinates  
50° 38' 12" N – 03° 04' 10" E  
Central Railway Station  
elevation  
18 to 46 m  
population  
224,900 (2005)  
size  
35 km<sup>2</sup>  
density  
6,457 /km<sup>2</sup>  
foundation / rst citing  
1054  
source  
<http://fr.wikipedia.org/wiki/Lille> (20.04.2008)



Lille – Euralille  
Image © 2008 Cnes/Spot Image

**plate 28**



occurrence conflicting with their restorative approach.<sup>160</sup> The urbanizing landscapes, despite the fact that they are not strategically planned, derive from various reasonable single decisions, which have to be acknowledged;<sup>161</sup> the populace living in these urban landscapes already outnumbers the urban one, having produced a new social, technical, and economic network, which is non-reversible;<sup>162</sup> the new relation of open landscape and developed areas makes no more the city but the landscape itself to an enclosed 'figure';<sup>163</sup> furthermore, the globalizing world and its economic and technological assets makes "Zwischenstadt" an ubiquitous phenomenon. These conclusions make SIEVERTS review and redefine the traditional terms of 'urbanity', 'centrality', 'density', 'mixture', and 'ecology', which so far have been undertaken with view upon the traditional city, and postulate the necessity for sustainably planning and designing urban regions that include all settlement patterns.<sup>164</sup> This planning and designing, however, implies patient and particulate steps with help of different leitbilder,<sup>165</sup> ultimately achieving a new "Gestaltungsperspektive" for the city (Sieverts 1997: 159).<sup>166</sup>

Winy MAAS (\*1959) together with the Dutch architecture firm MVRDV, however, addresses urban growth likewise in surface and populace on a general level. An abstraction of the current urbanization processes in statistical figures leads them from a "Metacity" to a "Datatown", which represents the basis for further "explorations that could induce a necessary round of self-criticism in architecture and urbanism" (Maas et al. 1999a: 19).<sup>167</sup> Datatown pushes urban processes to its extremes,<sup>168</sup> showing in a series of "what-ifs" the implications of accommodating the evergrowing world's population regarding main resources, agriculture, and waste (Maas et al. 1999a: 59 ff.). Special attention is given to high density, vertically piled up multi-function structures,<sup>169</sup> high concentrations at highway nodes, indirectly opposing the vast consumption of open land,<sup>170</sup> and a regional if not

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<sup>160</sup> see (Sieverts 1997: 10 & 19)

<sup>161</sup> see (Sieverts 1997: 15 ff.)

<sup>162</sup> see (Sieverts 1997: 48 ff. & 65 ff.)

<sup>163</sup> see (Sieverts 1997: 15 & 65)

<sup>164</sup> see (Sieverts 1997: 74 ff. & 95)

<sup>165</sup> see (Sieverts 1997: 96 ff.)

<sup>166</sup> 'major formative perspectives', (pg. 144); see also (Sieverts 1997: 9)

for a shorter and less complex, nevertheless intriguing account on the relevance and origins of this new settlement type see (Fishman 1994)

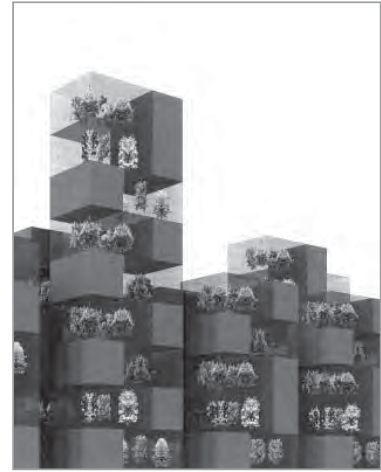
<sup>167</sup> "Datatown" can be understood as a succession of "Datascapes": "Unter Maximalbedingungen wird jede Anforderung, jedes Gesetz, jede Logik deutlich, 'erscheint' in reinen, unerwarteten Formen, die über die künstlerische Intuition oder die bekannte Geometrie hinausgehen und sie durch 'Forschung' ersetzen. Die Form wird nun zum Resultat solch einer Extrapolation im Sinne einer 'Datascap' der dahinter liegenden Anforderungen. Sie macht Anforderungen und Normen kenntlich, indem sie sie lächerlich macht und kritisiert [...]" (Maas 1999: 49).

'Under maximal conditions any requisition, any rule, any logic becomes evident, 'appears' in true, unexpected forms, which transgress artistic intuition or known geometry, and substitute them by 'research'. Form, now, becomes the result of such an extrapolation in terms of a 'datascape' of the underlying requests. It reveals request and standards by ridiculing and criticizing them', (author's transl.).

<sup>168</sup> as did the study "FARMAX. Excursions on Density" regarding an extreme floor-area ratio before (Maas et al. 1998)

<sup>169</sup> see "3D City. Multiplying Urban Capacities" (Maas et al. 2001), and "The Functionmixer" (Maas 2000: 134 f.)

<sup>170</sup> see also "Irgendwann muß man sich gegen den Sprawl entscheiden" (Maas et al. 1999b)



Excerpt from Datatown,  
1999, by MVRDV  
*cf* (Maas et al. 1999a: 89)

country  
USA / Maryland  
coordinates  
39° 03' 49" N – 77° 10' 29" W  
Crestview Court  
elevation  
25 to 78 m  
population  
58,091 (2004)  
size  
26 km<sup>2</sup>  
density  
2,226 /km<sup>2</sup>  
foundation / rst citing  
1878  
source  
[http://en.wikipedia.org/wiki/Gaithersburg%2C\\_Maryland](http://en.wikipedia.org/wiki/Gaithersburg%2C_Maryland)  
(20.04.2008)



Gaithersburg MD  
Image © 2007 TerraMetrics

**plate 29**



trans-regional understanding of the urban.<sup>171</sup> MVRDV's contributions derive from a pluralism of methods and not from one single approach, recorded in one stringent textual elaboration,<sup>172</sup> yet, we can understand them as a break up of a traditional hence outdated urban approach, leaving behind the recent discussion about urban sprawl on one side and the 'Compact European City' on the other. Still, not only the reoccurring reference to Dutch circumstances identifies these contributions as European, but also the implied necessity of influencing or steering the future urban development.<sup>173</sup>

Reviewing the role of the architect in 20th century's urban planning, Angelus EISINGER (\*1964) observes the difficult amalgamation of the pre-modern artistic architect with a modern societal visionary and the dilemma of envisioning himself as a generalist, even though having to cope with more and more special disciplines.<sup>174</sup> So far, the 'city of architects' hardly met the urban dynamics,<sup>175</sup> what he traces back to a lack of observing the actual social functioning but inventing new ones from scratch over again.<sup>176</sup> The resulting urban form of necessity fails to comply with contemporary and future requirements and demands. He argues that the city of the future can only be conceived from the present reality,<sup>177</sup> whose complexity and displeasure produces today's planning aporia.<sup>178</sup> This altogether, as he concludes, results in a "Selbstdemontage" of the architect as urbanist.<sup>179</sup>

There are, of course, many more writings to be consulted for a full review of criticisms on the Western urban development; likewise, the precedent short precis cannot include the full arguments of the presented contributions. Still, main critical lines regarding the industrial and post-industrial development and the resulting urban forms are evident and confirm the initially mooted generalized statements:<sup>180</sup>

We find substantial critiques on current urbanism with CULLEN, LYNCH, C. ROWE, SIEDLER, SUTER, and VENTURI, who all in one way or the other address the various results of the rapid urban transformation since the industrialization; here, we after all understand the pretense of universality, which was especially claimed by modernist designers and planners, as major issue. This universality, which is often connoted with the personality of LECORBUSIER,<sup>181</sup> resulted in a total neglect of the extant city with its multifold significance, up to its large demolition. However, similarly SITTE saw in his contemporary urbanistic development a denial of traditional urban form, and additionally much loss of traditional urban fabric is owed exactly to those measures taken to produce a traditional image of the city.

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<sup>171</sup> see "The Regionmaker" (Maas 2000: 144 ff.)

<sup>172</sup> see (Seifert 2003: 123)

<sup>173</sup> see also discussion on page 93

<sup>174</sup> see (Eisinger 2006: 11 f.)

<sup>175</sup> see (Eisinger 2006: 9 & 100)

<sup>176</sup> see (Eisinger 2006: 22), and the "Phantomfigur einer industriegesellschaftliche Normalexistenz" (Eisinger 2006: 108)

<sup>177</sup> see (Eisinger 2006: 19)

<sup>178</sup> see (Eisinger 2006: 131)

<sup>179</sup> a 'self-demounting', in terms of making oneself dispensable

<sup>180</sup> see page 55

<sup>181</sup> EISINGER gives some interesting statements on the originally varying programmatic in his review of the functionalist city (Eisinger 2006: 32 ff.)

Urban policy issues are focused on by HOFFMANN-AXTHELM and MITSCHERLICH, who apostrophize the solution of real estate issues as key for the future of the city, handing over responsibility to the urban dwellers themselves. Yet, broadening our view from immediate financial and possessory implications to the resulting conflict between the individual and the community, we identify, while reading JACOBS, NORBERG-SCHULZ, and P. ROWE, a major and still growing gap between the populace and the city in terms of a societal identification with the urban. The absence of civiness similarly results from and in social, functional, and formal segregation, epitomized likewise by large housing projects on one side and vast suburbia on the other, ultimately carried to extremes by synthetic urbanity severally designed as a weak substitute.

From the field of professional planners, we learned a somewhat humbling assessment about the possible impact of urban planning onto the cities' development. KOOLHAAS as well as SIEVERTS conclude in different manners the weakness of the recent approaches and confirm the disqualification of the traditional understanding of the city in favor of an extended regionalism and incrementalism, which, in a certain way, applies also to MAAS and EISINGER; the first even though he takes a detour via the abstraction and generalization of urban data, the latter by additionally questioning the role of the architect in planning after all, if he does not achieve to carefully examine the societal implications and constricts his notion of architectural importance for the urban. Altogether these authors identify a new complexity, which inheres in the contemporary city. Yet, contrary to ALEXANDER, who gave a first account on this matter, they hardly transform this recognition into a true planning prerogative.

This is supposedly the main striking insight, which we can derive from this compilation of criticisms: we hardly find a comprehensive analysis beyond the described symptoms, and consequentially most suggestions for relief do not reflect possible implications within the overall urban system. Moreover, we might detect here and there the danger of making the specific substantial critique an universal approach towards the city, with all its possible inferences. Interestingly, exactly this attitude has been fundamentally addressed by most authors, a contradiction, which can be well observed with JACOBS and C. ROWE, who both transform their critique into a planning principle. But also with MITSCHERLICH, HOFFMANN-AXTHELM, CULLEN, and MAAS we sometimes read irritating generalized statements regarding the further proceeding with the city and its planning, deriving from their examination of the current situation but disregarding the centuries of urban development before. Apparently, they all take the irreversible fact of the industrialization as a rationale for a future-orientation, which is not further scrutinized. Especially KOOLHAAS and SIEVERTS, by questioning the role of the urbanist and apostrophizing the demise of a traditional image of the city, ultimately leave us with an unclear notion about what a city is.



Already in the beginning we observed that there had been various attempts to define what a city is, still hardly any was undertaken from the urbanist's point of view. This is even more obvious after above's reviews. We read about an inevitable change from a texture-city to an object-city, an inappropriate recourse to traditional urban forms, or a necessary acknowledgement of the coexisting complex and contradictory in the urban realm. But even though the terms *city* or *urban* are always employed, there is seldom a testimony as regards the assignment of these terms to the various settlements throughout history, and why we as professional urbanists are calling the biblical Jericho as well as contemporary Levittown a city. The 'benevolent neglect', which we encounter with the current planning attitude,<sup>182</sup> obviously applies to the determination of the planning object as well,<sup>183</sup> and seemingly the observed rapid urban change more and more eliminates a common comprehensive understanding as well. From there the current aporia and randomness regarding the purportedly formal mediocrity is only one consequent result. While facing a growing number of facts and implications, we have to ask us whether we consciously conceal the primary urbanists' task to be aware of our scope to determine the relationship between urban functions and form, as well as urban quantities and qualities.

Yet, while reading the different contributions, we came across several statements, which appear to be worthwhile juxtaposing and reinterpreting to pursue another approach:<sup>184</sup>

MAAS states that in a commonly claimed discourse between all parties occupied with the development of cities, architects and urbanists "hardly escape the formalistic" (Maas et al. 1999a: 17); within his argument that seeks to produce a new agenda for future urbanism addressing the immense urban growth, evidently formalism is a weak approach that disregards the social and economical implications. Still, urban form should be the focus of architects, as their education and experience is concentrated on the production of space, which is ultimately an occupation with form. Accordingly SIEVERTS remarks that urbanists cannot determine the social changes, movements and forces, which are the basis for any urban development (Sieverts 1997: 8); as we learned, in those examples, where this basis has been designed along with urban form, the project categorically failed. Thus, the solution can neither be superimposing form nor pursuing simple formalism, but equally we cannot forbear from the importance of form as the urbanists' objective without ceasing the whole profession.

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<sup>182</sup> see discussion Seite 73.

<sup>183</sup> "Überblicken wir die letzten hundert Jahre Städtebaugeschichte, so zeigen sich über alle Denkmodelle, Leitbilder und Theoriekonjunkturen hinweg erhebliche Schwierigkeiten, die Zukunft von Architekten und Urbanisten zur Zukunft der Stadt zu machen. Am Städtebau wird deutlich, daß Zukunftsbilder immer nur Verlängerungen der Gegenwart sind. Den Entwurf, den wir heute vom Morgen machen, hat wenig zu tun mit der gesellschaftlichen Realität, die das Heute der Zukunft haben wird. So fehlt heute der Disziplin Städtebau die Zuversicht, das Objekt ihrer Beschäftigung fixieren zu können" (Eisinger 2006: 156).

'Reviewing the last hundred years of the history of urbanism, there evolve beyond all thought-models, Leitbilder and theory cycles immense difficulties to make the architect's and urbanist's future the future of the city. Urbanism exemplifies that images of the future are only elongations of the present. The project, which we make today of the tomorrow, has little in common with the social reality of the future Today. Consequently the discipline urbanism lacks the confidence of determining the object of its occupation', (author's transl.).

<sup>184</sup> To do so, the author asks for a munificent admittance of the decontextualization of the according passages.

Continuity and coherence, as Pierluigi NICOLIN adopted, as well as structural and syntactic formation have been the aspects, with which urbanists examined the city so far.<sup>185</sup> According to him, these aspects prove inapplicable as regards the urban periphery, for its concrete form does not show any continuity or coherence. Still, apart from these new forms and apparent diffuse textures, we might scrutinize whether the periphery actually stands apart from the development of cities; possibly we can understand it as an urban variety, which consequently still would be part of the urbanist's scope. Many authors leave no doubt about this affiliation, and also the according approaches of "Generic City", "Edge City", and "Zwischenstadt" all include the term *city* in their programmatic titles. Paolo PORTOGHESI talks about 'amnesia', from which this urban periphery suffers, and suggests a stimulation of a 'capacity for remembering'.<sup>186</sup> Of course, focusing this remembrance on mere physical form should not bring us far and again bears the dilemma of formalism. But we might investigate what kind of structure and syntax lies behind the different urban forms. Throughout history we encounter urban developments, which in their physical form represented novelties that were difficult to evaluate from viewpoints constricted to a then traditional understanding; the emergence of medieval cities after the barbarian migration, the spontaneous development of faubourgs and newly planned settlements in the late Middle Ages as well as the opening-up of cities in the absolutist epoche and the enormous urban extension of the 19th century being main examples. Nevertheless, apparently they all corresponded to an intrinsic idea of '*city*' that supposedly bases on plausible and reoccurring relations between urban function and form. This is the starting point for the present thesis, which shall introduce another approach to the city as an enduring concept of urban form in different expressions.

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<sup>185</sup> "Wie bekannt, wurde die Stadt von den Architekten und den Städtebauern immer unter dem Aspekt der Kontinuität, der Kohärenz, der strukturellen und syntaktischen Gliederung betrachtet" (Nicolin 1992: 58).

<sup>186</sup> compare also (Nicolin 1992: 57)



The requirements for this elaboration of another approach, consequently, shall result in addressing the described acceleration of Western urban development on one side and the evidently difficult understanding of the significance of urban form on the other. Apparently both implications make us obviate a general and comprehensive employment with the city from an urbanist's perspective, when it is not a historical observation and interpretation or an ideologically inculcated reasoning; nevertheless both implications as well call for such an employment.<sup>187</sup>

From the intellectual history in the beginning of this reflection as well as from some of the contributions reviewed in the receptional history we learned that the quick change of urban form since the industrialization results from the growing variability of social, economical, and political processes, to which we should add the ongoing cultural diversification and technological producibility in the Western world. This is not to say, that these processes did not exist in pre-industrial times and there had no influence on the cities' form; on the contrary, they must be understood as motivation for any urbanization, and while changing through-out history they also changed urban form as their physical result. However, since the industrial revolution the sheer pace of their alteration outdistanced the traditional formation of cities, which due to volume and complexity of the task was never able to happen instantly but only on a medium- or long-run; likewise the observed failure of most newly introduced urban models since the industrial revolution results from wrong prognoses of their further development, what most likely added substantially to today's retraction of general planning and the confiding in a moderating incrementalism, which no more follows urbanistic but ultimately economic reasoning. Refraining from a perception that seeks to solve societal issues through urbanism as well as from a notion that assigns to the urbanist merely the role of a vicarious agent of monetary interests, this approach suggests an employment with the basic principles of urbanism beyond the mentioned processes and looks for a concentration on fundamental urbanistic reasoning that resolves the historicity of single examples.

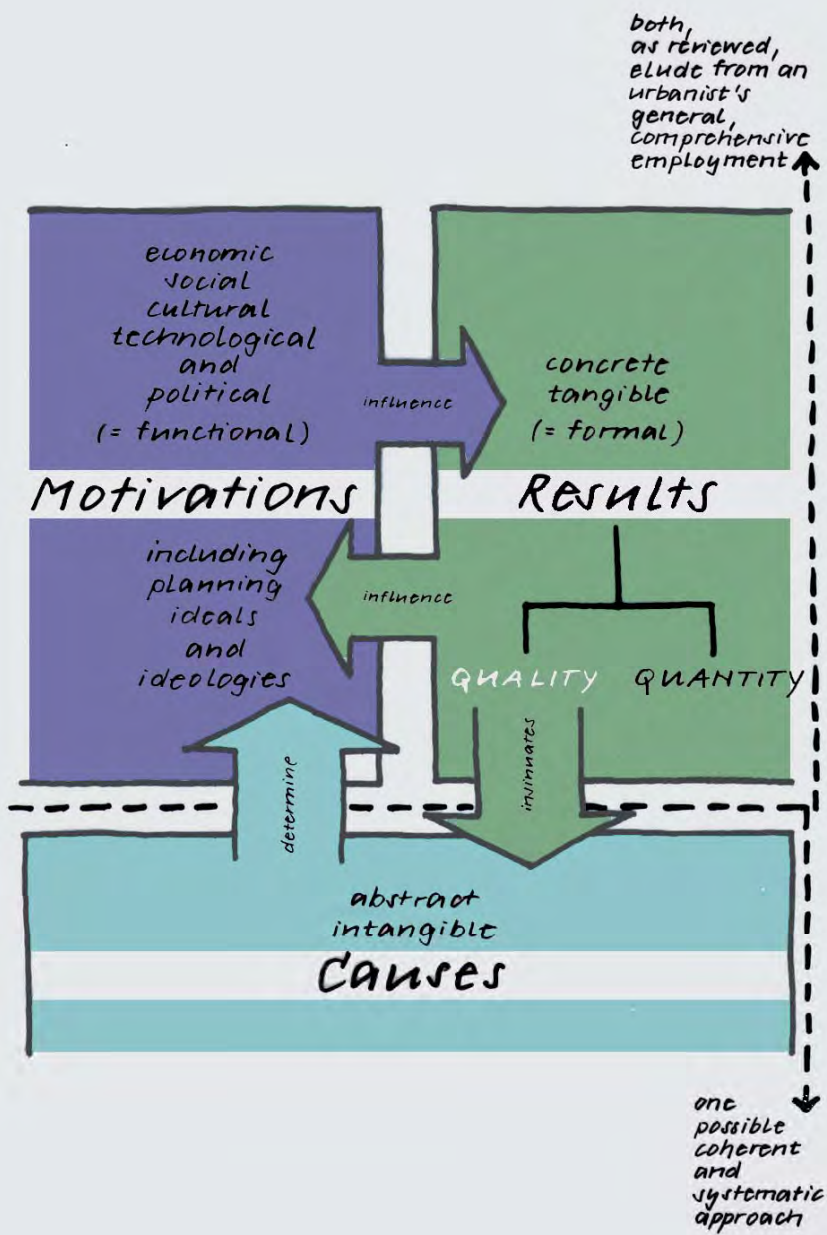
Thus, in this thesis, we should not seek to enter a planning debate by suggesting a deceleration of the mentioned versatile processes, planning ideals and ideologies that lead to the various and sometimes incoherent forms of urbanization of our days, but altogether withdraw from these promoting functional implications. When KOOLHAAS states an urban reality today, in which "a perverse automatic pilot constantly outwits all attempts at capturing the city; exhausts all ambitions of its definition, ridicules the most passionate assertions of its present failure and future impossibility, steers it implacably further on its flight forward" (Koolhaas 1995c: 963), we here should not question this automatic pilot and its unforeseeable route,<sup>188</sup> nor try to understand or alter its concrete functioning,<sup>189</sup> but omit the automatic pilot altogether and scrutinize the basic principles of the vehicle itself.

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<sup>187</sup> compare the preliminaries on page 5 ff.

<sup>188</sup> An attempt, which is virtually ineffective due to the number of actors, who participate in the urbanization processes; compare: "Landschafts- und Siedlungsveränderungen sind heute ein Gemeinschaftsunternehmen von vielen, oft anonymen Akteuren mit mannigfaltigen Handlungszwecken" (Eisinger 2006: 137).

<sup>189</sup> This again shall be a task for researchers in economy, sociology, technology, and policy making, who are dealing with all urban implications an urbanist cannot affect nor control, as SIEVERTS already ascertained (Sieverts 1997: 8).



Scheme: Approach  
plate 30



This *vehicule*, following the metaphor, is urban form in general, notwithstanding its manifold expressions of the ever changing relation to and reverse impact onto even more manifold functional demands: The question is not about the kind and size of aircraft or its motorization, but about flying in the air and transporting people and goods. Accordingly we shall at first distinguish between *motivations* leading to urban forms, and urban forms as the *results* of these motivations. Further on we shall disengage from the first, as they have proven to trouble a general and comprehensive approach towards the city from our professional perspective and ultimately lie, as we have red with SIEVERTS earlier, certainly outside our professional scope.<sup>190</sup> The remaining task, however, is investigating the relation between the varying results and the urban form in general.

#### *The City as a Phenomenon*

Hence, whereas the different resulting urban forms, being perceivable tangible entities in time, are relatively easy to address, urban form as an abstractum – and this should be understood by urban form in general – is inconvenient to deal with; we hardly find definitory sets for urban form – almost analogue to the issue of defining what a city is. Yet, in a philosophical perspective the city instantly tantamounts to the idea of phenomenona, that is in a PLATONIAN and KANTESIAN sense that different appearances ultimately correspond to an original idea.<sup>191</sup> In other words, we can identify cities as artifacts,<sup>192</sup> which comply with a commonly acknowledged but inchoate concept of *the 'city'*, necessarily including one but seemingly similarly inchoate idea of urban form.<sup>193</sup> Only such an epistemological understanding allows us to also conceive abstract urban form as a continuum from the earliest settlements until today (and furthermore), regardless its diversity, discontinuity, and contradiction in concrete detail.

To approximate the abstractum we might adhere to Giulio ARGAN (1909-92), who adopted from his art historian viewpoint – and there is also much consent in understanding cities not only as artifacts but also urban forms as artworks – that "spiegare un fenomeno significa individuare, all'interno di esso, le realizzazioni di cui è il prodotto e, all'esterno, le relazioni per cui è produttore, cioè quelle che lo collegano ad altri fenomeni, così da formare un campo, un sistema *où tout se tient*" (Argan 1983: 26).<sup>194</sup> Dealing with various phenomena throughout history, consequently, the relations in question have to transgress the limitations of a specific time-space frame to build a true coherent field. This, in addition to the already stated issues, legitimates for above's exclusion of motivations, that would be some of the relations of which urban forms are products, but which due to their historicity, that is their occurrence in one specific historic context, are hardly to be understood supratemporal or universal enough to ideologically effect the formation of cities in general.

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<sup>190</sup> see discussion on page 79

<sup>191</sup> see PLATO's 'Allegory of the Cave' (Plat.rep. 514a–519a); for KANT see the following; principally western philosophy distinguishes phenomena, which can be perceived sensibly, and noumena, which are conceived intellectually.

<sup>192</sup> For the use of the term *artifact* see also the glossary on page 273.

<sup>193</sup> This necessity is proven by the earlier introduced definitions; even though most of them derive from fields other than urbanism, they all include physical aspects, which we should like to summarize under the more general term *form*.

<sup>194</sup> 'Explicating a phenomenon implies discovering, to its inside, the relations of which it is a product of, and to the outside, the relations of which it is a producer, that is those which conjoin to other phenomena to produce a field, a system *ou tout se tient*', (author's transl., accentuations as in the original text); compare also German edition, pg. 32.

As for the resulting urban forms, moreover, a phenomenal analysis in regard to their evident similarities eventually has to transcend the varying detectable physical assets, which are equally bound to the time and place of their production and subsequently to their evolving utilization. Ultimately in this endeavor we are obliged to altogether overcome the ostensible interrelation between *motivations* and *results*, and hereby the issue of historicity of built urban forms, by investigating something that at this stage might be called common denominators causing urban form. To do so, we again find support with ARGAN and his assessment of the shortcoming of mere empirical methods and exact sciences for a full examination of phenomena,<sup>195</sup> a thought that also corresponds to a KANTesian understanding of cognition.<sup>196</sup> Accordingly, our approach rather has to base on our regulative capacity and its inherent, so to say metaphysical categories, than on mere empirical competence and subsequent scientific classification.

Empirical methods are determined to deal with the mensurable physis of urban forms, that is objective quantitative aspects; the proposed regulative reasoning, however, enables for an analysis of the abstractum or metaphysis of urban form, which we derive from those qualitative aspects that produce the envisioned alleged coherent field. Thus, after the distinction of motivations and results, which comply with the well known dichotomy of function and form, that is inherent to all artifacts,<sup>197</sup> we can discern with the resulting forms the effects of another dichotomy: quantity and quality. Whereas quantity in this context describes all voluminal characteristics of the different artifacts, which we might also understand as the sheer physical existence of urban form, qualities correspond to the abstract relevancy of these voluminal characteristics. Yet, even though function and form show the same division into intangibility and tangibility, for our purpose it is seemingly inappropriate juxtaposing or confusing both dichotomies: When urban forms as results of certain motivations succeed the intended functions ["form ever follows function" (Sullivan 1896: 408)], quality is inherent in quantity, usually meeting various functional demands at a time as well as they are able to meet more and other demands as contemporarily foreseen. The quality in question, therefore, is detached from immediate functions affecting the urban artifact and representing a universal value in regard to urban form itself.

This understanding significantly corresponds with SCHELERS'S 'Non-Formal Value-Ethics', in which he describes "Dingwerte" as values that are to be found with

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<sup>195</sup> "La qualità per cui oggetti appartenenti a categorie empiriche tanto diverse vengono considerati ugualmente artistici consiste evidentemente in qualcosa che tutti gli oggetti artistici, ed essi soltanto, possiedono. Questa qualità non è individuabile con metodi empirici né con i metodi delle scienze esatte" (Argan 1983: 27).

'The property, out of which these objects that belong to empirical categories are perceived as artistic, apparently results from something that all artistic objects, and only these, have in common. This property can neither be traced by empirical methods nor by those of exact sciences', (author's transl.); compare also German edition, pg. 33.

<sup>196</sup> With his "Kritik der reinen Vernunft" (Kant 1781), Immanuel KANT (1724-1804) introduced a new significance of human understanding. Whereas the predeceasing philosophy conceived cognition as an effigy of empirical reality, KANT understands it constructing reality, following inherent, that is *a priori* categories, which are correlated to *a posteriori* empirical human sentiences. Consequently, empirical methods (which we might understand also as a normative construct) cannot be effective to fully explain a cognition process.

<sup>197</sup> Understanding motivations as intangible functional aspects and results as tangible formal expressions, this comparison is easy at hand. Moreover, also the sequencing of motivation and result is widely agreed upon, established by Louis SULLIVAN's sentence "that form ever follows function" (Sullivan 1896: 408), which however is often misinterpreted as a verdict to disapprove of architectural ornament.



objects and a "Wertqualität" that relate to a good, whereas for instance the good as an abstractum might as well comprise materiality as a quality but is not factually materialized.<sup>198</sup> Along these lines, urban form can be characterized as a good having a value-quality and urban artifacts as objects having different qualities or thing-values; within the abstractum urban form, however, root the different phenomenal aspects, which appear with the various artifacts. To approach this value-quality we shall eventually assume that to some extent we do can induce from those thing-values, which reoccur with different artifacts, towards the quality of the abstractum, or at least to some aspects of this quality.<sup>199</sup>

Still, we have to develop a method that is unladen from a specific urbanist interest, such as the implementation or enforcement of one urban form, which we today experience or prognose as *reasonable*, *appealing*, or *beautiful*; our interest will not result in an instruction for designing or producing urban forms.<sup>200</sup> It rather results from an intellectual outlook onto the historic development,<sup>201</sup> which is subsequently resulting in a generalization or idealization of the urban formation process.<sup>202</sup> This logical course of actions, which will be described in Part 2 of this thesis, does not imply that all actual formation processes follow it step by step; yet it includes the premise that all its aspects, which relate to the quality of urban form and are to be epitomized in Part 3, are addressed or implemented in one

<sup>198</sup> The according passage by Max SCHOLER (1874-1928) reads: "Das *Gut* verhält sich zur *Wertqualität* so, wie sich das Ding zu den Qualitäten verhält, die seine «Eigenschaften» erfüllen. Damit ist schon gesagt, dass wir zwischen Gütern, d.h. «*Wertdingen*», und bloßen Werten, die Dinge «haben», die Dingen «zukommen», d.h. «*Dingwerten*», unterscheiden müssen. Die Güter sind nicht etwa fundiert auf die Dinge, so dass etwas zunächst Ding sein müßte, um «Gut» sein zu können. Vielmehr stellt das Gut eine «dinghafte» Einheit von Wertqualität, resp. Wertverhalten dar, die in einem bestimmten Grundwert fundiert ist. Die *Dinghaftigkeit*, nicht aber «das» Ding ist im Gute gegenwärtig. (So ist, handelt es sich um ein «materielles» Gut, in ihm wohl das Phänomen der *Materialität*, nicht aber die Materie, gegenwärtig.)" (Scheler 1916: 42 f.).

'A good is related to a value-quality as a thing is to the qualities that fulfill its "properties." This implies that we must distinguish between goods, i.e., "*value-things*," and mere values which things "have" and which "belong" to things, i.e., "*thing-values*." Goods have no foundation in things such that in order for them to be goods they must first be things. Rather, a good represents a "thinglike" unity of value-qualities or value-complexes which is founded in a specific basic value.

"*Thinglikeness*," not "the" thing, is present in a good. (If we are concerned with a "material" good, it is not matter but the phenomenon of *materiality* which is present.)', (pg. 20; all accentuations as in the according texts); compare also (Argan 1983: 19).

<sup>199</sup> For the whole of this thesis it seems appropriate to accurately distinguish between different terms, as close their meanings might be; whereas the difficulty of the present approach overall will be discussed in the following chapter, the terminological challenge shall be confronted in the second part of this thesis. At this point we should be obliged to repeatedly recall the proximation character of this thesis, which nevertheless should be enlarging our cognition about the city.

<sup>200</sup> compare for instance "L'architettura della città" (Rossi 1966), "A Pattern Language" (Alexander et al. 1977), or "The Timeless Way of Building" (Alexander 1979);

We do not want to scrutinize these approaches, only they did not help the author to pursue his general interest in urban form.

<sup>201</sup> "L'interesse per le cose dà luogo ad una conoscenza empirica, ma estesa e differenziata dei fenomeni artistici. L'interesse per il valore trascende i singoli fatti e generalizza la conoscenza dell'arte in proposizioni teoriche, conduce ad una filosofia dell'arte" (Argan 1983: 19).

'The interest in things gives place to an empirical, equally extensive and differentiated cognition of artistic phenomena. The interest in the value transcends singular facts, generalizes knowledge about art to theoretical propositions and leads to a philosophy of art', (author's transl.); compare also German edition, pg. 23).

<sup>202</sup> We know such observations and reflections of an ideal course of producing a city not only from ancient and medieval times (Stübben 1890; Lavedan 1926; Humpert et al. 2001; Andraos et al. 2001), but also from the planned cities of the modern and more modern ages (Geddes 1908; LeCorbusier 1924; Maass 1990). Still those either seek to demonstrate a historic standardized practice or carry an instructive undertone.

way or the other. To this end we might again call on ARGAN, who established for the ideal city, that it follows its own development logic and rhythm, in which an urban quality is realized in very proportion to its quantity.<sup>203</sup> We shall accordingly hypothesise that abstract urban form does comply with ARGAN's understanding of the ideal city, by which is not meant the designed or realized Renaissance cities of that name, but which serves as the point of reference for any urban entity.<sup>204</sup> Subsequently we ought to verify those qualitative aspects, which derive from the idealized urban formation, by means of factual urban entities throughout history. That then would be relating the qualitative aspects to the different SCHELERian *Dingwerte* and evaluating their significance.

The differentiation between the quantity and quality of urban form, however, gives us also another cue for the widely criticized urban development since the industrial revolution. In addition to the issue of variable motivations and lagging formal results, which are at the time of their realization already outdated in spite of an ever accelerating industrial production of urban forms, we encounter a definite misproportion between quality and quantity,<sup>205</sup> when not the change from a proportional relation towards an antithetic one, adjusting the production of urban forms to putative contemporary demands but disregarding their future

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<sup>203</sup> "Oltre che modello di forma, la città è modello di sviluppo, nei limiti in cui questo può avvenire senza contraddire ad alcune postulate premesse, secondo una sua logica e un suo ritmo evolutivi. La città ideale, più che un vero e proprio modello, è un modulo a cui è sempre possibile trovare multipli o sottomultipli che ne mutano la misura ma non la sostanza: la quale può senza dubbio concepirsi come un'opera d'arte che nel corso della sua esistenza ha subito modifiche, alterazioni, aggiunte, diminuzioni, deformazioni, tavolta vere e proprie crisi distruttivi. In generale, il disegno della città ideale implica il pensiero che nella città si realizza un valore di qualità che rimane praticamente immutato col mutare della quantità, in quanto si dà per postulato che qualità e quantità sono entità proporzionali o commisurate" (Argan 1983: 83).

'In addition to a formal model, the city is a model of development, in the limits of not contradicting some postulated premisses, following its own evolutionary logic and its own evolutionary rhythm. The ideal city is, more than an actual model, a module for which one can always find a multiple or denominator that can change its measure, but not its substance: which can without doubt be conceived as an artwork that in the course of its existence underwent modifications, alterations, amendments, diminishments, deformations, and sometimes true destructive crises. In general the design of the ideal city implies the thought that one realizes in the city a value of quality, which practically remains unchanged by the mutations of its quantity, according to the postulate that quality and quantity are proportional and commensurable entities', (author's transl.); compare also German edition, pg. 104).

<sup>204</sup> "Anche se taluni campioni di città ideale sono stati realizzati (e tutti li conosciamo, da Pienza a Sermoneta [sic!] a Palmanova) la cosiddetta città ideale non è che un punto di riferimento rispetto al quale si misurano i problemi della città reale: la quale può senza dubbio concepirsi come un'opera d'arte che nel corso della sua esistenza ha subito modifiche, alterazioni, aggiunte, diminuzioni, deformazioni, tavolta vere e proprie crisi distruttivi" (Argan 1983: 82).

'Even when some exemplary ideal cities have been realized (and we know them all, from Pienza to Sermoneta [sic!] and Palmanova) the so-called ideal city is not more than a point of reference, at which one measures the problems of the real city [...]', (author's transl.); compare also German edition, pg. 103 f.

In his enumeration of Renaissance ideal cities Argan confuses Sabbioneta with Sermoneta, a medieval city in Lazio, which will be discussed in part 3.

<sup>205</sup> compare also MITSCHERLICH's reasoning earlier, see discussion on page 63



development or even historic perspective.<sup>206</sup> From there we shall for the choice of examples conclude a main focus on pre-industrial urban forms, which are expected to give better insight into the different aspects of quality than the industrial and post-industrial examples.<sup>207</sup>

With this method we encounter two issues, which should be dispelled before continuing our considerations: the first is the theoretical understanding of urban form as a spatial entity in time; the second is, referring to the already identified uncertainty of what a city is, the question which of the examples to be chosen we can actually consider urban forms.

It has been already pointed out that the historicity of motivations and results, that is also determination by a specific geographical set and time span, represents an obstacle within our occupation with the abstractum urban form. Still, considering the abstractum we tacitly accept that even on this very theoretical level urban form cannot be understood other than an occurrence in space and time. Hence, the aspects of quality, however metaphysical and consequently non-local and non-temporal they are themselves, they all include the notion of an impact on space and time, or might even base on this very conception. This understanding is supported by an interpretation of SCHELER's argumentation regarding the materiality of a good, which differs from its materialization; accordingly we shall perceive this notion as a temporality and spatiality of urban form. Moreover, we might refer to KANT's 'Critique of Pure Reason', who states that space and time are cognitive principles *a priori* to any empirical perception, that is that the idea of time and space is given to human intellect without its occasional concrete experience.<sup>208</sup> Thus, we can also conceive space and time as abstract preconditions for urban form and understand the theoretical construct as an enduring spatial entity.<sup>209</sup>

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<sup>206</sup> "La relazione, proporzionale un tempo e di antitesi oggi, tra quantità e qualità è alla radice di tutta la problematica urbanistica occidentale. Proprio questo, credo, spiega la non continuità di sviluppo tra le città storiche e le città moderne, tra città preindustriali e città industriali o post-industriali; ed è questa rottura di continuità o impossibilità di sviluppo che dà luogo alla artificiosa concentrazione della storicità intrinseca della città nel nucleo antico, dandosi così per scontato che questo è per definizione storico così come il moderno, e l'ha già sottolineato Maltese, nella sua realtà e attualità, sarebbe per definizione non storico o addirittura anti-storico" (Argan 1983: 83).

'Within the relation of quantity and quality, which once was proportional and today is antithetic, roots the whole occidental urbanistic difficulty. Precisely this, I believe, explains the lacking continuity of development between the historic and the modern city, between the pre-industrial city and the industrial or post-industrial city; and it is this disruption of continuity or impossibility of development which gives place to the artificial concentration of the intrinsic historicity of the city to its historic center, whereupon it is agreed to be per definition as historic as the modern part – and Maltese already pointed this out – is in its reality and actuality per definition not-historic or even anti-historic', (author's transl.); compare also German edition, pg. 104 f.

<sup>207</sup> Nevertheless we should use latter examples, when they illustrate a specific aspect of quality better than the pre-industrial ones.

<sup>208</sup> see (Kant 1781: 71 ff.)

compare also (Simmel 1908: 687 f.)

<sup>209</sup> It might be excused that we do not enter the discussion about the conflicting philosophical reasoning with SCHELER against KANT. For our purpose it shall be sufficient to acknowledge differences (after all the alternating understanding of the term *a priori*), which, however, do not fundamentally affect this approach; for further reading see (Schlick 1938: 20-30).

The second question, however, is difficult to answer, exactly because there exists the discussed uncertainty about an urban definition and subsequently a problematic limitation of the urbanistic scope.<sup>210</sup> What is the accurate distinction between settlement, which we should determine non-urban, and city; or between village and town?<sup>211</sup> Does it matter, whether they developed spontaneously or planned, that is, to quote ALEXANDER, whether they are "natural" or "artificial" (Alexander 1965: 58)? The admittedly weak proposition for this thesis shall be, that we discuss predominantly those examples, which are widely acknowledged as cities, without further scrutinizing their status; for possible other examples, we should like to retire to an attitude that underlines a possible urban development of a settlement or urban potential, in reverse basing on the notion of various cities, which throughout history forfeit or resumed their urban status.<sup>212</sup>

Ultimately, following these considerations, we should be able to also address the already raised issue of formalism that restrained the perception of *the 'city'* to a specific urban appearance, which we encountered within our review of the receptional history of urban development. Thus, in addition, we here shall refrain from being enthralled by a false promise of good city form.<sup>213</sup> While acknowledging and strengthening the significance of urban form for the city, it shall not be a specific form, but the mentioned concept of urban form. Hence, while abstracting from the various motivations, which led to the establishment and development of cities, we shall altogether seek to prescind from the resulting concrete tangible urban forms,<sup>214</sup> but examine the various examples for their intrinsic intangible *causes* on basis of the different generalized aspects of quality of urban form. The body of Western examples accordingly serves not as a source for mere town plan analysis, but to investigate within the variety of urban forms for those original qualitative aspects that have been constitutive for the formation of cities throughout history, eventually bespeaking urbanistic common denominators.

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<sup>210</sup> For an intriguing discussion on this issue in the field of archeology see (Osborne 2005).

<sup>211</sup> At this point we might add a short etymological excursion to illustrate the arbitrariness of terms in use to describe urban entities; compare (Kluge 1883; Skeat 1910): From Latin tradition derive *city* [*civitas*; compare *cit  * (Fr.), *ciudad* (Sp.), *citt  * (It.)], describing community or the quality of citizenship, as well as *village* [*villaticus*; compare *village* (Fr.), *villagio* (It.)], describing the affiliation to a villa. Hence we find a distinction between an urban corporation of individuals versus the rural dependence to a country estate. The term *pueblo* (Sp.) for village, relating to population, deviates from this distinction, as does the concurring term *paese* (It.) relating to the cultivated countryside; in French the term *ville* for city or town, having the same origin as *village*, however, almost replaced *cit  *. From Germanic tradition derive *town* [*zaun*; compare German *Zaun*, *Umz  unung*, and also *Dorf*], describing the fencing in of a farmhouse with its outbuildings, as well as *settlement* [Gothic *sitls*; compare German *Sessel*] describing a seat or fixed place to come to a rest; both terms relate to a certain locale, one demarcated from the surroundings, the other marked by the absence of further nomadic movement. *Stadt* (Ger.) also relates to a certain locale (e.g. *St  tte*).

<sup>212</sup> see also (Argan 1983: 82)

<sup>213</sup> Compare similar disapprovals with C. ROWE, and KOOLHAAS, even though with different evolving conclusions (Rowe et al. 1978; Koolhaas 1995c).

<sup>214</sup> This is the scope for urban historians and already widely and renowned undertaken by a wide range of authors, such as Sibyl Moholy-Nagy (1903-71) with "The Matrix of Man" (Moholy-Nagy 1968), Anthony E. Morris (\*1931) with "History of Urban Form" (Morris 1972), Leonardo Benevolo (\*1923) with "Storia della citt  " (Benevolo 1975), Edward N. Bacon (\*1910) with "Design of the Cities" (Bacon 1967), Wolfgang Braunfels (1911-87) with "Abendl  ndische Stadtbaukunst" (Braunfels 1976), Spiro Kostof (1936-1991) with "The City Assembled" (Kostof 1992), and Charles Delfante (\*1926) with "Grande histoire de la ville" (Delfante 1997); not to name the variety of authors dealing with urban form in a specific geographical sets or time frames.



### *The City as a System*

Another significant thought, which we are obliged to include in these considerations on quality of urban form, is the idea of the city as a system. Even though surely constitutive already to the preindustrial and industrial occupation with urban nuclei, this understanding became outspoken in early industrial times with the task of expanding existing cities and towns to accommodate the growing populace. Ever since it was elaborated by the evolvement of the according academic disciplines at the end of the 19th century, when even superimposed as universal planning remedy in the mid 20th century, while eventually a systematic predictability was heavily addressed in recent times, as we have seen earlier.<sup>215</sup>

Within this understanding, however, we are able to identify two major employments, which we should carefully distinguish:

The first, deriving from a design point of view, is what we might call the *urbanistic system*.<sup>216</sup> Here *system* applies to the physical urban layout, mainly considering the traffic-flow on one side and the relation between open and built space as well as the architectural arrangement on the other.

The second, deriving from a planning point of view, is what we should call the *socio-economic system*. Here *system* applies to the functional relations and interdependencies affecting the urban dwellers and users, applying to all kinds of public and private services as well as individual friendships and family life.

Whereas the first usually shows the limited complexity, which is inherent to all building tasks – very well exponentiated by scale, the second deals with many wild cards and unknown variables, which additionally may quickly change. As argued earlier we detect implications as soon as both systems are confused or one superimposed over the other. Still most convincing in this regard is ALEXANDER's treatise "A city is not a tree", in which he illustrates the functional interdependencies within this system and rejects simplified hierarchical structures for their formalization (Alexander 1965); very well many professionals withdrew and still withdraw from an understanding of complex systematics as an uncomfortable thought in daily practice.

Yet, also within our quantity–quality dichotomy we should discern systemic relations and interdependencies, as playing an important role for the eventual development and mutation of phenomenal urban forms.<sup>217</sup> On one side this particular system, of course, results from the inherence of quality in quantity, that is the response to various (also alternating) qualitative aspects within one urban artifact. On the other side the urban artifact, as a product of various parties concerned and involving an even larger group of people affected by the artifact, of necessity constitutes a system of individual facts and actions; this peculiarity, which differs largely from artifacts habitually produced only by one person or a limited group for the use of a similarly limited group of people, also affects the relation between the different phenomena and the ideal city just discussed. Consequently the understanding of the city as a system refers to the abstractum urban form, which likewise has to include the notion of producers and consumers of different urban qualities.

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<sup>215</sup> compare discussion on page 59 ff.

<sup>216</sup> The term *Städtebau-System* occurred already in the first academic writings in the 19th century with BAUMEISTER, SITTE, and STÜBBEN – most often opposing the so-called «modern geometric system» versus the «artistic» or «organic system»; see also discussion on page 57.

<sup>217</sup> For the term *systemic* see also the glossary on page 273.

Altogether this understanding of the city as a system goes far beyond the cited urbanistic and socio-economic employments, arguably because of the delicate interrelation between both. Following the current approach towards complex systems, we are obliged to comprehend that the attributes of a system cannot be fully explained out of the attributes of its components.<sup>218</sup> Moreover, the system of *the 'city'* is a sociophysical entity composed of many elements in interaction,<sup>219</sup> which is dynamic, synergetic, self-organizing and adaptive, that is ongoingly changing in regard to evolving demands and obstacles, likewise affecting urban dwellers and urban form.

Urban systems, thus, are neither linear, a false consideration which already misled modernistic designers and planners in searching for an orderly city, nor generally chaotic, as many people concerned with urban development suggest today to withdraw from comprehensive planning. Moreover, they mostly conform to open systems, or, as Ilya PRIGOGINE (1917-2003) determined them for his mechanical model of nonequilibrium processes, with dissipative structures, which are "[...] ein Mittelding zwischen dem reinen Zufall und der redundanten Ordnung" (Prigogine et al. 1993: 123).<sup>220</sup> In his works he reasoned that most explorations in statistical mechanics base on the notion of closed systems in a thermodynamic equilibrium, which is hardly applicable for dynamic processes, as they are usually subject to a permanent flow of energy, matter, and/or entropy. These open systems may develop a *higher order*, depending on the system parameters, but may as well return to a *chaotic stage* when experiencing only little variation.<sup>221</sup>

His considerations include a substantially new approach towards a main traditional scientific principle, namely the supposed parity of prediction and retrodiction, that induced reversibility and consequently allowed for a determination of processes. Based on chaos theory, with dissipative structures we encounter mechanical trajectories, which are explicable only retrospectively through the inclusion of varying system parameters as well as evolving entropy between the involved parties and whose future courses are subject to probability rather than scientific certainty. Hereby we find the notion of a continuous time bar included into scientific reasoning (Prigogine et al. 1993 9 ff.). Similarly to this notion of irreversibility PRIGOGINE asserted the irreducibility of probabilistic descriptions, that is the impossibility of transferring descriptions of the whole system to single inherent trajectories (Prigogine et al. 1993: 14 f.). Dissipative structures, however, are characterized through a further development of dynamic equilibria based on dissipation, that is the utilization of energy.<sup>222</sup> The order of a dissipative structure is thus maintained through an ongoing supply of energy also from its vicinity, altogether representing an energetic imbalance or disorder; this stationary stage of the order might consequently be easily affected by changes of its vicinity, and will not return to its origin by an inversion of the process.

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<sup>218</sup> As LEIGHTON pointed out: "[...] although the whole is under the influence of its components, it has qualities and characteristics of wholeness which are the synthesis rather than the mere aggregation of parts" (Leighton 1959: 200).

<sup>219</sup> see (Ferguson 1975: 12)

<sup>220</sup> '[...] a medium thing between pure coincidence and a redundant order', (author's transl., as English manuscript not available); for his definition of dissipative structures and the development of non-equilibrium thermodynamics PRIGOGINE won the Nobel Prize in Chemistry in 1977.

<sup>221</sup> see also (Prigogine 1955; Nicolis et al. 1977; Prigogine 1984)

<sup>222</sup> For the term *dissipation* see also the glossary on page 273.



From physics and chemistry the understanding of dissipative structures soon expanded to other disciplines, such as control theory in engineering and mathematics,<sup>223</sup> but has been widely accepted also in social sciences. A simplified association of this understanding for urban systems thus seems very practical, allowing for all necessary caution of such a transfer: Cities can be understood as dissipative structures, that is open systems whose maintenance is subject to energetic impact from side of its users.<sup>224</sup> Moreover, urban forms as the cities' physical expression represent the perceivable stationary stage of its order, in which also slight energetic variations may produce immense changes. These changes will be irreversible – even through inverting the energetic process – as well as the development of the whole is irreducible in respect to the inherent components.

Yet, while eluding from concrete predictability, this systematic approach discloses new options for engaging with the abstractum urban form. An according system analysis can be understood as "[...] constructing a highly simplified model of the 'real' world and expressing in a series of mathematical equations the relationship among the factors selected" (Klein 1972: 37). These equations at first seem to be antagonistic versus the dictum of unpredictability; hence supposing this unpredictability after all for the figures inserted and resulting, they should nevertheless allow for an illustration of the different modes of action that evolve during urban formation processes notwithstanding concrete urban results. Exactly this shall be pursued by means of an idealized course of actions and the deriving of quality aspects, to be described in Part 2. There, we shall employ an intuitive concept mapping,<sup>225</sup> in which the different actions are examined for their causes, to aggregate and induce reoccurring factors, as well as indicating constituents of urban form. These constituents are consequently not a typological building kit, but establish the framework or semantics for the different formation processes.<sup>226</sup> The immanent proviso of validity in altering conditions, however, bases on the notion of logic and efficiency within the system, according to general human behavior and necessities.<sup>227</sup> Consequently, abstract urban form shall be understood as a system of interrelated factors that ultimately allows for all physical urban forms.

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<sup>223</sup> see also (Popov 1966; Willems 1972; Hill et al. 1980; Hill et al. 1992; Brogliato et al. 2000; Willems 2007)

<sup>224</sup> LEIGHTON for instance views an urban community "as a living, dynamic system which maintained an energy exchange among its various components. The totality formed a holistic community which tended to maintain a dynamic equilibrium" (Leighton 1959: 197); see as well (Ferguson 1975: 12f.) and (Zibell 1996: 28 f.).

<sup>225</sup> for scientific ratiocinations on concept mining see (Hotho 2004; Tergan et al. 2005; Trochim et al. 2007)

<sup>226</sup> In this context we might again refer to ARGAN:

"Nella ricerca, l'opera viene così analizzata nelle sue componenti strutturali, e quella che pareva essere la sua unità indivisibile appare invece come un insieme di esperienze stratificate e diramate, un sistema di relazioni, un processo. Infatti ogni opera non soltanto risulta da un complesso di relazioni, ma determina a sua volta tutto un campo di rapporti che si estendono fino al nostro tempo e lo oltrepassano [...]" (Argan 1983: 21).

'In research, the opus becomes analyzed into its structural components, and what appears as its indivisible unity appears to be a collectivity of stratified and dendritic experience, a system of relations, a process. In fact every opus does not only result from a complex of relations, but determines on its side again a field of relations, which extend to our times and even beyond', (author's transl.); compare also German edition, pg. 26)

For another use of the terminus "constituent" see (Cullen 1961: 15).

<sup>227</sup> compare for instance the distribution of settlements according to resources and yield of the surroundings (Ucko et al. 1972: 3)

Both, the phenomenological and the systemic understanding of urban form eventually presuppose for this approach a holistic perspective, which is not at all meant to discourage: "Holism refers to a perception of the relatedness of things in approaching reality or a problem. One abstracts from reality and forms an image of the interdependencies which exist among diverse elements" (Ferguson 1975: 5). In these lines we find summarized the main guideline for the present assignment, including the rejection of any mathematic model, which aims for finite simulations of a city.<sup>228</sup> It is another step towards the understanding of the relation between function and form in the urban context, which seeks to complement good intuitive judgement in design and planning.<sup>229</sup>

Recapitulatory we shall say:

1. The *phenomenon city* continues since the early cultures in the Near East until our post-industrial days, even though concrete functions and forms varied largely within this time span. Thus we shall presume abstract factors beyond concrete motivations and built results, which cause urban forms.
2. The *system city* is a complex, dynamic, and dissipative structure of which urban forms are a physical expression. Thus we shall presume that the abstract factors, which cause urban forms, are integrated and interrelating elements of an urban system.

Exploring such a system of causes for urban form, consequently, represents another possible approach towards the city within the field of general urban research, similarly acknowledging the vast variety of urban forms as well as their constant change. Naturally, it will not be able to address all eventual implications and, following heuristic rules, has to be furtherly elaborated. Yet, also at the stage presented, it shall allow for a new perspective onto the history of urban form as a tool to review factual urban forms as regards their different qualities instead of their quantitative appearance, as well as it shall induce a new perspective onto upcoming planning and design tasks as a tool to understand probable qualitative interferences within newly planned urban entities and strengthen a comprehensive proceeding.

Ultimately, we shall not only affirm the tacit assumption about an urban continuity and coherence since prehistoric times until today, but propose one possible approach of tracing this continuity and coherence no matter the current acceleration of urban processes.<sup>230</sup> Surely, this approach is not searching for an urbanistic philosopher's stone nor proposing an ultimate urban definition; as Ferguson said, it is merely a "thought-model; a guide to attacking a problem" (Ferguson 1975: 4), which we encounter in the more and more sophisticated denial of the significance of urban form within the current debate on cities as well as a pleading for the importance of the urbanistic discipline.

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<sup>228</sup> as, for instance, suggested in 1960s experimental planning approaches, presented by Cyril HERRMANN (Herrmann 1967)

<sup>229</sup> In deliberate further development of HITCH's dictum: "Where mathematical models and computations are useful, they are in no sense alternatives or rivals of good intuitive judgement; they supplement and complement it" (Hitch et al. 1967: 118-119).

<sup>230</sup> Hereby we shall deliberately disagree with Pierluigi NICOLIN's verdict (see discussion on page 71), who, however, referred to these terms describing the mere urban physis.



As mentioned earlier with its denomination as A WESTERN REFLECTION, this elaboration is subject to inevitable hermeneutic constraints, which we shall fully acknowledge: The presented thesis altogether signifies a thoroughly Western approach towards the city and its development, itself being part of a "wirkungsgeschichtliches Geschehen" (Grondin 1982: 143 ff.), which according to Hans-Georg GADAMER (1900-2002) cannot lead to a complete understanding of the observed object but represents one possible interpretation broadening the horizon of perception (Gadamer 1960: 284 ff.).<sup>231</sup> These constraints also lead to the deliberate focus on Western urbanism,<sup>232</sup> including Extra-western examples only in so far, as they produce a recognizable impact onto this development, and mostly motivated by a somewhat romantic interpretation of Western research in those regions.<sup>233</sup> This is not to say that the presented thesis is by definition not applicable to other kinds of urbanism, what, however, should be a subject of further analysis beyond this initial ratiocination.<sup>234</sup>

Yet, the hermeneutic predicament extends over the generic ontological, phenomenological and epistemological issues, affecting the presented narrowed research object itself: Apparently, there is not such a thing as WESTERN URBANISM. We might derive this from the discussions between European and American planners throughout the 20th century, WRIGHT and LECORBUSIER as main protagonists,<sup>235</sup> but eventually as well in the current debate between Winy MAAS and Sanford KWINTER.<sup>236</sup> Severe differences enfold not only between different Western regions and states, but, of course, also between different Western political and social ideologies. Then again, today we increasingly find the take-over of Western urban forms and theory in Non-western countries, to name Shanghai and Dubai as only two examples out of many more.<sup>237</sup>

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<sup>231</sup> According to GADAMER gaining cognition is determined by an ongoing relativation of prejudices (Gadamer 1960: 283 ff.), which derive from and produce new horizons of perception (Gadamer 1960: 284 ff. and 329 ff.). Acknowledging this, one experiences a "wirkungsgeschichtliches Bewußtsein" (Gadamer 1960: 285 and 448 f.) that relativates one's own conclusions and diminishes a static historicity. This term of GADAMER's works as well as "wirkungsgeschichtliches Geschehen" do not properly translate into English; the American edition of GADAMER's work uses "Consciousness of being affected by history" (pg. 301) for the first, and "Historically effected event" (pg. 299 and 308) for the latter.

<sup>232</sup> in addition to the necessary limitation of the scope of this work

<sup>233</sup> Out of many we should consider archaeological work in the Near and Middle East, starting in the early 19th century, as well as several western architects travelling to the Far East, for instance Frank Lloyd WRIGHT and Bruno TAUT and their travels to Japan; see also discussion on page 21.

<sup>234</sup> It is however obvious, that within the given constraints there can only be a proper review of approaches and examples the author is familiar with, in a manner he is proficient in due to his education and experience. With this kind of self-reflection the author abides by the idea of an 'observation of the observer' (Winter 1999: 25 ff.), which results from the general paradigm shift provoked by Albert EINSTEIN's theory of relativity (1905 and 1916) and set its way forth from physics to radical constructivism in the 1960 and the according philosophical cogitations of FOUCAULT and DERRIDA, whose discussion would go far beyond the scope of this thesis; for further reading yet see (Gumin et al. 1985; Marius et al. 1997; Bubenhofer 2002).

<sup>235</sup> see also discussion on page 43

<sup>236</sup> see (Seifert 2003: 12 ff.) and (Lootsma 1999: 87)

<sup>237</sup> At this point we can neither determine cause nor effect of these processes. Presumably, however, instead a mere «follow-up» of western amenities if not western culture (the laical capitalist approach is certainly alien to communist and Islamic culture), these processes suggest a new approach towards urban quantity and organization, which is only seemingly congruent with the western one.

Scope of this thesis, however, is the underlying formal constitution of urban development, as we learned it with the Western cultural realm, emphasizing those proceedings and examples that support the present set of thoughts. Other and maybe deviant proceedings and examples, of course, should be subject to a critical evaluation according to these lines, hence, in a discussion after the presentation of this thesis. At this point, our objective is mainly to show one possible and coherent systematic approach towards the wide spread field of urbanism. Still, this approach significantly enfolds two more conditions, which are intrinsic to a phenomenological and systematical approach and so again do not primarily derive from urbanistic thought:

*Complexity and Contingency vs. Causality and Determination*

The first one reflects a possible miscomprehension about the proposed urban system. Systems often induce a false impression of simplicity due to their disposition of simplifying complex processes. Even worse, they feature an inkling of predictability, assuming a certain result, which putatively can be obtained by proceeding strictly within a given systematics. The inherent danger of this thesis, thus, is twofold; firstly those "who see the approach as an attempt to institutionalize simplemindedness in urban and architectural problem-solving" (Ferguson 1975: 3), might insinuate an inappropriate oversimplification; secondly, some might interpret presented relationships within the system as one-to-one relations, which precipitate a false logic of causality and determination, similar to the one identified by ALEXANDER in his "A City is Not a Tree" (Alexander 1965).<sup>238</sup>

By contrast, in reference to the explained propinquity to dissipative structures, the system presented shall be understood as a "Nicht-triviale Maschine",<sup>239</sup> whose variable internal condition produces inconceivable many results without the possibility of an effectual empirical verification (Foerster 1985: 62 ff.). Even after identifying all possible implications, what itself is impossible, and presuming a not given static attitude of the system, the respective outcome is unpredictable. Living systems, such as the presented urban one, never reach final but continually intermediate states or results, which again affect the ongoing processes; they are consequently multi-complex, and repeatedly ambiguous. Still the resulting contingency,<sup>240</sup> as stated by Niklas LUHMANN (1927-98), results not in arbitrariness due to conditioning and contingency formulas (Krause 1996: 158 and 160). In fact, a system itself prevents from randomness, admitting the present employment that can be understood as looking into the according *conditioning* and *contingency* formulas. Yet, the contingency definitely interdicts a reverted plausibility that seeks to find here troubleshooting easy at hand.<sup>241</sup> Accordingly, investigating the city as a system should neither be oversimplifying, nor insinuating predictability – both shall be rendered alien to this approach.

<sup>238</sup> see also discussion on page 59

<sup>239</sup> The term was described by Heinz von FOERSTER (1911-2002). A 'Non-trivial Machine' depends on its respective 'internal conditions', which themselves are affected by the precedent operations (Foerster 1985: 62); for dissipative structures see discussion on page 89 ff..

<sup>240</sup> The term *contingency* goes back to considerations within natural sciences, produced also by Albert EINSTEIN's theory of relativity, as well as Max PLANCK's quantum theory and Werner HEISENBERG's uncertainty principle. For the humanities LUHMANN specified it as 'negation of exigency and impossibility' also opposing a unified and ultimate truth in observing reality (Krause 1996: 160); see also the glossary on page 273.

<sup>241</sup> As Paul WATZLAWICK stated: "One of the most common fallacies about change is the conclusion that if something is bad, its opposite must of necessity be good" (Watzlawick et al. 1974: 19). 'Einer der landläufigsten Irrtümer über das Wesen des Wandels ist die naive Annahme, dass die Herbeiführung des Gegenteils dessen, was geändert werden muss, die Lösung darstellt', (pg. 38).

### *Thought-Model vs. Ontological Effigy*

The second condition represents a possible miscomprehension about the employed method. This thesis emanates from a true theoretical approach towards the origination and development of urban form, that is an abstraction from actual processes. This includes also the already described dissociation from specific time-space determinations, even though time and space, of course, play an important role within the employment: the notion of time is preconditionary for understanding the city as an evolutionary object; the notion of space is even more essential for the existence of cities being spatial entities.<sup>242</sup> Still, it does not seem to be helpful to entrap into interesting but special examples and incidents, worthwhile to be investigated having another scope. The basic assumptions, consequently, are at first purged from these examples and incidents and follow the already mentioned idealized logical course of actions. Even though it "is frequently pointed out that such preconditions render a model unrealistic" (Ucko et al. 1972: 13), we shall understand the present thesis as a thought-model, in which a deliberate limitation to an imaginary and abstract understanding of time and space is inevitable to obtain utilizable results, at least for further discussion.<sup>243</sup> Again, employing a thought-model is a typical Western scientific approach and the abstraction from actual processes should not at all question the hermeneutic proposition of a historicity of cognition, as it is described earlier.<sup>244</sup>

Moreover, the proposed thought-model shall not be mistaken for an ontological effigy of the city. The model does not seek to produce a general truth about the city – which is most likely not to exist – but should give a relative truth within the given assumptions and constraints, and thus follows Ernst von GLASERSFELD's (\*1917) notion of "Viability", which understands cognition as a creative act beyond ontic objects (Glaserfeld 1985: 18 and 23 ff., esp. 29).<sup>245</sup> Likewise the thought-model is one epistemological endeavor to grasp the *phenomenon city*; according to FOERSTER the only way to cope with a *Non-trivial Machine*, which is otherwise analytically indeterminable (Foerster 1985: 66). The present thought-model in addition enables us to meet the overly complex reality with the concise and minimized complexity of a system.<sup>246</sup>

Retaining these abstract thoughts regarding the present ontological and scientific-philosophical premises, we might remember the manifold definitions of the city in the beginning of this part, all developed from various viewpoints and exactly epitomizing what just has been discussed; they all employ a thought-model, which itself seeks to produce a manageable complexity to deal with the even greater environmental complexity of the city. For an anthology of urban historians re-garding the term *city* Peter JOHANEK (\*1937) wrote: "Zum Teil sind diese Unterschiede [im Gebrauch des Stadtbegriffs, the author] dem jeweiligen Erkenntnisstand und der spezifischen Methodik der einzelnen Wissenschaften geschuldet.

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<sup>242</sup> see also discussion on page 83 ff. and on page 130 ff.

<sup>243</sup> compare Johann Heinrich von THÜNEN's (1783-1850) considerations about the 'Isolated State' (Thünen 1826), where THÜNEN is confronting the reader with a similar problem of postulating non-real assumptions to enfold his argumentation.

<sup>244</sup> compare discussion on page 93

<sup>245</sup> GLASERSFELD follows the argumentation by Silvio CECCATO (1914-97); see (Ceccato 1964).

Altogether the basic lines of this approach derive from radical constructivistic thought, as it is developed by MATURANA, VARELA, FOERSTER, and GLASERSFELD himself; see also the glossary on page 273

<sup>246</sup> compare (Krause 1996: 158)



Erkenntnisinteresse und Methoden konstituieren die Wirklichkeit und damit eben auch die jeweilige Stadtvorstellung. [...] Jenseits aller konstruktivistischen Theorien resultieren die Unterschiede zum anderen aber auch aus der kultur- und epochenspezifischen Vielfalt von Stadt, die es erschwert, ein universales Verständnis von Stadt den eigenen Betrachtungen zugrunde zu legen. [...] Jede Epoche und jede Kultur hat eben ihre jeweils eigene Stadt und ihr spezifisches Ideal der Stadt" (Johanek et al. 2004: VII).<sup>247</sup>

What at first seems to be a relativization of any generic understanding of the city is ultimately a justification for the varying approaches, which all from their specificity transcend boundaries and altogether produce a hermeneutic approximation towards the *phenomenon 'city'*. According to these lines this thesis is an approximation towards the formal constitution of cities, and reasonably does not follow the accustomed scientific procedure of initially giving a precise introduction to the field of research. Instead of an introduction the present individual reflection chronicling the intellectual and receptional urban history on one side and the basic principles for a new personal approach including their origin on the other side represents a means to bridge the discussed hermeneutic predicament – at least between the author's and the reader's understanding of *the 'city'* – to allow for a favorable engagement with the subject.

For this whole employment, ultimately, we shall juxtapose JOHANEK's categorical verdict with Fernand BRAUDEL's (1902-85) not less universal conclusion: "*une ville est toujours une ville*, où qu'elle se situe, dans le temps comme dans l'espace" (Braudel 1979: 423);<sup>248</sup> this not in terms of a misleading equalizing historical objectivity but as a historically effected scientific necessity.<sup>249</sup>

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<sup>247</sup> 'Partly these differences [of the use of the term *city*; the author] result from the according state of cognition and the specific methodology of the different sciences. Cognitive interest and methods constitute reality and consequently also the according city-conception. [...] Beyond all constructivistic theories, the differences result also from the diversity of the city in respect to the cultural and age specificity, what aggravates to base one's own view on a universal understanding. [...] Now, each epoch and each culture afford their own city and their own specific ideal of the city', (author's transl.).

<sup>248</sup> '*a city is always a city*, wherever it is situated in time and space', (author's transl., accentuations as in the original text); compare also German edition, pg. 524)

<sup>249</sup> In continuation of discussing the definitory quandary in the beginning see also KANT's assertion on the "Einheit des Begriffs" from his "Kritik der Urteilskraft", where he confirms this approach: "Nun gehören zu einer Vorstellung, wodurch ein Gegenstand gegeben wird, damit überhaupt daraus Erkenntnis werde, Einbildungskraft für die Zusammensetzung des Mannigfaltigen der Anschauung, und Verstand für die Einheit des Begriffs, der die Vorstellung vereinigt" (Kant 1790: 296). 'Now there belongs to a representation by which an object is given, in order for there to be cognition of it in general, imagination for the composition of the manifold of intuition and understanding for the unity of the concept that unifies the representations', (pg. 102).

## Part 2 On the Causes of Urban Development.

### A Systematic Approach

So far we suggested the elaboration of an approach that induces a thought-model based on the notion of varying traceable qualities of urban form; these exist since the first becoming of cities persisting until today, and, as proposed, intrinsically comply with abstract causes that determine the motivations for any urban development and consequently again affect the results of the different urban formations in their quantity as well as their quality.<sup>250</sup>

Within this perspicuous cycle urban research usually focuses either on measurable urban *quantities*, commensurable urban *qualities*, or within the largely exploratory –interpretative field on the plentiful *motivations* for urban development; all of those bear manifold realizable findings for different disciplines dealing with the city, such as urban planning, -geography and -sociology, urban and architectural design, as well as urban theory and -history – frequently also on a very practical level; but as well neighboring disciplines benefit from this research.<sup>251</sup> As for the underlying *causes* however, some of which we could only vaguely discern with the thoughts of BELOW, CHILDE, WEBER, and RATZEL,<sup>252</sup> there apparently has not yet been much occasion to deal with from side of urbanistic research.<sup>253</sup>

Now, exactly these causes should lead us to urbanistic common denominators, which are inherent to any urban form and which, regarding our perception of cities as complex, dynamic, and dissipative structures,<sup>254</sup> play a significant role in their origination, advance, conversion, and repeated decline. Yet, before engaging in the investigation for individual causes of urban development, we should delve into the methodic principles for this investigation and address some additional peculiarities, which derive from the aforesaid phenomenological and systemic understanding. From there we shall recognize that the causes of urban development only produce the prerequisite for a systemic and systematic framework, in which the parameters of urban form play the significant role and their inter-relation eventually determine the formation process of cities.

The following three chapters, consequently, will present some more detailed conceptual thoughts on the basic understanding of urban systems (Grundlagen), introduce to the derivation of factors conditioning any urban development (Herleitung), and finally propose a method to conclude constituents of urban form and from there induce according qualitative parameters (Vorgehensweise). Evidently here the understanding of the city as a system constitutes the starting point for all further considerations; additionally to these systemic implications, however, we shall generally investigate the characteristics of the proposed organizational structure and its components by means of denomination and classification, why this part not only represents a systemic but after all a systematic approach towards the enjoined task and hence the city itself.

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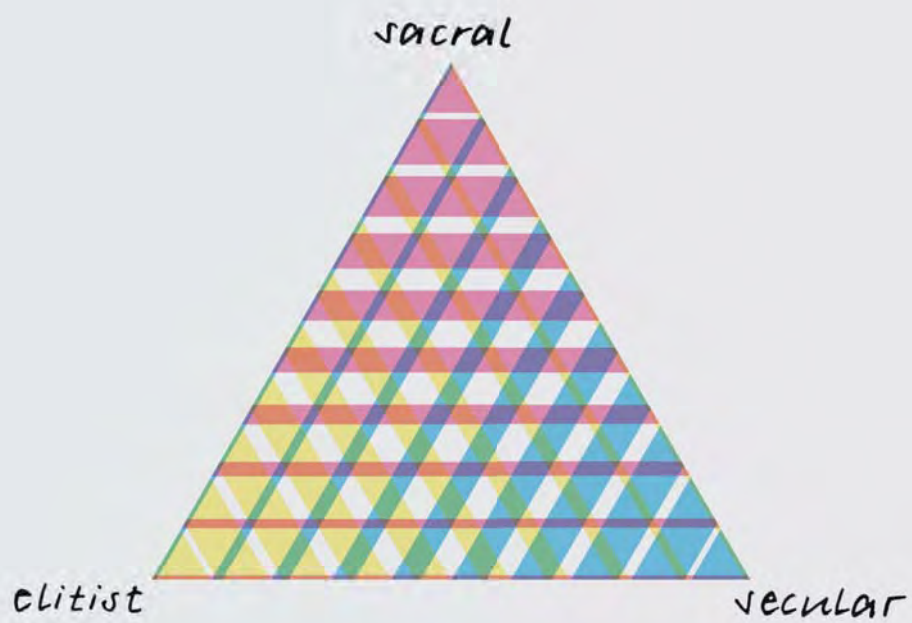
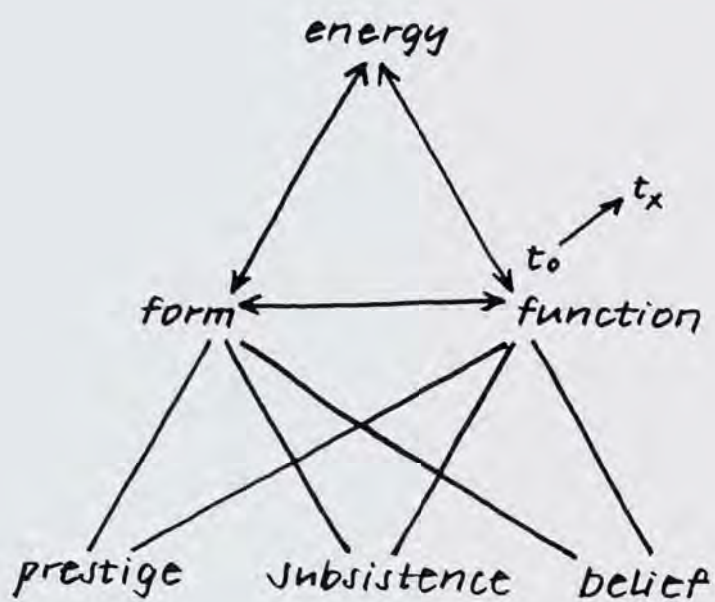
<sup>250</sup> see illustration on page 82

<sup>251</sup> In addition to civil engineering that of course takes also largely part in the actual construction of cities, lately especially applied computer sciences discovered urbanism as a field interest, mainly with the further development of GIS for inventories, traffic control, or touristic guidance.

<sup>252</sup> see discussion on page 15 ff.

<sup>253</sup> We should here again remember that none of those authors can be called a declared urban researcher, much less an urbanistic researcher.

<sup>254</sup> see discussion on page 89 ff.



Triadic Relations  
according to JANSEN & TOSI  
**plate 31**



The depiction of the city as a "field of forces in movement" by Sanford KWINTER well illustrates a significant complementary understanding of urban development within the present approach.<sup>255</sup> It likewise serves the idea of a systemic interrelation of different units, which are undetermined regarding their size and impact as a field of *forces in movement*, as well as it supports the notion of the undeterminability of system altogether, which is subject to an ongoing development process as a *field of forces* in movement. Correspondingly we might perceive urban evolution (Stadtwerdung) and the processes of urban mutation (Stadtveränderungsprozesse)<sup>256</sup> as result of unpredictable constellations of varying energy states within the according given systems; this again stresses the propinquity to PRIGOGINE's idea of dissipative structures,<sup>257</sup> while, of course, the variability within an urban context is not as fast moving as in chemical or thermo-physical processes.

A sound thought-model to demonstrate the significance of this energy for the development of settlements and towns represents the *triadic relation* of energy, form, and function, as it has been initially discussed between Michael JANSEN and Maurizio TOSI.<sup>258</sup> In an urbanistic and architectonic context energy repeatedly expresses itself in form and function, which affect each other and retroactively impact on the original energy; formal and functional conditions again attend the basic human requirements of physical *subsistence*, engrossed *prestige*, and habitual *belief*, which already before sedentation determined human life as regards the interventions into the natural environment by means of artificial as well as artistic transformations.<sup>259</sup> Man, as bearer of this energy, ever since activates material as well as non material processes, which within another triadic relation can be assigned to *secular*, *elitist*, and *sacral* poles within the ongoing interplay of creative forces;<sup>260</sup> here we already have to allow for an increasing complexity in respect to the rare unique relations but preponderant approximations to all three classifications within the according triangle, what, however, enables us to interpolate every formal or functional condition, showing the corresponding subjections.

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<sup>255</sup> "The poverty of much urbanist thought can be reduced to a central fallacy: that the city, or Metropolis, expresses itself fully in its physical form, that as a finite concrete object alone is amendable to analysis and intervention. The city, however, is not this, but rather a perpetually organizing field of forces in movement, each city a specific and unique combination of historical modalities *in dynamic composition*" (Kwinter et al. 2001: 495).

<sup>256</sup> for a summary on the vast research on urban development and different urban entities in Germany see (Heit 2004: 10)

<sup>257</sup> see discussion on page 90

<sup>258</sup> Unfortunately this discussion has not been documented or published; yet these considerations were brought forward in several scientific dialogues, in which the author was glad to join, eventually being thankful to both, Maurizio TOSI and Michael JANSEN for their endorsement regarding the present appropriation; (Tosi, Jansen: personal communication January 7/8, 2008).

<sup>259</sup> In this context we should name the impact onto nature through specific hunting and gathering behavior including the according tool production as well as the early forms of food storage and harvesting on one side, and clothing, lodging, and garnish patterns on the other, up to the creation of special assembling and spiritual places with individual decoration (e.g. palaeolithic cave paintings in Lascaux in France); see also (Mumford 1961: 6 ff.).

<sup>260</sup> Apart from a small description of the Urban History teaching program at Aachen University in an exhibition catalogue, JANSEN has not yet fully published this latter thought but in a diagram; see (Jansen 2001: 56). However, for the very exhibition JANSEN and the author developed an additional summarizing schematic chart. We are similarly obliged to have permission to include redrawings of both corresponding illustrations.

### *Energy in Space and Time*

Also for the present considerations it is crucial to understand the immanent energy as originally neutral and erratic until it is employed for a specific ambition; in physics that would be giving a specific direction, and eventually becoming a force, which can be classified according to the poles mentioned.<sup>261</sup> Yet, we can judge the energetic ambition in our considerations only by means of the formal or functional effect of the employment, respectively force. Within the suggested urban system we have to additionally consider manifold employments, which, if at all, can only on an average be interpolated within the triadic relations, inducing a high level of negligence as regards the collectivity of individual and sometimes also antagonistic forces as well as an usually strong impact of specific scientific if not teleological interests (*erkenntnisleitendes Interesse*).<sup>262</sup> Still, we shall acknowledge that the urban system altogether is determined by these employments rather than the formal and functional results, or, in accordance with the auto-poiesis approach: not the subjects but the operations constitute the system.<sup>263</sup>

However, any energy employment results in a localization and temporalization of the according energy; space and time are similar neutral categories, merely setting the stage for the forces, which there reveal themselves analogous to language that – as Georg SIMMEL apostrophized – expresses a thread by means of words but not through the single words themselves.<sup>264</sup> Little later, we read with

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<sup>261</sup> Correspondingly natural sciences cannot immediately measure energy but only its changes, and thus have to employ auxiliary quantities, such as force, to recalculate the scalar; appropriate formulas would be for instance:

$$E = F \cdot s \quad (\text{energy equals the product of force and path) given a steady force, or}$$

$$E = \int_0^s F \, ds \quad (\text{energy equals the integral from 0 to s over force) given a changing force.}$$

Force, however, is a vector quantity, having both a certain magnitude and direction that are embedded in a specific space-time framework (following Isaac NEWTON's second law of motion from *Philosophiæ Naturalis Principia Mathematica*, 1686/87):

$$\vec{F} = \frac{d(m\vec{v})}{dt} \quad (\text{force equals the change of mass times velocity through the change of time}).$$

<sup>262</sup> see again (Johanek et al. 2004: VII)

<sup>263</sup> The concept of autopoiesis was originally conceived by the biologists Humberto Maturana (\*1928) and Francisco Varela (1946-2001) to describe the self-creation and -maintenance of living systems (Varela et al. 1974), soon transcending the biological field:

"An autopoietic machine is a machine organized (defined as a unity) as a network of processes of production (transformation and destruction) of components which: (i) through their interactions and transformations continuously regenerate and realize the network of processes (relations) that produced them; and (ii) constitute it (the machine) as a concrete unity in space in which they (the components) exist by specifying the topological domain of its realization as such a network" (Maturana et al. 1980: 78).

Later LUHMANN transferred the concept to social sciences (Luhmann 1984; Luhmann 1992; Krause 1996), from where it entered also urban planning (Zibell 1996; Naveh 2001; Chettiparamb 2007); in particular see (Luhmann 1984: 13 f.) and (Zibell 1996: 30); see also the glossary on page 273.

<sup>264</sup> The according passage by the philosopher and sociologist Georg SIMMEL (1858-1918) reads: "Aber die Inhalte dieser Formen erfahren doch nur durch andere Inhalte die Besonderheit ihrer Schicksale, der Raum bleibt immer die an sich wirkungslose Form, in deren Modifikationen die realen Energien sich zwar offenbaren, aber nur, wie die Sprache Gedankenprozesse ausdrückt, die allerdings in Worten, aber nicht durch Worte verlaufen" (Simmel 1908: 687 f.). 'But the contents of these forms only experience the peculiarity of their destiny only through other contents, space always remains the inherently non effective form, in which modifications the real energies reveal themselves, but only, as language expresses threads, which however proceed in words, but not through words', (author's transl.).

him that the interaction between human beings<sup>265</sup> should be understood as a *completion of space* (Raumerfüllung),<sup>266</sup> that is a spatial appropriation as well as a spatial determination through the systematic interaction, both proceeding in time. The suggested dichotomy of motivations and results, reflecting the binary relation between function and form, consequently appears in defined spaces and times, while we might perceive the energy as not bound to specific space- and time-frames, as already pointed out with our phenomenal notion to the *abstractum 'city'*.<sup>267</sup> From here we shall argue that in non-predictable constellations of different energy states, respectively in unspecific critical sizes of interacting forces result functional and formal changes of our environment, which thus cannot follow any rules, when, of course, we can retrospectively apply different models, such as linear or dialectical progress,<sup>268</sup> cyclical undulation and pulsation,<sup>269</sup> or – what should be closest to our considerations – chaos theory;<sup>270</sup> however, altogether these models predominantly yield assistance through the interpretation of the treasury of collective experiences and traditions, from where one can legitimately but not at all resiliently anticipate future developments.

A consideration, which one can apply to all these models, is based on the idea of coinciding energy employments, which intensify themselves and entail epochal redirections of the current development. These unexpectedly combined forces, naturally, have to connect within a specific space- and timeframe, while this connection might sustain over relatively long time periods as well as relatively far distances and still not attenuates its impact; still, we spot such *threshold incidents* (Schwellengeschehnisse) solely in retrospect, when – especially in the latter case

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<sup>265</sup> and we shall here stress their energy bearing attribute and the consequent transformation of energy into forces

<sup>266</sup> see (Simmel 1908: 689)

<sup>267</sup> see discussion on page 83 ff.

<sup>268</sup> These assume the development of history towards an ideal future condition; compare for instance the approaches by

Jacques-Bénigne BOSSUET (1627-1704): "Discours sur l'histoire universelle" (Bossuet 1679), Gottfried Wilhelm von LEIBNIZ (1646-1716): "Essais de Théodicée sur la bonté de Dieu, la liberté de l'homme et l'origine du mal" (Leibniz 1992),

KANT "Idee zu einer allgemeinen Geschichte in weltbürgerlicher Absicht" (Kant 1784), and Georg Wilhelm Friedrich HEGEL (1770-1831): "Vorlesungen über die Philosophie der Geschichte" (Hegel 1837); see also (Rossmann 1959).

<sup>269</sup> These assume the enduring change of conditions within history, not necessarily being teleologic; compare for instance the approaches by

Giambattista VICO (1668-1744): "Principi di una scienza nuova d'intorno alla comune natura delle nazioni" (Vico 1725), Nikolay DANILEVSKY (1822–85): 'Russia and Europe: a look at the cultural and political relations of the Slavic world to the Romano-German world' (Danilevsky 1871), Oswald SPENGLER (1880-1936): "Der Untergang des Abendlandes" (Spengler 1919), and Paul M. KENNEDY (\*1945): "The Rise and Fall of the Great Powers" (Kennedy 1987).

<sup>270</sup> Interestingly, even though SIMMEL already in 1892 dismissed the idea of a teleologic devolution of history and strengthened the notion of a hermeneutic coherence of the philosophy of history and the diverse historical facts – decades before GADAMER's theory (Simmel 1892: 419 f.), we today hardly find significant approaches that scrutinizes the course of history along chaos theory: there are merely small according articles, hence mostly with specific questions to certain circumstances (Rozov 1995; Roth et al. 1995; Lindenfeld 1999; Danos 2004), while a comprehensive theoretical disquisition in this direction appears to be an evident desideratum; a good insight into the application of chaos theory to social sciences however is given by (Kiel et al. 1996), correspondingly, a mathematical approach towards history is given by (Rashevsky 1968).



– for sufficient evaluation the impact must have time to unfold.<sup>271</sup> Ultimately, no matter which model we apply to gain cognition about urban development in a historical perspective, while trying to understand the relations within the moving field of forces, we perceive the appearance of energy in space and time as a process that concurrently shapes and reshapes our environment in form and function; here evidently functional change ensues faster than formal alteration, allowing us to infer from one form a variety of related functions and induce multiple effective functional as well as formative forces.

#### *Process of Transformation through Forces*

Regarding the city, as object of our employment, ARGAN comes to the analogue conclusion that "la forma è il risultato di un processo, in cui punto di partenza non è la forma stessa. La città non è *Gestalt* ma *Gestaltung*. Poiché però è ovvio che la città è una costruzione e il punto di partenza di ogni costruzione è la costruibilità, prima di considerare la città rispetto a categorie estetiche, bisogna considerarla rispetto alle tecniche che la rendono non soltanto ipotizzabile, ma progettata; e quindi, logicamente, rispetto alle procedure e alle tecniche della progettazione" (Argan 1983: 84).<sup>272</sup> In this argument, already focusing the city as an artifact, a specific consciousness of the proposed impact of employed energy plays a significant role; for the time being, however, we ought to dispense this notion and stress the consideration of procedural transformation.<sup>273</sup> Then we understand that, as long as potential energy is transformed into forces, we find a *completion of space*, which in an urban context expresses itself also in shaping the sedentary environment, either in form or function. When this circumstance is illustrated in the energy-form-function triad by means of repeated relations at several points of time ( $t_0$ - $t_x$ ), we learned that these fractions of time also comprise the presumption of sustainable impact from bygone forces, not only by means of actual formal or functional conditions but also through the actual review of the former transformation itself (historische Wirkmächtigkeit). Altogether, we discern with this – even in its simplicity – complex thought-model an evident 'kinetic imperative' to the relation between energy, form, and function altogether, as well as among each other,<sup>274</sup> that ever since is inherent to urbanization process and thus highly considerable for our approach.<sup>275</sup>

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<sup>271</sup> These threshold incidents eventually provide the basis for a periodization in historiography, where we well recognize the necessity for sufficient time distance as well as the common summarization of often even independent occasions to one group, determining the transition from one epoch to another.

<sup>272</sup> 'Form is the result of a process, in which the starting point is not the form itself. The city is not *Gestalt* but *Gestaltung*. Being obvious that the city is a construction, and that the starting point of any construction is constructability, one must, before considering the city according to aesthetical categories, consider her according to technical categories, which render her not only hypothetically but projected; and thus, logically, with reference to the procedures and techniques of projecting', (author's transl., accentuations as in the original text); compare also German edition, pg. 105 f.)

<sup>273</sup> We shall return to this important instance later in this thesis; see discussion on page 183 and especially in on page 224 ff.

<sup>274</sup> see (Heit 2004: 12)

<sup>275</sup> Nota bene: This notion of a 'kinetic imperative' within the urbanization process is alien from the earlier described acceleration of western urban development since the industrialization! When the latter refers to the rapid conversion of the built environment, the procedural 'kinetic imperative' describes the exigency of mobility within the field of forces; consequently we have to distinguish the rapid succession of strongly diverging energy-form-function relations at specific fractions of time from the mere moving gesture of the overall triadic relation and the flexibility of its components.

This procedural understanding also enables us to give additional support to our employed attitude regarding the urban status of a settlement.<sup>276</sup> For the systemic relations that possibly result in urban form the sedentary status is initially exiguous: from the first camps that were formed around cairns, caves, and caches we can draw a development line via hamlets and villages already featuring shrines and mansions to small towns; all of them allow for the potential energy to develop cities, metropoleis or megalopoleis in form and function.<sup>277</sup> The same allows us to perceive a retrogression line from prosperous cities to shrinking towns and villages down to eventually deserted estates, where we well recognize a probable outlasting of forms that become obsolescent and gradually loose any functional designation. Hence, for our exploration of a system of causes for urban form we shall be able to revert to a variety of sedentary forms, as long as we scrutinize their actual scope for a potential urban development. For the purpose of clarifying usage in this thesis, however, we shall from hereon differentiate between *settlement*, as any kind of human dwelling, and *city*, as those entities that are widely acknowledged as it,<sup>278</sup> notwithstanding their actual size, relative significance, or altering denomination.<sup>279</sup> Urban development, however, shall reflect all entities within all levels of an urbanization process, that is also the settlement or village, which are not yet a city, but ultimately have an urban potential.

At this point, though, we have to put forward our main search for the abstract systemic relationships by again divesting the *field of forces in movement* from all specific social and behavioral considerations, as well as dismantle it from those anthropological and cultural issues that of necessity integrate the urban formation process into a specific space-time framework, even though the process of transformation through forces, of course, occurs in space and time.<sup>280</sup> Following the thought-model of the triadic relation between *energy*, *form*, and *function*, this should be the investigation of possible common denominators, respectively factors, determining the transformation of energy into urban forms and functions at all time stages. With our suggested relation between *causes*, *motivations*, and *results*,<sup>281</sup> this should be the *causes*, which afford the conditioning and contingency formulas that in spite of manifold possible results as well as motivations prevent the dissipative urban system from randomness.<sup>282</sup> Moreover, we shall observe with the conditioning and contingency formulas that the factors are intrinsically related to each other and determine the city on an abstract as well as at least on the factual levels presented with the examples in the succeeding catalogue.

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<sup>276</sup> see discussion on page 88

<sup>277</sup> compare also (Mumford 1961: 5) as well as (Osborne 2005)

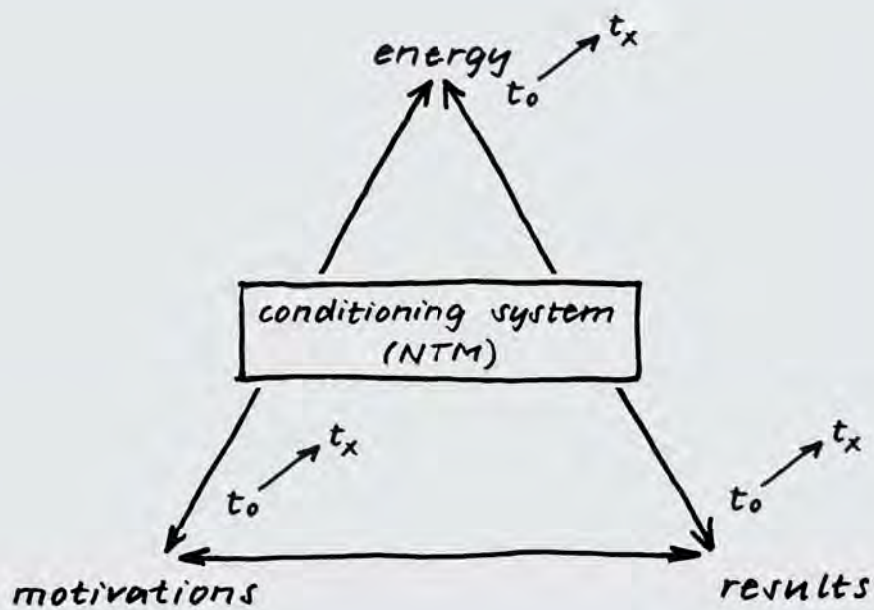
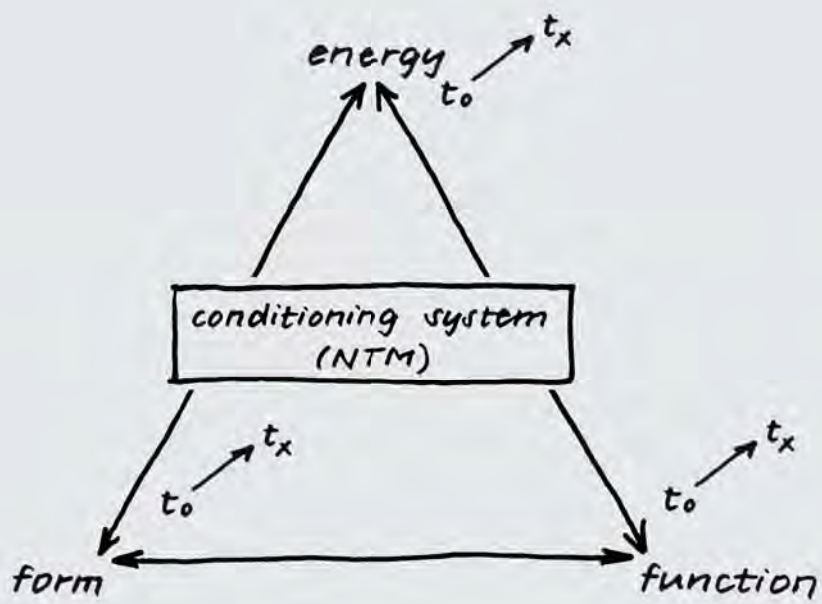
<sup>278</sup> compare again the discussion on page 88

<sup>279</sup> Despite this usage necessity within the present employment, we shall stress the scientific desideratum to engage in a discourse on the significance of the "town" versus settlement, village, city, and state; see (Osborne et al. 2005: 1ff.).

<sup>280</sup> see discussion on page 83

<sup>281</sup> see plate on page 82

<sup>282</sup> see (Krause 1996: 158 and 160) and compare discussion on page 94





Ever since its origin in the mid-1940s, the general system approach yielded plentiful cognitions as regards the explanation of complex phenomena.<sup>283</sup> In his field of research the behavioral scientist James G. MILLER for example came to the conclusion that "Systems are bounded regions in space-time, involving energy inter-change among their parts, which are associated in functional relationships and with their environments" (Miller 1956: 31).<sup>284</sup> J. MILLER, of course, here refers to the manifold appearances of actual living systems as his primary concern, yet we can transfer this statement to factual urban systems, as it outlines the aforesaid considerations of energy in space and time as well as the process of transformation through forces. Having presented our phenomenological as well as the systemic understanding of *the 'city'*, which induces the abstraction from specific space-time relations, however, we have to complement this statement through the notion of an underlying systemic relation that conditions these manifold factual urban systems in such a way that they become part of the urban development, beyond all contingencies that we encounter or perceive.

Consolidating the previously described model of *energy-form-function relation* with these considerations, we perceive the need to localize the conditioning and contingency formulas as a filter between the neutral and erratic energy, which sponsors urban development and the evolving functions and forms, which manifest themselves in concrete space-time frames; in other words this shall be that a conditioning system determines the direction of the, through their movement cognizable, forces, while the system itself remains unmoved and directionless in the abstract realm. This again accords to the previously assessed autopoiesis idea, what should be: not the conditioning system itself but the according operations constitute the eventual urban system.<sup>285</sup> Moreover, when within the energy-form-function relation we have to understand all components as variable in their magnitude, the conditioning system should in its set-up remain invariable.

For this systemic set-up, as also implied by J. MILLER, we read with the sociologist Herbert SIMON that a complex system "can be analyzed into many components having relatively many relations among them, so that the behavior of each component depends on the behavior of others" (Simon 1995: 26). However, according to the proposed invariability of our conditioning system, FOERSTER would call it a *Non-trivial Machine*, we should like to substitute the term *component*, to which inheres the notion of quantity, by the term *factor*, which better induces the notion of a specific quality that only by stimulation of a certain quantity of force results in physical appearance; likewise we should, due to the proposed invariability of factors, substitute the term *behavior* by the term *impact*. Consequently, we can perceive the conditioning system as composed by relatively many factors having relatively many relations among them, so that the impact of each factor also depends on the impact of others. Thence, in the following we shall set up a method to investigate for the single factors involved in this conditioning system; a reasonable cue to this task gives us the earlier quoted language analogy by SIMMEL,<sup>286</sup> why we now shall have a look onto what might be called *semantics in urbanism*.

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<sup>283</sup> compare discussion on page 37; see also (Bertalanffy 1949)

<sup>284</sup> see also (Ferguson 1975: 12)

<sup>285</sup> compare discussion on page 100

<sup>286</sup> compare discussion on page 100

### *Concepts and Semantics in Urbanism*

Within these considerations about factors of the abstract conditioning system determining urban development we have to return to basic epistemological reasoning, as we, rather than principally relying on empirical facts, have to initially base on the notion of general *concepts* (Begriffe), which are only then subject to concurrent synthesization,<sup>287</sup> as well as subsequent realization in factual objects.<sup>288</sup> In other words this shall be that the jointly conditioning factors ought to represent individual but universal terms that are able to describe all those circumstances, which have been anthropogenically produced. On reverse, this perception of factors coincides with the earlier introduced *causes* determining the different motivations that lead to urban forms.<sup>289</sup> Factors or causes therefore ideally originate from logical intellectual practice, which we could arguably call transcendental regarding the factual development within the set up limitations of our approximation to abstract urban form.<sup>290</sup> Notwithstanding their described basically neutral attitude we shall be able to equate the terms of factor and cause, as for the present approach the factors within the urban system, which likewise determine the motivations for urban development, also condition the varying forces to commonly shape an environment accordingly. Consequently these factors effect the diverse energy employments to establish a specific urban system, as they eventually *cause* the different formal results to become a city.

This notion of general concepts as factors causing urban form, though, affords a qualificatory semantic difficulty as for the methodology to be suggested: In reference to Gottlob FREGE's semantic understanding, we can attribute to concepts specific senses, which represent the entirety of the according essential features or properties (in logic as well as linguistics one also speaks from *intension*), as well as a variety of references, that comprise the entirety of according entities to which the concept extends over or applies to (accordingly we find here the term *extension*).<sup>291</sup> With the present thought-model, yet, we ultimately suppose an extension of the different individual concepts commonly over the entire (or at least large parts of the) abstractum *urban form*, as well as an intrinsic interrelation of the different factors amongst each other, producing closely allied effects. Therefore, we will not be able to single out exclusionary concepts being subject to a strict *classificatory*, *quantitative*, or *comparative* explication, which could be according to Rudolf CARNAP appropriate methods for their scientific verification.<sup>292</sup> Moreover, given the limited scale of this thesis we ought to over again suspect that within the logical delineation of factors or causes to be suggested we will

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<sup>287</sup> The term *concept* (German: *Begriff*) shall be understood in the philosophical understanding as it has been introduced by KANT; see for instance (Kant 1781: 109) and (Kant 1783: 129 ff.).

<sup>288</sup> Ein Begriff "bezieht sich als Form auf einen möglichen Gegenstand der Erfahrung; er ist real aber doch rein und unabhängig von Erfahrung [...] Einen Begriff realisieren h[eißt] ihn auf wirkliche [sic!] Gegenstände anwenden" (Schmid 1786: 107).

A concept 'relates as form to a possible object of perception; it is real and yet pure and independent from experience [...] To realize a concept means to apply it to factual objects', (author's transl.).

<sup>289</sup> see discussion on page 83

<sup>290</sup> According to KANT, of course, the term 'transcendental' refers to cognition in general, arguing about the categories of thought, which are a priori given to the human mind (Kant 1781: 63).

<sup>291</sup> The German mathematician FREGE (1848-1925) innovated this distinction between *Sinn* and *Bedeutung* in 1892; see (Frege 1892), as well as (Carnap 1947; Lewis 1951; Robins 1967; Frisch 1969; Walther-Klaus 1987).

<sup>292</sup> The German-American philosopher CARNAP (1891-1970) established this notion in his work on "Logical Foundations of Probability"; see (Carnap 1950: 8 ff.).

accomplish a scientifically consummate methodology;<sup>293</sup> yet, despite this temporary lack of full methodical proving of each individual concept, the succeeding abstraction from diverse "explicanda", to nevertheless use CARNAP's terminology, shall lead to such "explicata", which at least within the presented theory represent valuable components that comply with his requirements of effectual simplicity in the definition of the concepts themselves as well as in their interaction in the proposed conditioning and contingency formula (Carnap 1950: 3 ff.). To do so, however, we should briefly consult set theory as well as formal concept analysis for a consolidation of the constricted methodology to be employed.

#### *Sets and Lattices in Urbanism*

For the establishment of concepts as *qualitative factors*, we might turn to an intuitive concept mining,<sup>294</sup> which catenates reviews from the perspective of an urbanistic historian with considerations of a linguistic as well as a mathematic amateur; this obviously implies that there will be plenty clues in this thesis, which in the future should form starting points for a more detailed and professional analysis of the presented thread by the according experts. However, for our approach today, we find with these disciplines outside urbanism several indications that should help, also in their inchoate evaluation, to develop the envisioned theory.

As pointed out before and with urban form as our focus, we understand the systemic factors causing urban form as concepts, which have an intension and an extension, while for their significance within the proposed system their extensions must largely coincide over urban form. From a set-theoretical perspective we can perceive the extension of a concept as a *defined set* and consequently their common extension as an *intersection* of the accordingly defined sets – while these sets might, of course, have also complementary entities outside this intersection, which are then by definition not applying to urban form.<sup>295</sup> Hence, the different extensional sets must be scrutinized in respect to their application to urban form, while the complementary meaning should be left aside as potentially misleading. Moreover, perceiving urban formation as a process, we shall presume a temporality of impact, resulting in a succession of the different extensional sets cumulating the different concepts but at the same time confining the common extension. Here, evidently, the question regarding the procedure employed could be answered by a review of the chronological succession of operations ensuing to generate urban form. Accordingly we might understand this notion as an incremental and refining *conceptual clustering*, to borrow this term from informatics without fully absorbing the underlying scientific approach,<sup>296</sup> but assessing a perception that explicates the constitution of the conditioning system of urban form through the implications of the formation itself and their aggregation to concepts.

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<sup>293</sup> compare discussion on page 92 ff., especially page 94

<sup>294</sup> see for instance (Hotho 2004; Tergan et al. 2005; Trochim et al. 2007)

<sup>295</sup> formularized this would read:

$$Ext_{Common} = \bigcap_{i=1}^n Ext_i := \{x \mid \forall Ext_i : x \in Ext_i\}$$

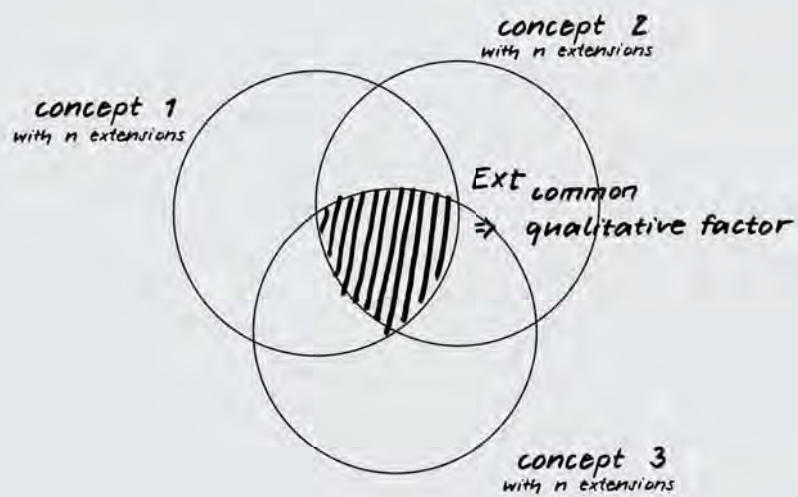
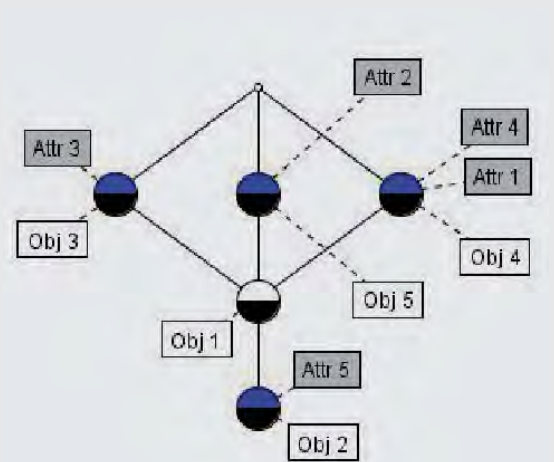
(the *common extension* of concepts equals the *intersection* of an indefinite number of definitory sets  $Ext_i$ , which is defined as the set of all entities  $x$ , which are element of all definitory sets  $Ext_i$ )

<sup>296</sup> for conceptual clustering in machine learning see for instance (Michalski et al. 1983; Fisher 1987; Biswas et al. 1991);

for an according approach towards architecture see (Börner 1997)



	Attribute 1	... 2	... 3	... 4	... 5	→ Intension
Object 1	X	X	X	X		
... 2	X	X	X	X	X	= subconcept
... 3			X			
... 4	X			X		
... 5		X				
← Extension	= superconcept					



This basic set theory and data analysis leads to another, still intuitive view onto the derivation of concepts through *formal concept analysis*.<sup>297</sup> The according algebraic theory bases on *contexts* (e.g. cross tables), in which a set of objects is related to a set of attributes forming concepts as pairs, both containing initially diverging clusters of objects and attributes. Here, one could possibly generate different concepts for the qualitative factors in question by mathematically relating their extensional objects to potential intensional attributes.<sup>298</sup> However, this represents a task, which apparently goes beyond the amateur capacity of the author regarding specialized *lattice* and *order theory*. Still, our understanding of formal concept analysis with the idea of *super- and subconcepts*, as well as *many-valued contexts*, shall support the presentment and distinguishment of factors as regards their scope and consequently determine their impact on diverse abstract settlement forms as well as different factual urban forms. This appears to be promising especially as this method originally represents a true qualitative means for data analysis that allows neglecting troublesome quantitative implications. To do so, different sedentary circumstances and entities should later be related to potential attributes, which epitomize the according qualitative (and as described before: conceptual) factors; in this context we should obviously differentiate between the mathematical term *concept* and the so far discussed semantic understanding. Such an analysis, however, might as well endorse the already mentioned notion of different stages within the development process of urban form.

In respect to our understanding of an underlying system that determines urban form by means of qualitative factors, we shall with these considerations on concepts and sets at least approximate the sociologist Rudolf KLEIN's verdict about system analysis as "a series of mathematical equations" (Klein 1972: 37), while yet we will never be able to eventually present mathematically explicit formulas for the proposed energy filtering *Non-trivial Machine*. Still, our approach shall result in simple concept definitions and evident propositions as regards their effects and interrelation, also when there will be obviously a range of different *explicata* – returning to CARNAP's ratiocination – which we can derive from the plentiful *explicanda* on the causes of urban development; these with their extensions fulfill the requirements for the proposed *conceptual intension* but as well comprise *predominant socio-economical effects* and thence refer to cultural, political and other motivational circumstances: here we will have to choose those *explicata* that get by with a minimum of logical and general system-theoretical abundance in respect to the envisioned system conditioning urban form.<sup>299</sup> From the semantic and ontological implications, however, as well as this glance at logical and mathematical reasoning altogether we should now be enabled to pursue our urbanistic approach by means of an abstract and idealized course of urban formation to eventually produce specific qualitative factors that determine the parameters of urban form.

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<sup>297</sup> as it has been developed by the mathematicians Rudolf WILLE & Bernhard GANTER since the 1980s

<sup>298</sup> formularized for the derivation of concepts this would presumably read:

A concept is a pair (Extension, Intension) with Extension (Ext) as subset of the set of objects G, and Intension (Int) as subset of the set of attributes M, while there is defined for the set

$Ext \subseteq G$  of objects:  $Ext' = Int$  and  $Ext = Int'$ ; while the derivation is determined by

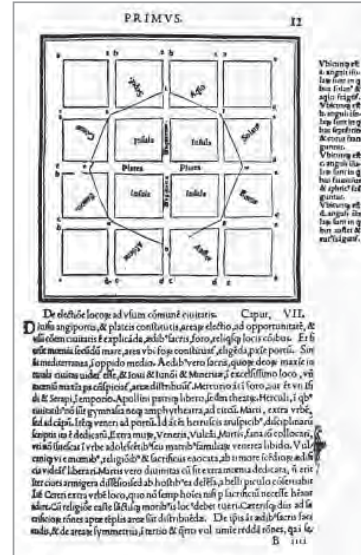
$Ext' = \{m \in M \mid g \text{ I } m \forall g \in Ext\}$  and dually  $Int' = \{g \in G \mid g \text{ I } m \forall m \in Int\}$

(a specific Extension equals the set of attributes common to the objects in Extension, and dually: a specific Intension equals the set of objects which have all attributes in Intension);

compare (Ganter et al. 1996: 17 f.)

<sup>299</sup> compare also (Carnap 1950: 7)





country  
Italy / Lombardia  
coordinates  
45° 48' 42" N – 09° 05' 02" E  
Cupola Duomo  
elevation  
201 m  
population  
83,200 (2007)  
size  
37 km<sup>2</sup>  
density  
2,228 /km<sup>2</sup>  
foundation / *rst* citing  
before 196 BCE  
source  
<http://it.wikipedia.org/wiki/Como> (20.04.2008)



Como  
Image © 2008 DigitalGlobe  
**plate 34**



With reference to ARGAN's understanding of the ideal city as a substantially invariant module referring to any urban entity,<sup>300</sup> we shall suggest a similarly qualitative determined idealized course of action that eventually leads to urban form; here once more it is crucial to emphasize that this idealization has to withdraw from any specific teleological attempt other than produce urban form in general: There are plentiful contributions on how to "make" urban form (Kostof 1991: 9), usually with the intention to design it better than the contemporary forms; an according list leads from authors such as SITTE, STÜBBEN, BRINCKMANN and HEGEMANN to CULLEN, LYNCH, KRIER, and Michael TRIEB – as Spiro KOSTOF remarked in his book on "The City Shaped"; still, as we learned with the RECENT CRITICISMS, we should enlarge this list at least with the names of LECORBUSIER, KOOLHAAS, SIEVERTS, and MAAS, and still we ought to consider it far from being exhaustive. For such manuals on specific design ideas and ideals, however, we already reviewed many resulting forms that today we experience very disproportional to their original promising design idea, almost involuntarily leading to an inherent inkling of failure with any of such formal guideline; this particular circumstance also found entry to literature, for instance with Italo CALVINO's "Perinzia" in his "Invisible Cities" (Calvino 1972: 144 f.).<sup>301</sup> For the investigation of the supposed idealized course we thus favor those contributions, which focus courses of action themselves rather than an envisioned certain formal result.

At first, we have here the foundation process of ancient Roman castra and towns, which has been passed down to us not only in abundant physical urban forms, but also in description by VARRO and SERVIUS,<sup>302</sup> wherefore we find this process widely treated in urbanistic research.<sup>303</sup> Hence Pierre LAVEDAN summarized inauguration, limitation, orientation, and consecration as main principles:<sup>304</sup> the locale for the future city is decided upon by the auspices of the augurs, then the gromatici define the limitation of the future city and set up the street layout by orientating the two major axes of decumanus and cardo, before the Roman clergy consecrates

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<sup>300</sup> compare discussion on page 86; from here we employ the term *ideal city* always in this respect

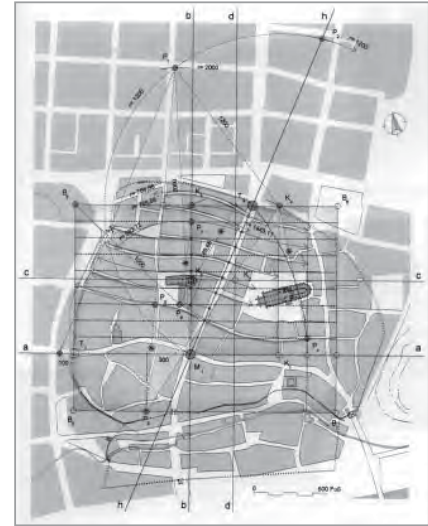
<sup>301</sup> CALVINO (1923-85) describes Perinzia as a planned city, whose design seeks to generate an outmost benevolent development by reflecting the astronomic harmony of the canopy but only yields a stunted and begrudgingly populace.

<sup>302</sup> Marcus Terentius VARRO (116-27 BCE), Roman historian, described the Etruscan ritual to found a city as the origin of the Roman urban tradition in his "De Lingua Latina" (Varro ling. 5, 143); Maurus (or Marius) SERVIUS Honoratius (late 4th century CE), Roman grammarian, specified the VARRONIAN terms in his "Commentarius in Vergilii Aeneida" (Serv. Aen. 1, 446); In this context we should regard the VITRUVIAN account on the city, especially on the choice of a healthy urban locale as well as the layout of the street grid with reference to the winds, (Vitr. 1, 4-7) of minor significance for the foundation process, as VITRUV seeks to establish an instruction guideline for architects and engineers, rather than passing down traditional rites; especially for the implementation of VITRUVS guidelines for the orientation we find few evidence as well as the variety of different Roman decumanus-cardo layouts leave us anyhow with doubt about a consistent unmodified gromatical practice during the centuries; see (Barthel 1911; Hesselmeyer 1935) as well as (Müller 1961: 15 ff.) and (Lorenz 1987: 32 f. & 40 ff.). Additionally we find various contributions by Roman gromatici themselves, which have been bequeathed in medieval manuscripts and already in the 19th century compiled in (Blume et al. 1848; Cantor 1875; Tissot 1879); we find a short according summary with (Müller 1961: 9 ff.); see also discussion on page 161.

<sup>303</sup> see for instance (Lavedan 1926 [1.1]: 296 ff.), (Egli 1959: 274 ff.), (Müller 1961: 9 ff.), (Mumford 1961: 205 ff.), (Morris 1972: 56 ff.), (Benevolo 1975: 220 ff.), (Lorenz 1987: 13 ff.), and (Pallottini 1993: 417 ff.)

<sup>304</sup> see (Lavedan 1926 [1.1]: 298 ff.)





Wave-form of Street-blocks,  
2001, by Klaus Humpert & Martin Schenk  
cf (Humpert et al. 2001: 109)

country  
Germany / Baden-Württemberg  
coordinates  
47° 59' 43" N – 07° 51' 08" E  
Cathedral (Tower)  
elevation  
278 m  
population  
217,548 (2006)  
size  
153 km<sup>2</sup>  
density  
1,421 /km<sup>2</sup>  
foundation / first citing  
1120  
source  
[http://de.wikipedia.org/wiki/Freiburg\\_im\\_Breisgau](http://de.wikipedia.org/wiki/Freiburg_im_Breisgau) (20.04.2008)



Freiburg i.B.  
Image © 2008 AeroWest

**plate 35**



the main temple close to the axial intersection with the adjacent forum to those deities, which are denominated as urban patrons. Evidently, this *ritus*, despite all geo-strategical, political, and economic motivations for the foundation itself, emanates from a thorough religious belief in the act, which thus of necessity represents a reoccurring standard, a 'hallowed formula' as EGLI described it.<sup>305</sup> Moreover, we should argue that the pragmatism, which we ascribe to Roman urbanism, rather roots in this standard of action than in the standard of form, which results from the particular *cardo-decumanus* grid and the similar positioning of public buildings.<sup>306</sup> The grid was beforehand employed in Babylonia as well as in the Harappa culture and, of course, with the Greek Hippodamus system,<sup>307</sup> – later we find it with the medieval German colonization of Middle and Eastern Europe, the seizure of the Americas by the Spanish crown in the 16th and 17th century, and ultimately JEFFERSON's Land Ordinance for the North-American continent,<sup>308</sup> all with similar organizational benefits, while, as far as we know, without an according religious superelevation of a very standardized course of actions it is the case with the Roman *castrametation*.

Secondly, we should quickly review some medieval foundation processes, especially in the German territories that constituted the Old Empire, which largely were not influenced by ancient urbanism. Here researchers largely comply as regards the primacy of geo-strategical, political, and economic motivations over a standardized foundation ritual:<sup>309</sup> It is the envisioned function that determines the urbanization,<sup>310</sup> in which after all from the 11th to the 14th century German rulers issue letters of privileges to gather populace in a certain locale to «plant» a new or enlarge an extant nucleus.<sup>311</sup> Accordingly there is a variety of forms, which comprise radio-concentric layouts, grids, as well as manifold so-called «spontaneous formal developments» that supposedly have only in common a distinctive density optimizing the ratio between surface and perimeter. With regard to the necessity of surveying the according land, HUMPERT & SCHENK lately presented an intriguing thesis of standard geometrical constructions for the urban layout that explains a majority of those forms, which hitherto have been appraised as erratic or spontaneous;<sup>312</sup> in examining the Zähringer planted towns in Southwest Germany they describe the utilization of a "Campus initialis", from where by Thales-construction, "Kantenschlag", "Wechselschlag", and curve-construction the layout of streets and city walls can be traced (Humpert et al. 2001: 67 & 344 ff.). As for the rationale of these standard constructions, which yielded very non-geometrical results, however, they did not offer more than the assumption that the medieval

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<sup>305</sup> see (Egli 1959 278)

<sup>306</sup> An intriguing according account we read with the manual of "How to Build a City" by Koolhaas' Harvard Project on the City (Andraos et al. 2001).

<sup>307</sup> for Babylonia, Harappa, and Greece compare for instance (Gerkan 1924; Hoepfner et al. 1986; Nissen 1994; Heinz 1997; Pant et al. 2005; see also (Müller 1961: 48 ff.)

<sup>308</sup> for the Middle Ages, the Conquista and colonization of North-America, and JEFFERSON's Land Ordinance compare for instance (Wilhelmy 1950; Reys 1965; Stoob 1979; Gates 1996; Janssen-Schnabel 1999; for JEFFERSON see also discussion on page 29

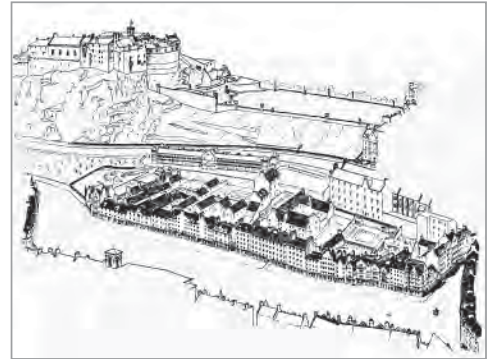
<sup>309</sup> see for instance (Pirenne 1925: 77 ff.), (Lavedan 1926 [1]: 227 ff.), (Braunfels 1953: 20 f.), (Egli 1962: 14 ff.), (Saalman 1968: 11 ff.), (Ennen 1972: 51 ff.), (Morris 1972: 92 ff.), (Benevolo 1975: 252 ff. & 286 ff.), (Guidoni 1978: 8 ff.), and (Stoob 1979: 131 ff.)

<sup>310</sup> see for instance the functional classifications with (Braunfels 1976)

<sup>311</sup> see also (Stoob 1970)

<sup>312</sup> see (Humpert et al. 2001)





Grassmarket of Edinburgh,  
1915, by Sir Patrick Geddes  
*cf* (Geddes 1915: 11)

country  
United Kingdom / Scotland  
coordinates  
55° 56' 55" N – 03° 11' 48" E  
Castle - Gatehouse  
elevation  
73-95 m  
population  
448,624 (2001)  
size  
259 km<sup>2</sup>  
density  
1732 /km<sup>2</sup>  
foundation / first citing  
7th century CE  
source  
<http://en.wikipedia.org/wiki/Edinburgh> (20.04.2008)



Edinburgh  
Image © 2008 The GeoInformation Group

**plate 36**



population preferred the curve as more tenseful and complex than the straight line.<sup>313</sup> A religious superelevation with the medieval city, similar to that of the Roman foundation ritual, we find only with its eventual buildings: churches and cathedrals, palaces and towers, walls and gates,<sup>314</sup> while especially the appearance from the countryside, resulting in a differentiated skyline and harmonizing and impressing fortifications, suggested not only civic pride but the specific Christian confidence to produce with a city also a terrestrial effigy of the Heavenly Jerusalem.<sup>315</sup>

Thirdly, we might return to the development of urban planning at the turn of the 19th to the 20th century and GEDDES with his precept of "survey before plan".<sup>316</sup> When in Roman times we distinguish an operational focus on the surveying and the subsequent layout of the city, and in the Middle Ages a focus on the development and design of buildings and the shape of the city, GEDDES' plea addresses the delicate occupation with the locale before its urban transformation. In his first summary of an appropriate study prior to city development, the Dunfermline Report, he compared the according actions "to the various stages of art. First came that of description, of simple realism. Next came that of improving technical details; this rises to arrangement and organization, and then passes to a yet higher phase – that in which the process and direction of things again begin to be discerned as part of an orderly universe in evolution" (Geddes 1904: 221). When already here and even more explicitly in his book on "Cities in Evolution" he called for a comprehensive outlook not only on geographical, ecological, economical, and immediate urbanistic matters, but also for detailed sociological and cultural investigations, he, of course, attended to the growing complexity of the industrial societies (Geddes 1915). Still, for our discussion on urban form we shall capitalize on his operational approach towards the factual preconditions of urbanization, that is the exploration of a given situation for sedentation or sedentary melioration. Interestingly, GEDDES' pleading became a principle for the urban planning discipline, almost as a «profession of faith» that persists until today; we do not want to stress an inequitable comparison to the notion of religiosity mentioned with the earlier examples, yet we shall take the liberty of assessing not only the operational but also the cultural significance of his precept for the planning profession in an otherwise secular scientific realm.

These references, vigilantly chosen from antiquity, medieval-, and industrial times, stand for a variety of similar evidence for standardized courses of urban formation all over the world.<sup>317</sup> However, one might argue that all of these imply the notion of an outspoken, integral, and provident planning for the envisioned entity, that is an initial intention to found a city. During the history of sedentary life, still, the foundation of cities represents only one part, possibly more often we find a gradual development of settlements eventually becoming cities. With the

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<sup>313</sup> see (Humpert et al. 2001: 380); a consideration that bothered already SITTE and HENRICI; see discussion on page 57

<sup>314</sup> compare (Bandmann 1951: esp. 85 ff.) and (Braunfels 1953: esp. 86 ff.)

<sup>315</sup> The concrete implementation of a specific scheme remained insignificant, especially when the then common understanding of Jerusalem as a circle with an inscribed street crossing had never been realized; see also (Müller 1961: 53 ff.).

<sup>316</sup> see discussion on page 37

<sup>317</sup> Notably on the Indian subcontinent (e.g. Silpa Sastra) and the Far East (e.g. Jōkamachi) we find ideal urban plans parallel to the Roman castrum; compare (Volwahn 1968; Pirazzoli-t'Serstevens 1970; Gutschow 1976; Dallapiccola 1985; Michell 1995) as well as (Müller 1961: 115 ff.) and (Ley 2005a: 87 ff.).

A tree  
A rock in a desert  
A cloud over the great plains

Space comes into being. Natural space.  
Spaceradiators of nature, The habitation of the gods.  
The ghosts of the wood, the sacred grove.  
The Olymp, the Fuji, the Kailas, the Navajo Mountain.  
Focal points. Ruling over the land of their worshippers.  
But a limited rule. Static.

Farther goes the cloud. And Thor governs with thunder and lightning.  
Dynamic.

The sun and the moon.  
Infinite presence. Infinite control.

All that has been. That was for hunters and gatherers.  
MAN starts to govern space. Man starts to BUILD.  
And the seat of god disappears from the threedimensional reality of our world.

A new kind of man appears and takes over control.  
The builder.  
Der Bauer.  
Bauer und Bauer.  
Bauer der Felder und Bauer der Gebilde.  
Man builds his own Mount Olymp.

The first furrow with the plough. A field. Space comes into being.  
The trees fall. The woods are opened up. Space comes into being.

Manmade space.

You dig a hole.  
Pile up some rocks.  
Put up a pole.  
Architecture comes into being.  
Spacedeterminators. Made by man.

from Hans HOLLEIN'S "Plastic Space" 1960



proposed idealized course of urban formation this other substantial part of urban development is yet not to be excluded. On the contrary, whatever sedentary process and concurrent formation of space we can imagine beyond an initial urban intention, we find reoccurring the same basic operations when man seeks to settle down: the investigation and determination of a specific locale, the division of land and structurizing of uses, and eventually the production of buildings with an automatic or even anticipated evolvement of shapes and spaces; these, of course, altogether represent – even without the notion of true planning – omnibus, tactical and consecutive endeavors, which, according to our argumentation of an urban potential that we find with every settlement,<sup>318</sup> can be understood as constitutive for any urban form and ultimately for the city itself.

To substantiate the applicability of this operational triad also for informal settlement development we might recur to some contributions from archaeological and anthropological research, which explain major according implications.<sup>319</sup> A first supporting contribution we find with Ruth TRINGHAM's treatise on the "Territorial demarcation of prehistoric settlements" (Tringham 1972): Herein she puts forward the territoriality of human beings, who are ever since ready to demarcate and defend their particular whereabouts,<sup>320</sup> which unlike the behavior of other mammals were chosen according to the "value [that] was attached to the space and its contents" (Tringham 1972: 464). This implies a space-consciousness that leads not only to choice and to utilization of a given natural resort but also to its evaluation, appropriation, exploitation, and transformation. These actions aggregate to what we just described with investigation and determination of a locale and might be subsumed under the term *situative operations* as they confront the situation of a certain locale in respect to a possible urbanization.

When these situative operations – understanding demarcation initially as an outward defensive limitation of a specific array,<sup>321</sup> which among other things can be used for habitation – still not yet imply a sedentary activity, TRINGHAM eventually reports on possible more fragmented demarcations impacting inwardly: For one, "the environment or economy might necessitate the construction of protective barriers for human individuals or small groups (what might be termed the "sleeping unit"), or their domestic animals or stored food" (Tringham 1972: 470), while here she supposed the insignificance of additional protective measurements for the whole residential unit. For another, "the actual habitation area of the organizers of the centres is further demarcated by clear barriers", which "can act not only as the hub of power, but also as the main defended refuge, particularly of urban centres whose demarcation walls are so long that it is difficult to defend them effectively" (Tringham 1972: 471 f.). With these quotations we recognize two major development trends, the horizontal and the vertical socio-cultural differentiation of the conhabitating group, which point at the growing significance of the

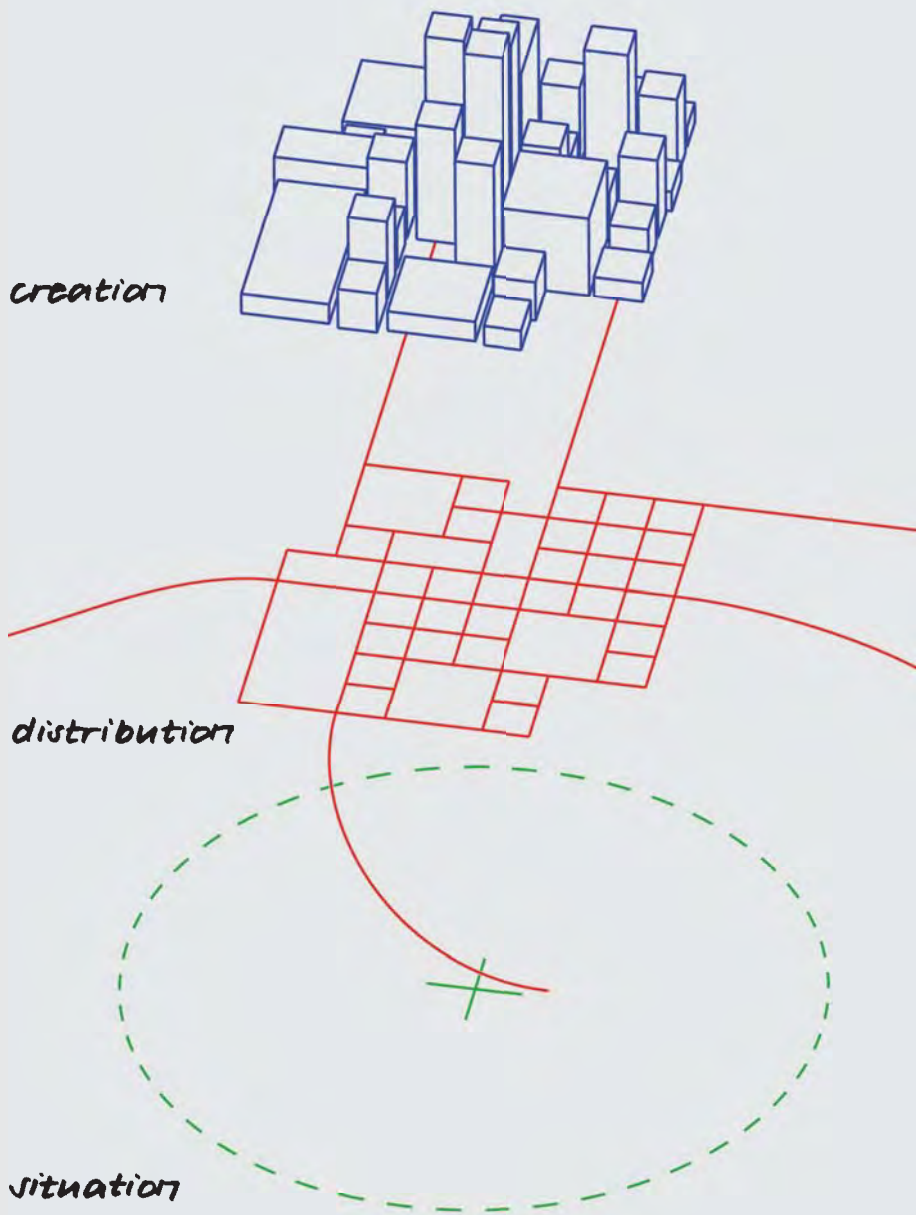
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<sup>318</sup> compare discussion on page 21, 83, as well as 88

<sup>319</sup> In this context read also, appositioned on the left, Hans HOLLEIN'S (\*1934) text from "Plastic space", his master's thesis at the College of Environmental Design in the Graduate Division of the University of California, Berkeley; here HOLLEIN traces, in a literary manner, the suggested operational triad regarding situation (man governs space), distribution (man makes space), and creation (man produces architecture); see (Hollein 1960).

<sup>320</sup> see also (Lorenz 1963; Ardrey 1966; Morris 1967; Martin 1972; Malmberg 1980; Lovell 1998)

<sup>321</sup> see also (Rowlands 1972)



Scheme: Constituents  
**plate 37**

individual as well as at the distinction of private and public utilization of space,<sup>322</sup> both generally accepted preconditions for any urban development.<sup>323</sup> For our considerations on form, however, we shall generalize these actions of dividing land and structurizing uses as *distributive operations*, beyond any socio-cultural implications, as they confront the distribution at a certain locale in respect to an evolving urbanization.

Other intriguing treatises on elementary sedentary life represent Mary DOUGLAS' ideas about "Symbolic orders in the use of domestic space" (Douglas 1972), dealing with several villages in the Americas and Africa, and Friedrich SCHWERTDFEGER's deliverables on "Urban settlement patterns in northern Nigeria (Hausaland)" (Schwerdtfeger 1972).<sup>324</sup> Both give account on proto-urban settlement design, that is the tactical production of spatial relations through a distinct positioning and grouping of buildings. These result from a three-dimensional permutation of internal demarcations, which are initially referring to the preconditionary distributive purpose, but already indicate another, more specified space-awareness within the "domestic space to express distinctions of age, sex and rank" (Douglas 1972: 514), respectively to arrange "extended family groups based on agnatic kinship" within diverse compounds (Schwerdtfeger 1972: 553). Conspicuous with all these examples is a hierarchization of the inner-settlement space that transcends an inevitable but possibly random allocation of functions, representing first *creative operations* regarding the relation of sedentary forms and functions amongst each other; that is a tactical approach not only to the operation itself, desirably meeting its basic functional incentive (e.g. motivation), but an already conscious approach towards the formal result that should result from the operation – altogether an inventive, when though not yet a true artistic endeavor. Evidently, from these «premature designs» we can also infer to the foreshadowing urbanistic reflections of sensibly relating closed and open spaces in dense Neolithic sedentary contexts, for instance at Çatalhöyük in Anatolia,<sup>325</sup> or, as DELFANTE points out, to the first urban designs with the early cities in Mesopotamia.<sup>326</sup>

#### *Constituents of the Ideal City*

For our idealized course of urban formation we shall be consequently able to start from these three groups of operations, dealing with the *locale* (= situative operations), the *framework* for the division of land and uses (= distributive operations), and eventually with the *shape* that results from the production of buildings (= creative operations). While these operations do not need to result from a comprehensive planning prior to execution, which most likely would provide also for a specifically planned execution, we do recognize a logical sequence of the different operations, starting with the situative ones that have to prepare the locale for the distributive ones, and eventually the creative ones that transform the territorial framework into a physical shape.

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<sup>322</sup> see also (West 1972)

<sup>323</sup> compare also discussion on page 17

<sup>324</sup> There are, of course, plenty contributions dealing with additional times, sites, and cultures; all of which, however, locate outside the Western world; see for instance "Village Planning in the Primitive World" (Fraser 1968). The ones cited here, including TRINGHAM's observations, were taken from the proceedings of the international meeting of the Research Seminar in Archaeology and Related Subjects, held at the London University Institute of Archaeology in December 1970, which give an intriguing overview over several research topics, concrete and conceptual; see (Ucko et al. 1972).

<sup>325</sup> see (Mellaart 1967; Todd 1976; Lichter 2007)

<sup>326</sup> see (Delfante 1997: 25 ff.), as well as the discussion on page 20; compare also (Lampl 1968)



For the abstraction of urban form, which should be understood along with ARGAN's ideal city, we can consequently also determine three cardinal components – in accordance with our semantic considerations,<sup>327</sup> that are concepts which are in their extension initially subject to the grouped operations: the locale, the framework, and the shape of the city.

Due to their omnibus and preconditionary significance we could eventually call them constituents of any urban entity. Despite their equal importance for the urban entity, they succumb to the same logical sequencing pointed out before, which is established by the mere fact that the later cannot be thought of before the prior one: no framework without locale – no shape without framework. The unconditional existence of and essential attendance to these constituents, however, can be seen as the basic common denomination of any urban form, or in reference to ALEXANDER's verdict, as the unchanging part of any urban system that should be of special interest to every designer.<sup>328</sup>

Nevertheless, the mere existence of and attendance to these three constituents are at first simple quantitative matters, which, as we have seen, also apply to non- respectively not-yet urban entities. Thus, we ought to expect for these urban constituents more than just effectual operations to ensure simple sedentation. Here again rises the definitory quandary, which we described earlier and where we learned about the difficulty of quantitative assessment and the piecemeal support from introducing any threshold-size or –volume, what would only allow to determine the extension of the constituents for specific space-time frames.<sup>329</sup> Therefore a qualitative assessment represents the sole key to seek for a general explication of the intension of the constituents that shall be later subject to further verification by means of a review of several examples, representing accepted or plausible factual extensions of the constitutive concepts. For now, the designation of qualitative factors applying to the constituents should evolve according to the inherent logical sequencing that results from the operational chronology.

A crucial consideration, which derives from this logical sequencing and which we however shall bear in mind for the further elaboration, is the notion of non-exclusiveness or integrality that implies major impacts of the prior constituent to the later ones, what we might also relate to the aforesaid common extension of the here employed concepts over the entire abstractum,<sup>330</sup> and which should make us anticipate further findings regarding the interrelation of the qualitative factors. Another significant approach, resulting from the assessment of urban constituents, represents within the idealized urban formation process a focus on the product's rather than the producer's perspective, that is reviewing the different evolving implications from side of the constituents or the according operations themselves and not from side of the operators.<sup>331</sup> This additionally ensures the exclusion of the troubling momentum that would ensue from the immanent question for the motivations of the different producers.<sup>332</sup> Still, we shall hold onto our basic axiom that the reviewed abstract urban form is the *matrix* for the ephemeral urban that results from these motivations.

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<sup>327</sup> see discussion on page 106

<sup>328</sup> see (Alexander 1965 [1]: 58)

<sup>329</sup> see especially discussion on page 83

<sup>330</sup> see discussion on page 106

<sup>331</sup> this use of *producer's perspective* is not to be confused with the our discussion on page 89

<sup>332</sup> see discussion on page 83

### *Induction and Designation of Factors*

With the introduced triad of situative, distributive, and creative operations in their logical sequencing we have found a basic description for a general course of *settlement formation*, which we can already understand as idealized, as it is abstract (according to the suggested phenomenological approach) and thus not reflecting any particular historical instance or standardized operating system, like the ones we became acquainted with at the beginning of this chapter. Yet, it still lacks the required qualification that would make it comprehensive (according to the suggested systemic approach) in respect to *urban formation*; to this end we ought to additionally scrutinize the according operations as regards their ultimate significance for the city, respectively abstract urban form – notwithstanding an eventual occurrence or applicability within earlier stages of urban development.<sup>333</sup> Consequently, operations that are initially undertaken to induce sedentary life, qualify for a factor of urban form only, when their scope reach as far as the ideal of a city; by this reasoning we also find demonstrated ARGAN's bivalent understanding of the "ideal city" not only as a non-quantitative and thus insubstantial module (concurring with our suggestion for a conditioning system of interrelated factors), but also as an abstract conception of the best possible city and therewith of the best possible urban form, to which any quantitative and substantial city with its actual physical urban form is related to (Argan 1983: 82 ff.).

Without forestalling the detailed explanation of qualitative factors in due course of this thesis, we should illustrate this consideration with an example:

Evidently, the situative operation of investigating for potable water is a major task, and the *existence of sufficient potable water in close reach* of a settlement an indispensable requirement for sedentary life. This can be met by natural condition, with surface waters, such as springs, creeks, rivers and lakes, as well as by artificial means, utilizing ground water through wells or precipitation water through cisterns.<sup>334</sup> Taking this as a qualitative factor implies a balanced relation of water amount within the settlement locale or its immediate vicinity and the number of inhabitants and evolving utilization (e.g. alimentation and hygiene, as well as the feeding of domestic animals and agricultural irrigation, etc.). This proposition surely applies to many sedentary forms, from individual domiciles in caves, hamlets, and estates over villages and towns – even the "water splendour" of the Bronze Age city of Moenjodaro based mainly on its impressively large amount of wells (Jansen 1993). However, for cities in general the proposition fails, taking into account that the early urban societies already contrived technical masterpieces of irrigation canals, dams and reservoirs several kilometers away from their cities to maintain a continuous water supply for agricultural needs as well as to prevent from uncontrolled floods;<sup>335</sup> ultimately in the metropoleis of antiquity the per-capita consumption of fresh water immensely outbalanced the water potential as well as water quality of the urban locale itself, initially calling for sewage systems and later for fresh water supply by means of aqueducts and culverts, in the Roman Empire with lengths up to 130 km.<sup>336</sup>

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<sup>333</sup> compare discussion on page 103

<sup>334</sup> let alone technically sophisticated procedures like in situ water catchment through desalination

<sup>335</sup> compare for instance the canal systems in the Diyala region (Uruk) of Mesopotamia from the 4th millenium BCE (Adams et al. 1972), the Sad el Kafara dam on the Nile, dating ca. 2800 BCE (Garbrecht 1981: 45), or the Marduk (Nimrud) dam on the Tigris, dating ca. 2500 BCE (Garbrecht 1981: 49); see also (Jansen 1993: 14 f.)

<sup>336</sup> compare (Jansen 1993: 14), (Lamprecht 1984: 77), as well as (Garbrecht et al. 1988); see also the original texts of (Vitr. 8) and (Frontin.aqu.)

Consequently, a qualitative factor *existence of sufficient potable water in close reach*, which we could derive from the according situative operation, is too constricted to apply to the city; the wording, though, becomes more effective by substituting existence through *accessibility*, as the according provision for urban form does not depend on the factual existence of water in situ, but on the potentially consumption in situ. Yet, we should as well understand the accessibility of water as just one part of the primary *condition* of the locale that only together with the potential exhaustion of available *resources* and the probable effectuation of agricultural as well as other economic *yields* allows for an urban development of this locale. From here we can follow, that the single factor *accessibility of sufficient potable water in close reach* adds up to a generalized factor, which includes the investigation of several attributes regarding the condition of the locale.

Moreover, we should perceive the mentioned generalized factors of condition, resources, and yield as ingredients of an even more comprehensive concept, eventually manifesting the feasible *permanence* – not only currently of the locale itself, but also of its further urban development and future maintenance. The concept of permanence, deriving from the situative assessment, thus also extends over the outcome of any successive distributive and creative operation, while it does not imply a constancy or stagnancy within the urban development, but an envisioned warranty of the development. Ultimately we recognize with this kind of concept exactly those attributes, which fulfill the specifications of a *cause* determining the motivations for any urban development and consequently affecting the results of the different urban formations: When human beings want to refrain from hunting and gathering (motivation) they need a permanent domicile (result) to commence husbandry; the notion of permanence is accordingly causing the whole development and, beyond any concrete quantification, can be understood as a *qualitative parameter* for the formation of the functional demand.

With the confusion of permanence with constancy or stagnation we already noticed the difficulty regarding the designation of this parameter, which derives from alternating use of language and which we can plausibly anticipate for any other parametral statement; to avoid further wording uncertainty like this, we shall in the following distinguish parametral conceptions from other potential meanings by attaching an inverted comma (') to parameters. Eventually we thus can understand the concept of *'permanence'* as a first conclusive parameter of urban form.

From these considerations, however, we derive two important implications for the induction and designation of qualitative factors in general: on one side we have to understand the operations during the idealized course of urban formation only as starting points, which have to be reconsidered as regards their scope also for the successive development and maintenance of the urban nucleus; for the further elaboration therefore as well as due to their sheer number the operations themselves take a background position in respect to their joint scope, respectively to the *aspects* of the according *constituents* – on the other side we have to designate the different concepts, which serve as qualitative factors, as copious and general as possible by summarizing the according scopes as *criteria* in respect to their impact onto the urban development; this permits the establishment of *parameters* that should be able to include also aspects and operations, which have not been thought of in this employment, or which possibly evolve in the future.



In consideration of these implications that force us to simplify the examination of the idealized course of urban formation by cutting down the number of potential qualitative factors, which in explicatory reasoning resemble *explicanda*, we encounter another significant proposition in respect to the conceptuality of parameters. So far we suggested that from a wide range of operations that ensue within a formation process we can induce scopes, which relate to a comparably much smaller number of aspects that determine the different causes of the three constituents of urban form. From the causes then we can infer to parameters, which determine the formation process. Yet, while the operational scopes, aspects, and constituents describe factual or quantitative (while still conceptual) matters, the parameters serve as imperatives, as abstract and qualitative determinations of how the matters should be; in their impact on the constituents, however, the different aspects of the constituents turn into *Criteria* of the parameters,<sup>337</sup> explaining the various modes, in which a parameter possibly determines urban form. According definitory statements hence read:

Within the complex system conditioning urban form a *parameter*' is a qualitative factor based on an intensional concept that determines the forces employed in urban development as well as it causes urban forms.

Within the qualitative factor causing urban form a *Criterion* is a significant feature or property of the according concept that among other *Criteria* aggregates respectively exemplifies its intension.

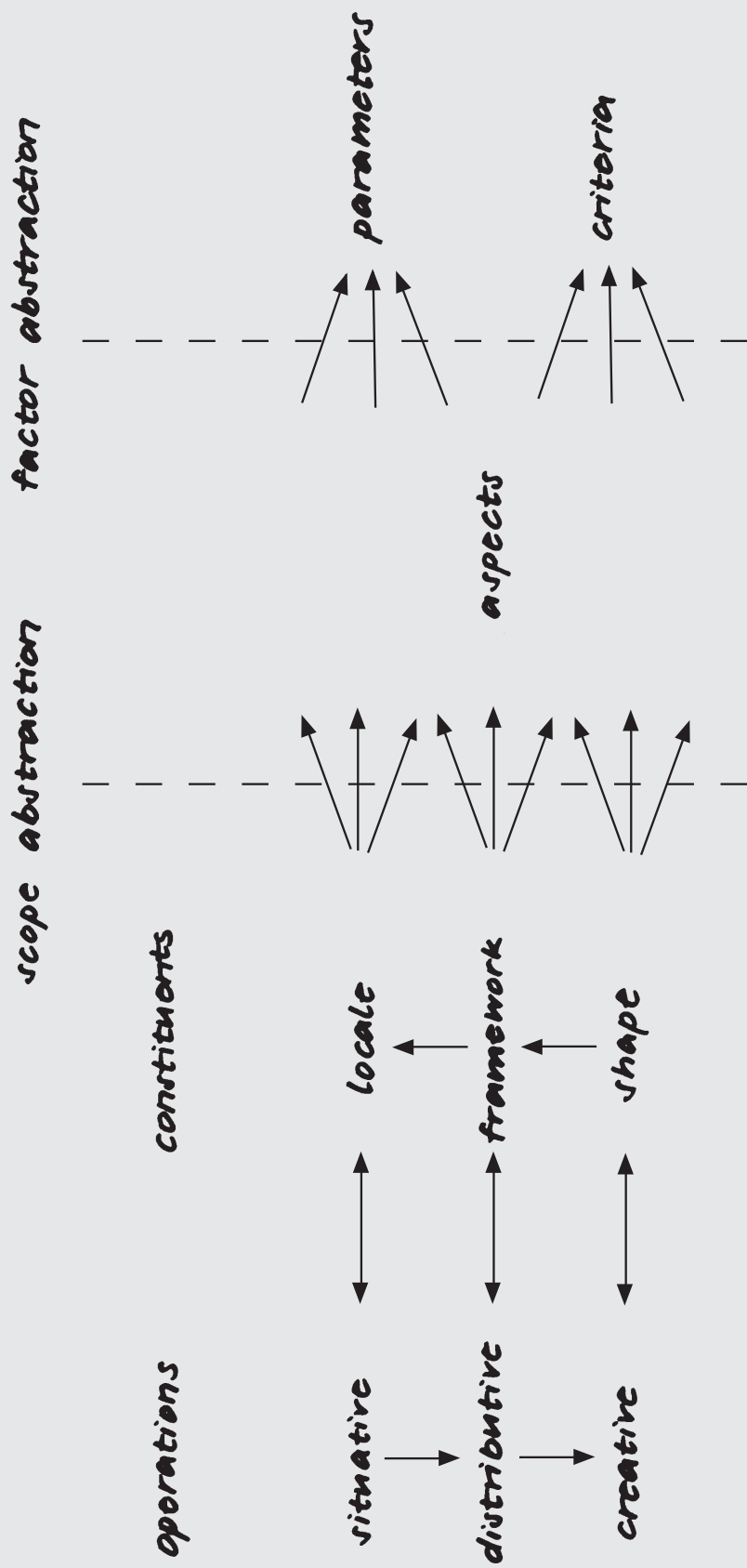
For the further presentation of qualitative factors we thus shall opt for the introduction of three successive levels of examination, which however, do no longer immediately reflect the underlying inductive methodology but illustrate the affiliation of the defined categories in a plausible delineation:

the first level represents a correlation of the factors to their initial constituents - situation, distribution, and creation,  
the second level represents the single parameters, and  
the third level represents the different criteria of the according parameter.

Concluding this demonstration of the induction and designation method, we shall shortly turn to its linguistic characteristics. When hence the designation of the first level factors result from a simple apposition of an adjective and the third level factors retain their nominative form from the original aspect name, the parameters will altogether represent nominalizations; while with the situative and distributive factors the word formation ensues from a nominalization of adjectives, determining how matters should be, the creative factors are constituted by a nominalization of verbs, complying with the creative processes that are undertaken. These characteristics become more obvious when the English concepts are translated into German: here the derivational suffixes *-heit*, *-keit*, and *-tät* indicate an adjectival, the endings *-ung* and *-ion* a verbal origin. Thus, and with regard to the anticipated bilingual readership of this thesis, we shall give a German translation of these and other important concepts in brackets.

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<sup>337</sup> Along with the accentuation of parameters through an inverted comma, criteria in their abstract meaning are capitalized; compare also the short guide on page 271.



Scheme: Induction/Relations  
plate 38

### *Relations and Changes within the System*

The previous description of the CONDITIONING SYSTEM OF INTERRELATED FACTORS in connection with the foregone general reasoning on urban systems already largely provided for and implied the evolving understanding of the qualitative factors' bearing amongst each other; still we might exemplarily return to LEIGHTON's key-words "energy exchange", "holistic community", and "dynamic equilibrium" (Leighton 1959: 197),<sup>338</sup> which pinpoint their intrinsic interrelation, when also the unpredictability of their impact, as well as an according irreversibility and irreducibility. In addition we yet must appreciate, that while the induction of qualitative factors by means of an idealized formation process does induce a *succession* (Reihenfolge), which we shall also employ for the following definition, it does not imply a *ranking* (Rangfolge), which could superimpose certain factors over others. Moreover, we should perceive the factors, although they are induced from individual operations and successive constituents, as not-exclusive in their scope and impact; this becomes evident as soon as we reexamine our previous statement: no framework without locale – no shape without framework.<sup>339</sup> While we so far highlighted here the inherent logical succession, we now also ought to recognize that once a framework and/or shape have been established at a locale, they become part of the local characteristics (as well as the shape before becomes part of the distributive characteristics). For our understanding of factors as concepts this inclusiveness arguably leads to an increase of the conceptual extensions, when, however, the concepts' intensions remain unaffected.

When accepting this notion of *inclusiveness* of qualitative factors, we furthermore understand the difficulty of maintaining a perception of simple proportional relation between quality and quantity once a specific urban system expands. ARGAN argued that such a proportionality, which he attributed to the pre-industrial city, rooted in a "volontà di sviluppo", a will to develop the extant city instead of contraposition it, and thus insinuated a continuity of qualitative premises (Argan 1983: 83);<sup>340</sup> here our thread implies more precisely an ever-growing extension of qualities with every new formal result, which has to be accounted for in the envisioned maintenance of proportion by investigating the impact of the new onto the old as well as by scrutinizing the extension of the old for their value within the new extended system. Thus one cannot simply judge the *new* according to the traditional canon, but has to again reflect the whole, the *extant* with the *new*, in respect to the invariable qualitative premises. Similarly, efforts to emend single qualitative extensions within the system, "suboptimization" as FERGUSON said,<sup>341</sup> are bound to fail, when the envisioned effect of the proposed change is not assessed to the ensuing change of the whole system. Herewith we already recognize the complex implications of the suggested conditioning system of interrelated qualitative factors for future planning; nevertheless it allows for a conclusive view onto the proposed systemic determination of urban form throughout history.

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<sup>338</sup> see also discussion on page 91

<sup>339</sup> see discussion on page 120

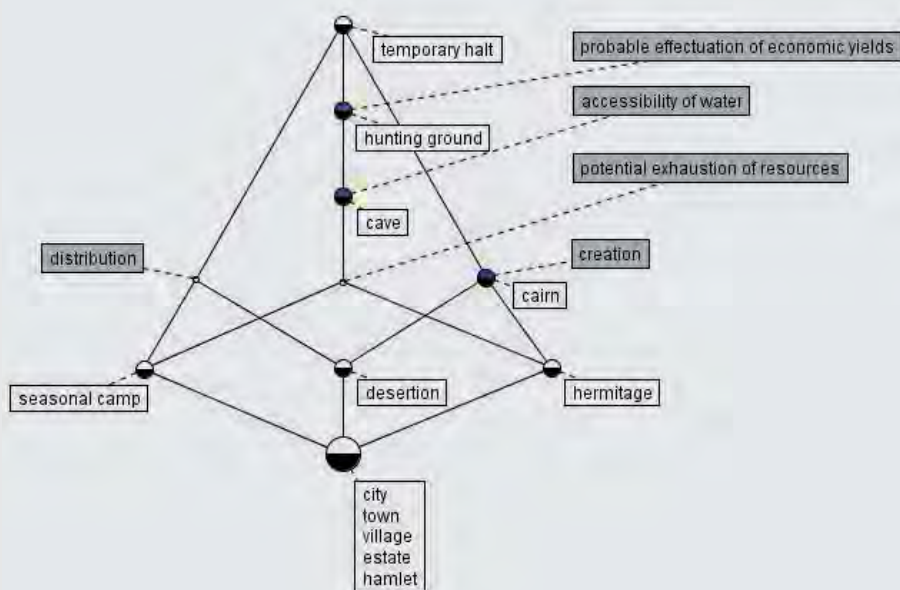
<sup>340</sup> see discussion on page 87

<sup>341</sup> "Suboptimization is the attempt to optimize the performance of a particular subsystem without regard to the effects of this optimization action upon larger whole of which the sub-system is but a constituent part" (Ferguson 1975: 6).



	situation				
	water	resources	yield	distribution	creation
temporary halt					
hunting ground		X			
seasonal camp	X	X	X	X	
cairn					X
cave	X		X		
hermitage	X	X	X		X
hamlet	X	X	X	X	X
estate	X	X	X	X	X
village	X	X	X	X	X
town	X	X	X	X	X
city	X	X	X	X	X
desertion				X	X

= permanent sedentary forms



Scheme: Sedentary Forms 1  
**plate 39**

### *Proposed Ratiocination*

Already before reviewing the idealized course of urban formation in detail and concurrently defining qualitative factors as parameters and their appropriate criteria, our considerations regarding their interrelation within a conditioning system possibly allow for some general conclusions, if not yet a corollary, in respect to an consequential employment of this thesis as well as in particular to the over again stated uncertainty about what urban form is. The according key to this question appears to be the selected inclusiveness of qualitative factors on one side and their correlation with various sedentary entities on the other; as suggested by *formal concept analysis* such a correlation can be expressed in a context like the adjoining one, while we here, in the lack of a comprehensive definition, only insert attributes as they have been described before and thus only obtain a preliminary statement as regards an enduring sojourn at one locale: the accessibility of sufficient potable water in close reach, the potential exhaustion of available resources, the probable effectuation of agricultural and other economic yields, as well as general distributive and creative measures. Already with these attributes, we can assess different sedentary forms for their preconditionary characteristics, and find with hamlets (Weiler), estates (Landgüter), villages (Dörfer), towns (Kleinstädte), and cities (Städte) the superconcept of *permanent settlement*. The relations among the different sedentary forms, however, are well illustrated in the according concept lattice, in which we can discern the increasing significance of attributes starting from a temporary halt down to the entities that present permanent settlements as well as the potential fall-back of the latter to a desertion when situative attributes cease.<sup>342</sup>

For a full ratiocination on a proposed concept *urban form*, one consequently should consider the following detailed catalogue of parameters and criteria for applicable attributes. Then, presumably, the supercontext of *permanent settlement* will fan out in more distinguishable subconcepts, one of which might comprise the determination on what urban form is. Evidently for such a purpose the distinction and variety of attributes is a main issue to precisely specify the resulting concepts. Already now we foresee the significance of distributive and creative factors, which are not yet fully specified – especially with the creative factors we might, however, expect considerations, which are similar to DELFANTE's appraisal of the importance of a compository approach towards sedentation.<sup>343</sup> Still, with regard to our review of manifold urban forms in industrial and postindustrial times, we should assume the necessity of additionally introducing qualitative valences to any methodology resulting from the present reasoning, what of course shall not mislead to another quantitative assessment, but clarify the extent to which the significance of a certain factor can be traced within the according analysis of factual forms as well as the extent to which a certain factor will impact on an envisioned urban design.

Moreover, we should already by now propose these present considerations on parameters and criteria of urban form as another potential approach towards the definitory quandary regarding the *term 'city'* itself, by also understanding it as a concept that largely comprises abstract formal attributes, which are surely main subject to an urbanistic exploration.

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<sup>342</sup> The lattice, of course, allows for many more considerations, such as the correlation of certain sedentary levels within the given set-up; we can for instance recognize that the desertion ranges on the same procedural level as the village, while its outside position expresses well its lack of dwelling quality. A more detailed reasoning, however, can sadly not be undertaken within the present thesis.

<sup>343</sup> see (Delfante 1997: 7f.), as well as the discussion on page 20 f.





### Part 3 The Definition of Qualitative Parameters.

#### A Commonsensical Catalogue

The task of defining universal statements regarding the qualities of urban form at first seems to be an ambitious one, after all being aware of numerous ideas, criticisms, and theories already developed, well presented and thoroughly discussed. Yet, forcing ourselves into this task, we soon recognize that for a start we have to set aside these theories, and principally rely on nothing but our common sense about what determines the form of a city – following HUXLEY's verdict that science is nothing but organized common sense the following part of this thesis is subtitled A COMMONSENSICAL CATALOGUE.<sup>344</sup>

The employed methods of organization for the catalogue are twofold: firstly, a sequence from the basic to the successive, according to the constituents of urban form already singled out;<sup>345</sup> secondly, an analysis from the general to the special, according to the discussed distinction in constituents and their aspects. These methods already imply that the presented parameters are not only incommensurable in their significance and effect,<sup>346</sup> but also subdued to a certain succession and interrelational order, which will be subject to discussion in the last part of this thesis. Once more, here we shall stress the idea of conveying the parameters according to their relevance for urban form as a *product* and not according to their occurrence within the process of urban formation; this again would focus the producer's perspective and reintroduce the underlying motivations, which we, by definitions pointed out before, have to exclude from the present considerations.

Each parameter is specified by several criteria, which are related to the urban aspects and further epitomize the variety of features and ramifications of the parameter itself, notwithstanding, of course, the actual formal or functional expression within a space–time framework. When the present catalogue usually gives an illustration of three criteria, this is not to say that there are no further possible criteria, yet we shall argue that the ones described already enable a comprehensive understanding of the impact of the different parameters, which within the restricted agenda of this thesis seems to be sufficient. The respectively selected urban examples usually show extreme features regarding the according criterion to illustrate their significance for and impact onto urban form, which might be very benevolent or conversely impeding. Naturally, even within the limited field of Western urbanism there is abundant material to choose from; still, not to get out of hand the scale and, of course, the thread of this thesis, we opted for an inversely proportional employment of elaborated examples as regards the immense variety of *faites-urbains* epitomizing parameters and criteria, rather reverting back to already presented examples or quickly glancing at those widely renowned than fully introducing new ones. This is not at all to pretend a decreasing importance within the sequencing of parameters, but on the contrary distinctly highlighting the enormous impact the later parameters have onto urban formation.

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<sup>344</sup> This omnibus verdict results from an aphorism by the English scientist Thomas Henry HUXLEY (1825-95): "Science is, I believe, nothing but trained and organised common sense, differing from the latter only as a veteran may differ from a raw recruit ..." (Huxley 1854: 45). Altogether the results of this catalogue bear the danger of seeming trivial; still, as NORBERG-SCHULZ pointed out: 'Today [...] simple structural relationships are hardly understood and still less respected', what eminently confirms this thesis' basic incentive; see (Norberg-Schulz 1979: 175).

<sup>345</sup> see discussion on page 119 ff.

<sup>346</sup> see discussion on page 119 ff.

The first parameters determine the quality of a certain situation, which represents the prerequisite for any urban development and is *categorical* to a city.<sup>347</sup> They are fundamental regarding the subsequent distributive and creative parameters, as they affect the physical basis of a city: the place where it is.

There are various contributions dealing with the situation of a city or settlement, out of which those from the field of archaeology seem to be very instructive, as they often discuss the process of landtaking and the initial condition for the further sedentary development. Naturally, these occupations with the environment do not necessarily focus on an urban development – archaeology comprising studies on the nomad as well as on the settler, and even the latter not implicitly living in a town or city. Still, the recurring sojourn of human beings at a specific place must be seen as a precondition for a perpetuation of these sojourns towards a continuous habitation – ultimately the development of a city.<sup>348</sup>

The geographer William KIRK (1921-87), for instance, talks about a "phenomenal environment", including natural facts, that might be altered or created by man, and a "behavioral environment", which is subject to concrete human action and creation (Kirk 1951). Thus we find a differentiation between an environment that is part of human action at a certain point in time, and an environment that is at this particular point in time not part of this human action. His colleague Donald A. DAVIDSON distinguishes a "physical environment", covering the actual terrain, its flora, fauna, and climate, a "perceived environment", which isolates out of the physical environment those elements included in human decision-making processes, and ultimately the "behavioral environment", which causes a creative response by the according human beings (Davidson 1972). His succession is, even more diacritically than KIRK's, based on the notion of human action within an environment. Both notions strictly reflect the environment starting from the human being and his actions.

Within our considerations, as discussed before, we seek to focus on the process of urban formation rather than the sociological processes and impacts. Thus, several of the cited environmental attributes reoccur in the following argument, yet are brought into another context or summarized under other terms. Instead of *environment*, which focuses on the interrelation between human beings and their ambience and ought to produce a strong propinquity to existing concepts and theories, *situation* is seemingly more appropriate and flexible to cover the components dealing with the place for urban form. Interestingly, while comparing the different corresponding approaches and models, there evolved a proximity to the VITRUVIAN term of "firmitas" (Vitr. 1, 3, 2).<sup>349</sup> Within his definition of architecture and delineation of the building process "firmitas" stands for the proper foundation and static innocuousness of a building, as well as the use of apt materials. Analogically, the situative parameters and their criteria determine what principally allows for an urban development, yet transcending the mere architectonic issues towards those considerations that have to be taken into account for sustaining habitation at a certain place.

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<sup>347</sup> Our use of the term *situation* includes geographic as well as the topographic features, and thus neglects the differentiation between *situation* and *site*, as conventional in urban geography; for the latter see (Hettner 1895; Penck 1912; Hofmeister 1969).

<sup>348</sup> see also discussion on page 103

<sup>349</sup> "firmitas" translates stability or solidity.

### 3.1.1 permanence' (Beständigkeit')

A city can only be where a city can be.

The principal constituent regarding any urban concept is the existence of a situative relation or *locale* (Ort). Within theoretical or literary occupations, this locale does not necessarily have to be a physical one, as we have seen with utopian models, ideal cities and urban visions,<sup>350</sup> including the concept of a heavenly Jerusalem and Thomas More's Utopia.<sup>351</sup> Neither does the locale have to be immobile; manifold are supposals about swimming, flying, and orbiting cities or city-like entities, not to speak about non-terrestrial ones.<sup>352</sup> Still, any form of this obligatory localization implies a *permanence'* that allows a settlement to develop and to persist; and with a successful development we shall observe an increasing desire for it. This *permanence'* reflects fundamental aspects towards a human dwelling at a certain place: Can I stay where I am? Is the ground stable enough? Are there enough resources to build structures and produce goods? Will this place allow for a yield high enough to feed me and to eventually earn my livelihood?<sup>353</sup>

We shall refer to the subsequent depictions of *permanence'* as geogenic situative criteria, as their underlying aspects are principally independent from human influence or transformation but given, tangible natural facts; in this respect one might also call them objective:

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<sup>350</sup> Within this argument we shall differentiate between utopian approaches, which signify unreal urban concepts, ideal cities, which represent hardly realizable still planned urban concepts, and ultimately urban visions, planned urban concepts which anticipate a technical and societal development to come in the near or medium-term future.

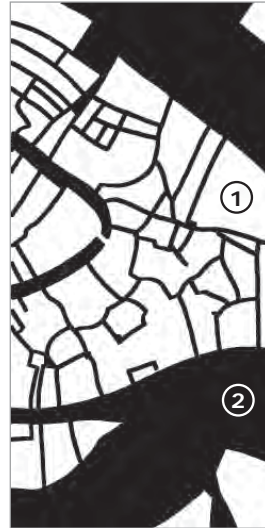
<sup>351</sup> "Heavenly Jerusalem" is accounted for in the biblical apocalypse (Book of Revelation 21, 1 ff.). Very interestingly, it is one of the few paradisiacal visions in World religions that locate life after death within a city, that is at first an ordered urban society. Subliminally, it reflects the important status of urban life during the Middle Ages and the organized cooperative fundamentals of Christianity – pre-stage of the heavenly order to come, as AUGUSTINE (354-430) describes it in "Civitas Dei" (The City of God; ca. 413-26). Of course, the concept itself derives from the notion of a holy place, not accessible during life-time, just as – at latest from 1244 on – Jerusalem was not accessible by Christians due to the Ayyubids' conquest. Nevertheless, the concept comprises an urban formation at a specific locale, which is in paradise. Thomas MORE (1478-1535) had to revert to a conceivably real locale of an unknown island to eventually produce his vision of a societal impossibility, which is thus called "Utopia", i.e. 'Non-place'. In his work from 1516 the city of Utopia and its surroundings are even elaborately described, from what we should conclude that the locale and formation of the city plays an important role in his argumentation for an ideal society; compare (Kegler et al. 2004: 34 ff.).

<sup>352</sup> We shall quote out of many only five author of according designs:

August WENZEL HABLIK (1881-1934): "Der Bau der Luftkolonie" (1908), and "Luftgebäude, große fliegende Siedlung (1907/1914) (Groot et al. 1982: 63ff.); Georgy Tikhonovich KRUTIKOV (1899-1958): "Flying City" (1928) (Chan-Magomedov et al. 1983); Richard Buckminster FULLER (1895-1983): "Cloud Structure" (1962) (Marks 1960: 235ff.) (Fuller 1981: 336ff.); Hal MOGGRIDGE (\*1936): "Sea City" (ca. 1971) (Dahinden 1971: 136f.); Thomas SHANNON (\*1947): "Airborne Islands" (1973-79) (Schuyt et al. 1980: 105ff.) Literary and cinematic examples are even more manifold: "Cloudcuckooland" (Nephelokokygia) by ARISTOPHANES (The birds/ornithes; 414 BCE), "Laputa" by Jonathan SWIFT (Gulliver's Travels; 1726/35), or "Mega Liner MA 156" by Michael MARSHALL SMITH (Spares; 1996), "2001: A Space Odyssey" (Arthur C. CLARKE and Stanley KUBRICK 1968), "Star Trek" (Eugene Wesley RODDENBERRY, since 1966), or "Star Wars" (George Walton LUCAS, Jr., since 1977).

<sup>353</sup> We shall again clarify that the present concept refers to the permanence of any potential development, not a constancy of every development occurred – this, however, has been inherently excluded already by our understanding of the city as a system; see discussion on page 89 as well as on page 99 and on page 122. Consequently permanence' is the basis for all subsequent parameters, as they also induce permanence of their impact, no matter their eventual physical expressions.





1 Consolidated Islands  
2 Laguna

country  
Italy / Veneto  
coordinates  
45° 26' 04" N – 12° 20' 22" E  
Piazza San Marco  
elevation  
2 m  
population  
268,516 (2007)  
size  
413 km<sup>2</sup>  
density  
651 /km<sup>2</sup>  
foundation / rst citing  
421  
source  
<http://it.wikipedia.org/wiki/Venezia> (20.04.2008)



Venice  
Image © 2007 DigitalGlobe

**plate 40**

it is the terrain with its varying ground stability of different locations and the sufficient availability of potable water; within this terrain we will encounter an investigation of the accessible resources as well as an evaluation of the ground value to optimize the relation between built-on areas and open land for other purposes; and eventually there will be an evaluation and improvement of the yield of the surrounding grounds in respect to cultivation and recreation.<sup>354</sup> These aspects lead to a reflection of the relationship between size and costs to establish a settlement in regard to the existing building techniques, import and export of building material, and the possible nutrition and availability of further goods.

#### 3.1.1.1 Condition

Even though today mankind appears to have immense technical and economical means to produce urban entities almost everywhere, still the primary condition of a locale is a basic criterion for the permanence of a settlement and any urban development. *Condition* describes those aspects of a locale, which are given by nature and usually not subject to major human labor to obtain or to maintain.<sup>355</sup>

A stability of the ground or foundation has to be existent, or at least relatively easily reinforced by substructures, to allow for the establishment of buildings and infrastructure at reasonable costs and efforts. The same accounts for an access to potable water, which might not be given but comparatively easily produced – its availability, however, is a precondition before other resources and yields.<sup>356</sup>

##### *Venice*

Venice, as a city on the water, epitomizes the human interaction with the condition of an extreme urban locale: situated on 117 islands within a lagoon of the Adriatic,<sup>357</sup> the basis for the urban development had to be produced by ramming millions of oak-, elm-, and larch-poles into the silty ground, filling the interspaces with adobe and constructing the *Zattaron* on top, a wooden pontoon stabilized by bricks.<sup>358</sup> Only on this basis, which was established in the 16th century, the city could be developed to the current size. The substructure is evidently very sensitive regarding changing water levels; as high waters lead to a deluge of the pontoon and lower stories, low waters cause heavy damage to the static effective poles, which erode when exposed to air. Without immediate fresh-water supply,

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<sup>354</sup> While talking about geogenic situative criteria we should refer to DAVIDSON's understanding of the terrain as "the sum of the form of the land, the soil and the water attributes" (Ucko et al. 1972: 17).

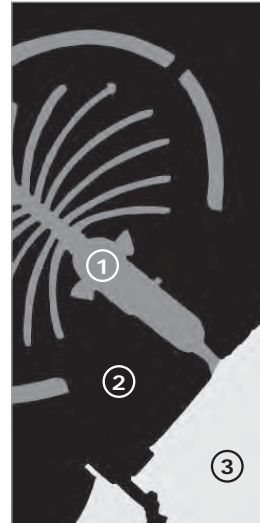
<sup>355</sup> Consequently, *Condition* differs from the concepts of phenomenal and behavioral environment (KIRK) as well as of physical, perceived, and behavioral environment (DAVIDSON), as it singles out the mere condition of a locale from the overall environmental aspects, such as climate, flora, and fauna. Still, it somewhat relates to KIRK's *phenomenal environment*, as we seek to strengthen the fact, that *condition* refers to natural facts that might be altered or created, unnoted our basic thesis that the production of urban form generally implies a behavioral approach. We shall use the term *condition*, instead of *terrain*, to include possible locales, which are produced by man and do not have a natural terrain.

<sup>356</sup> The availability of potable water is assigned to the criterion *Condition* according to its fundamental importance for several natural resources and any yield. There is, of course, also reason to understand water as a dominant resource, which can be accessed and consumed just as wood, stone or metal. Similarly we know of the collection of precipitable water or we can imagine a production of water out of its chemical components (still these components have to exist in sufficient scale and the technical means have to run stable and continuously) – both would suggest a categorization to the criterion *Yield*, as it will be described later. Yet, exactly this ambiguity results in an inadequacy, assigning it to either of these two criteria.

<sup>357</sup> see (Egli 1962: 56-58)

<sup>358</sup> see also (Becker 2002: 35 ff.)





- 1 The Palm
- 2 Persian Gulf
- 3 Mainland

country  
United Arab Emirates

coordinates  
25° 06' 45" N – 55° 08' 40" E

elevation  
1 m

population  
4,000 (envisioned residents)

size  
5,6 km<sup>2</sup>

density  
714 /km<sup>2</sup>

foundation / first citing  
2001

source  
<http://www.designbuild-network.com/projects/palm-jumeirah/> (27.07.2008)



Jumeirah (Dubai) –  
The Palm Jumeirah  
Image © 2007 DigitalGlobe

**plate 41**



the population previously had to collect precipitable water in cisterns; only in the 19th century, after several unsuccessful endeavors, water pipes could be built, carrying freshwater from the mainland into the city.<sup>359</sup> Consequently we have to assert that the permanence of Venice in regard to the condition of its urban locale is dependant on great human effort in manpower as well as technical and financial means.

#### *Dubai*

This accounts even more to the current land reclamation development in Dubai. To multiply valuable waterfront sites in this Arab emirate, the governmental developer Nakheel decided on constructing several artificial islands close to the natural shore, which will include luxury housing and associated infrastructural and tourist functions. Since 2001 the first palm shaped development, called *The Palm Jumeirah*, has been under construction for which some 100 million cubic meters of sand and rock have been heaped up. To avoid destruction by exposure to the open sea, an encircling 11 km long breakwater is chief part of this development that together with the «trunk» and the «fronds» of the palm shape includes 560 ha of new land; the whole project, which also comprises major building activity on the mainland, shall soon accommodate some 100.000 inhabitants and visitors.<sup>360</sup> Two upcoming additional palm developments are even larger, to be followed by more waterfront projects.<sup>361</sup> In these cases the developers do not only produce a completely new basis for an urban development including all necessary infrastructures (at this stage of argumentation predominately the fresh-water supply), but they also create a new ecological system, whose impact on the extant ambience however is not yet entirely foreseeable.<sup>362</sup>

#### 3.1.1.2 Resources

The urban development of a locale depends on the consumption and processing of resources, such as building material (wood, adobe, stone, etc.) as well as manufacturing substances (mainly minerals for craft or industrial purposes as well as materials for energy generation). In general, at least materials for the immediate establishment activity are in close reach, complemented by more resources searched for as they become desirable or necessary. Thus, *Resources* describes those aspects of a locale, which are subject to human investigation, access and ensuing removal and utilization.<sup>363</sup> To a certain extent also nourishments can be

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<sup>359</sup> see (Goy 1997; Romanelli 1997; Huse 2005)

<sup>360</sup> see (Angéil 2006; Nakheel 2006a; Nakheel 2006b; SPG Media Limited 2007)

<sup>361</sup> The other two palm projects, "Jebel Ali" and "Deira", were scheduled to be finished in 2007, respectively 2009, while both are currently still under construction. Apart from "The World", a resort development comprising some 200 small islands in shape of a world map, "Dubai Waterfront" represents the largest urban development of Nakheel with some 440 sqkm and a planned population of 1.000.000 (Nakheel 2006b).

<sup>362</sup> Nakheel is promoting the new ecosystem of the Jumeirah development on its website. Importance is given especially to the great advantages for diving and fishing, strictly according to the sales purposes of the company, which has to focus on the pay-back of this enormous investment.

<sup>363</sup> Consequently, *Resources* goes beyond the mere condition of a locale; it implies natural facts (usually excluding the climate as far as it is not affecting renewable resources), which are not necessarily immediately obvious to man and cause bigger effort to obtain, either in regard to the specialty of its deposit (minerals) or sheer quantity (land, wood etc.). In comparison to KIRK and DAVIDSON, *Resources* comprises those materials, which are usually generated by nature and subject to human utilization, and thus represents a component of the behavioral environment (with DAVIDSON similarly the perceived and behavioral environment); compare discussion on page 130.



- 1 Medieval City
- 2 Hinterland
- 3 Marais Salants
- 4 Atlantic Ocean

*country*  
 France / Pays de la Loire  
*coordinates*  
 47° 19' 41" N – 02° 25' 46" W  
 Place Saint-Aubin  
*elevation*  
 0 to 61 m  
*population*  
 13,603 (1999)  
*size*  
 81 km<sup>2</sup>  
*density*  
 167 /km<sup>2</sup>  
*foundation / rst citing*  
 ca. 848  
*source*  
<http://fr.wikipedia.org/wiki/Gu%C3%A9rande> (20.04.2008)



Guérande  
 Image © 2007 Cnes/Spot Image

**plate 42**

considered a resource, such as wild game, plants, and fish.<sup>364</sup> The most important resource, however, is the surrounding land, which has to be large enough to bear all necessary resources and to give space for cultivation as well as the disposal of waste. Also, this environing land is essential for a possible extension of the settlement itself and the subsequent enlargement of its environs.

#### *Guérande*

The utilization of a rare resource and its positive impact on the persistence of a settlement in a certain locale can be observed with the French town of Guérande on the Atlantic shore. Its location on a peninsula with access to sea water in the shoals was used for the exploitation of salt by small salterns already in early Iron Age.<sup>365</sup> The establishment of large maritime salt pans and evaporation ponds in the Middle Ages then allowed for a prosperous development of the town,<sup>366</sup> which temporarily became a bishop's see in 848 and afforded an imposing fortification 1343-1488.<sup>367</sup> Currently about a fourth of the municipal area of Guérande (ca. 2.000 ha) is occupied by the *Marais Salants*, the large channel and retention system between the town and the ocean, which produces a widely renowned table salt.<sup>368</sup> Even though today the dependence on immediate access to other resources is not as vital as in earlier times, we still encounter substantial land use for foresting and agriculture within the city limits.<sup>369</sup>

The occurrence of salt and other minerals often played a crucial role in the localization of a settlement, not only for alimentation purposes, as we have just seen, but also for relieving human ailments. Important features in this context are sources of mineral or thermal water, which are utilized for inner and outer medication. The development of larger spas gives evidence to this significant resource. With increasing medical knowledge, however, we also find the use of other substances carrying minerals, for instance fango, turf, or brine.<sup>370</sup>

#### *Urk*

The effort, which is often undertaken to gain more land resources, is epitomized by the Dutch *polder* program; albeit on a regional and ultimately national level, its impact on the urban development is evident. Since the 16th century the densely populated and highly urbanized Netherlands turned their flood protection measures into vast land reclamation. From 1932 on, with the production of the 32 km long *Afsluitdijk* (closure levee), the former maritime *Zuiderzee* was turned into

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<sup>364</sup> In the same line of the previous annotation, wild flora and fauna are generated naturally without major human control and have to be hunted, gathered, or fished – usually without completely foreseeable success.

<sup>365</sup> According to Roman authors the region also featured considerable tin deposits for the production of Bronze; MORLENT ascribes the cultivation of the *Marais Salants* to the Saxons (Morlent 1819: 99).

<sup>366</sup> see (Gierloff-Emden 1981: 119 f.)

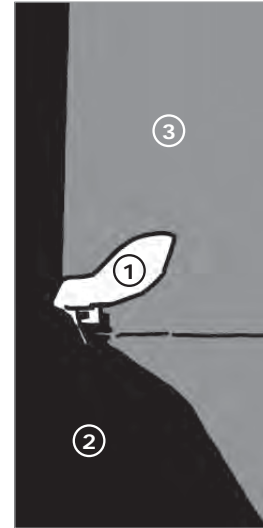
<sup>367</sup> see (Morlent 1819; Gallicé 2003)

<sup>368</sup> see (SSNOF 1980; Gierloff-Emden 1981; Buron 1999)

<sup>369</sup> The built area of the town itself remained relatively small, but the total number of inhabitants together with the surrounding villages adds up to 17.000.

<sup>370</sup> These resources, of course, refer to the health of the dwellers or visitors of a locale; however, they are not enclosed in the *Health* criterion, which is to be described later, as their occurrence and utilization conform with any other tangible resource; compare also discussion on page 155.





- 1 Former Island
- 2 IJsselmeer
- 3 Land Reclamation

*country*  
 Netherlands / Flevoland  
*coordinates*  
 52° 39' 41" N – 05° 35' 43" E  
 Wijk 1  
*elevation*  
 3 m  
*population*  
 17,767 (2007)  
*size*  
 110 km<sup>2</sup>  
*density*  
 1,540 /km<sup>2</sup>  
*foundation / rst citing*  
 966  
*source*  
<http://nl.wikipedia.org/wiki/Urk> (20.04.2008)



Urk  
 Image © 2007  
 Aerodata International Surveys

**plate 43**

the freshwater IJsselmeer,<sup>371</sup> and immense draining actions brought forth several new areas for cultivation and urbanization.<sup>372</sup>

Within this process Urk, a significant sea-angling harbor on an island situated in the center of the Zuiderzee, became a continental town.<sup>373</sup> Whereas the old island was divided into a small town on an elevated adobe plateau of 12 ha and attached grassland of some 70 ha, today's town covers already more than the old island surface and extends administratively over 1.150 ha urbanized area and agricultural hinterland. Accordingly, the population grew from some 4.200 in 1940 to 17.000 in 2003.<sup>374</sup> Still being an important fishery location, even though at larger distance to the open sea, Urk nowadays hosts considerable industries and trade companies, which were enabled through the population growth as well as through the integration into the regional traffic network.

### 3.1.1.3 Yield

To assure enduring alimentation in a certain locale, it is usually not sufficient to rely on natural resources. Agriculture and animal husbandry are consequently substantial to any sedentary life; both imply human intervention into natural processes – viz cultivation, including planting and harvesting, as well as domestication, including breeding and butchering – and lead to the improvement of output, ultimately producing a surplus, which has to be stored or otherwise processed.<sup>375</sup> Accordingly, *Yield* describes those aspects of a locale, which are subject to recurring or permanent human investment, maintenance, and absorption.<sup>376</sup> In an urban context, however, the yield of the immediate environs soon has to be complemented by trade goods from other places; this is due also for those goods and resources, which cannot be obtained from or at a certain locale. To do so, locally produced goods, which exceed the current demand, are given in exchange for foreign goods; an increased foreign demand for some of these local goods might even lead to an optimization of and concentration on the according production to the disadvantage of other products, which can be more easily obtained from alien producers. Consequently, we encounter trade as an indirect component of the yield criterion, as it can be determined as a transformation of output,

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<sup>371</sup> In Dutch, "zee" stands for open sea, whereas "meer" for lake.

<sup>372</sup> see (Buhlmann 1975; Camp et al. 1992)

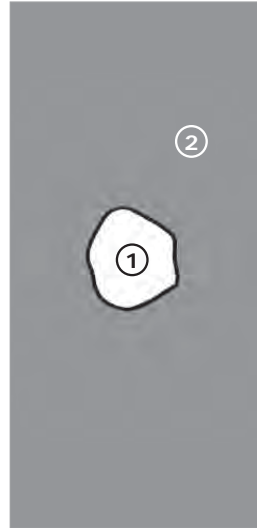
<sup>373</sup> The draining of the so-called «Northeast polder», of which Urk is part today, started in 1936. In 1939 Urk was linked with the town of Lemmer by a 31,5 km long dam, in 1942 the land reclamation was executed, followed by a first road connection in 1948 (Dissel 1991; Camp et al. 1992; Gemeente Urk 2007).

<sup>374</sup> All data presented derives from the official website of the municipality of Urk (Gemeente Urk 2007), and should count accurate enough for our purposes.

<sup>375</sup> Surplus of alimentation as a dominant stimulus for cultural development and accordingly for urbanization has been stated with various authors, and gained major recognition by CHILDE (Childe 1936; Childe 1951). Also, his delineation for the determination of urban culture states the importance of collectively administrating this surplus as important criterion (Childe 1950: 11).

<sup>376</sup> Consequently, *Yield* transcends the preceding criteria, as it depicts humanly transformed and renewed natural facts (again excluding the climate, as far as it is not determining the yield directly) and hence represents a definite component of the behavioral environment after KIRK and DAVIDSON.





1 Medieval City  
2 Agricultural Hinterland

*country*  
Germany / North Rhine-Westphalia  
*coordinates*  
51° 34' 18" N – 08° 06' 30" E  
Domplatz  
*elevation*  
90 m  
*population*  
48,442 (2006)  
*size*  
86 km<sup>2</sup>  
*density*  
565 /km<sup>2</sup>  
*foundation / rst citing*  
836  
*source*  
<http://de.wikipedia.org/wiki/Soest> (20.04.2008)



Soest  
Image © 2007 GeoContent

**plate 44**



extending the scope from the production of local goods to a locally generated added value, eventually including financial revenue.<sup>377</sup>

#### Soest

The significance of an expected high agricultural output at a certain urban locale can be observed since the early urbanization in the potamic cultures, but also in prehistoric Europe (Clark 1952: 91 ff.). Yet, there the escalation of urban foundations in the Middle Ages,<sup>378</sup> gives not only according evidence,<sup>379</sup> but presents with the appearance of the rural burgher an even stronger interlink between the urban nucleus and the surrounding grounds (Pirenne 1925: 217 f.) and (Bockholt 1987: 49).<sup>380</sup> The quality of the soil considerably determined the localization and improvement of cities in medieval times, and simultaneously extended the urban range beyond the city walls.<sup>381</sup> In addition the innovation of the three-field rotation led to formerly unknown harvests.

We can observe this well with Soest, which locates on fertile loess grounds in the sparsely wooded North West German lowlands.<sup>382</sup> The successful cultivation of cereals and sugar beet,<sup>383</sup> which ensued in its fiefdom of the *Soester Börde* since early medieval times,<sup>384</sup> highly promoted the development of the city: Soest soon

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<sup>377</sup> Arguably, the yield criterion, as it is envisioned here, comprises most economic features of a city: all manufacturing processes, which we can find in the urban context, start from the nutrition surplus, which is originally developed agriculturally from the locale. Only this surplus allows for the specialization and differentiation of the urban society, which in turn cannot be understood out of a mere local demand, but only by taking into account the existence of regional and interregional trade: A local demand might be satisfied within a non-specialized community, the production of consumption goods by specialists however involves greater outlet to be effective. Yet, the wider understanding of yield results not only on the nourishment surplus (agricultural yield) as a vehicle for enabling the production of trading goods, nor on the necessity for a surplus within the different categories of consumption goods (manufacturing yield); it represents itself also in the trade process, which is, as defined, subject to recurring or permanent human investment, maintenance, and absorption.

<sup>378</sup> Heinz STOOB (1919-97) names the period of great urbanization from 1150-1450 in Central Europe "mittelalterlicher Riese" ('medieval giant'); an urbanization, which in the total number of urban foundations exceeds the industrial period at large (Stoob 1970: 19 ff.).

<sup>379</sup> For the development of cities in the Middle Ages see for instance (Stoob 1970; Ennen 1972; Guidoni 1978; Isenmann 1988; Schmieder 2005), (Mumford 1961: 243-314), (Stoob 1979: 131-194), or (Pitz 1991: 151-255).

<sup>380</sup> The phenomenon *Ackerbürgerstädte* describes towns, whose economy still relies on agriculture (Bockholt 1987). But also in bigger cities, there remained a certain amount of citizens employed in farming on public grounds in and outside the city walls. In contrast to regular peasant the rural burghers tilled only small acreages, but reaped the benefits of citizenship (after all the absence of corvee). They usually exerted also a handicraft in and contributed to the common urban services. Depending on the economic success their main occupation laid here or there, yet the cultivation remained an obligation, which however could be passed in leasehold.

<sup>381</sup> This phenomenon, however, did not originate in medieval times. Already in ancient Greece we find this kind of cities and towns accommodating farmers, which cultivated the environs – also at this time the city not necessarily controlled only its area *intra muros* (as discussed earlier; see footnote 11 on page 17); the rural interlink of the Greek poleis is described with (Cosmopoulos 2001) and (Hansen 2006: 93 f.).

<sup>382</sup> Preceding settlements date back to Neolithic times; for a short account on the city's development see (HHS 1963: 963-969).

<sup>383</sup> Interestingly, the German term for cereals 'Getreide' goes back to the Middle High German 'getregede', which signifies 'crop' or 'yield' (Kluge 1883: 321).

<sup>384</sup> The term *Börde* itself epitomizes the affiliation of city and hinterland; in addition to its scenic signification today, it stood for tax and jurisdictional district (Kluge 1883: 126), also in the case of Soest producing a mutual dependence (Römling 2005: 64 ff.).



- 1 Medieval City
- 2 Harbor
- 3 Hinterland

country  
Germany / North Rhine-Westphalia  
coordinates  
51° 26' 08" N – 06° 45' 37" E  
Alter Markt  
elevation  
31 m  
population  
495,668 (2007)  
size  
233 km<sup>2</sup>  
density  
2,129 /km<sup>2</sup>  
foundation / rst citing  
883  
source  
<http://de.wikipedia.org/wiki/Duisburg> (20.04.2008)



Duisburg  
Image © 2008 AeroWest

**plate 45**

became a main member of the Hanseatic League and principal Westphalian municipality, in 1450 having a size of some 100 ha (within the city wall) and ca. 10.000 inhabitants.<sup>385</sup> Suffering from economical and political difficulties, which caught many European cities in early modern times, and a subsequent decrease of population and prestige, Soest always relied on its agricultural prosperity,<sup>386</sup> and was able to compensate the other, declining economical sectors. To this date the city and its environs play an important role in the food industry.

#### *Duisburg*

Within the formal urban context, trade as an important feature of the yield criterion can be visualized only with larger facilities for storage and shipping. This is epitomized by port cities, which attribute most of their economic success to trade. Usually they are based at an outstanding location on waterways and within a regional traffic network, an aspect of the urban locale that is to be discussed later on. Still, most of these cities originally featured also a substantial agricultural and manufacturing yield within the city limits or its environs; this eventually led to the development of greater trade services, which during time and the attraction of foreign yield ultimately might have outperformed the direct yield from local surplus.

A good example for this process is Duisburg, today Europe's largest inland port. Despite some earlier settlement activities, the city developed out of Germanic and presumably Roman fortifications at the strategically important estuary of the Ruhr River into the Rhine,<sup>387</sup> soon becoming a Free Imperial City.<sup>388</sup> In addition to the agricultural use of the environs, there was early considerable utilization of wood, adobe, and already minerals and coal. Only in medieval times the stock turnover from land transportation on the *Hellweg* to the water transportation on the Rhine laid ground for the development of a port,<sup>389</sup> that soon maintained trade relations upstream towards Cologne, Mainz and the later Swiss confederation, downstream to the Netherlands, as well as to the eastern and northeastern members of the Hanseatic league. Notwithstanding the natural dislocation of the Rhine in the 13th century some two kilometers to the West, which inhibited direct access to the main waterway, the trading locale managed to perpetuate its significance by the establishment of special shipping routes and artificial waterways (*Börteschiffahrt*), as well as new docks and port facilities (*Ruhrort*). Ultimately, the industrial exploitation of the large coal deposits and the smelting of steel from the 19th century, which thoroughly changed the cityscape,<sup>390</sup> manifested the port's importance and the city's yield out of trade.

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<sup>385</sup> see (Römling 2005) and (Egli 1962: 132)

<sup>386</sup> see (Kuske 1943: 11ff.)

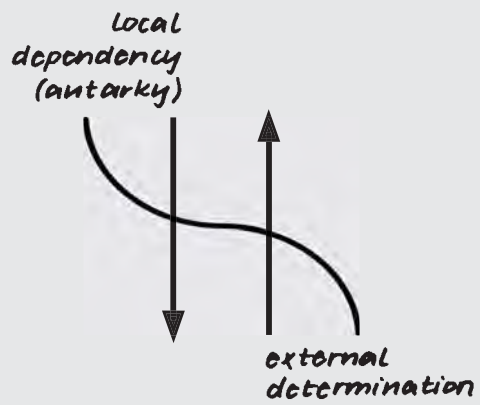
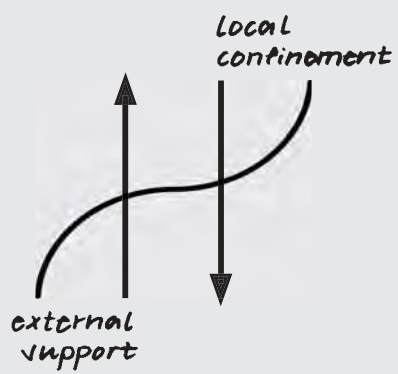
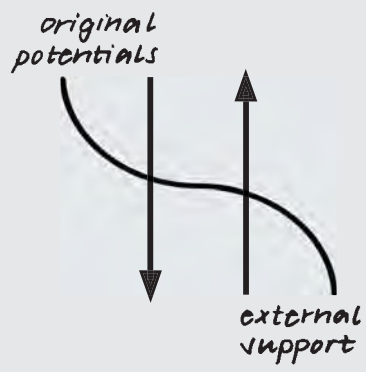
<sup>387</sup> see (Averdunk et al. 1927: 1 ff.) and (Roden 1970: 14 ff.); for a short account on the city's development see (HHS 1963: 251-260).

<sup>388</sup> The status of a *Free Imperial City* (*reichsunmittelbare Stadt*) was in medieval times assigned by the emperor of the Holy Roman Empire and granted important and prosperous cities independence from local and feudal impact. The city authorities were subordinated only to the imperial administration, i.e. in reality independent in their economic and social policies. The introduction of *Imperial Immediacy* (*Reichsunmittelbarkeit*) epitomizes the importance of urban development in medieval Germany (Schmidt 1957).

<sup>389</sup> see (Trapp 1983: 364)

<sup>390</sup> see (Haase 1999)





In spite of the sometimes enormous human impact, which we encountered while reviewing the examples, the presented criteria of *permanence*<sup>391</sup> refer basically to geogenic, that is tangible natural facts. Purging the criteria from these heavy customizations, which we shall render extraordinary endeavors,<sup>391</sup> we still recognize with them varying modes of human employment in regard to the given situation: within *Condition* the activity is limited to occasional examination or improvement; within *Resources* the investigation and succeeding exhaustion of limited or renewable material already represent long-term actions; within *Yield* ultimately we encounter not only an continuing depletion of resources but an ongoing interaction with the urban locale and its environment, including the activation and control of natural processes. Hence, we can differentiate the employment by its increasing extensity rather than its intermittent intensity.<sup>392</sup> Moreover, when the first two can be considered primarily phenomenal, only eventually causing specific approaches, the latter represents a predominately behavioral criterion.<sup>393</sup>

All cited criteria are usually subject to efficiency considerations, that is the expectation of a maximum output at a minimal effort.<sup>394</sup> Thus, we will find according to the purposes an optimized determination within the urban locale and the surroundings: stable ground for buildings, fertile ground for nourishment regarding varying agricultural return, etc. Some given deficiencies can be made up within the urban locale, most likely the cultivation of adapt field-fruits than exceptional ones; regarding the condition, as we have seen, there might be a reinforcement of built-on grounds or external water supply; other shortages have to be compensated by trade. Eventually, this efficiency is never a strict economical one (as we will see with the following parameters) – still, scarcities as well as abundances will have to be balanced to persist in a certain locale.

Within the geogenic situative criteria of *permanence*<sup>391</sup> consequently we might encounter some basic relationships:

- the worse the condition of an urban locale, the availability of resources, and the maintenance of yield are, the higher is the necessity of external support for the settlement;
- the higher the necessity of external support for a settlement is, the lower is its local confinement;

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<sup>391</sup> At this point we ought to remember that the presented examples shall epitomize the significance of a certain criterion and thus often represent extrema.

<sup>392</sup> Extraordinary human impact onto an urban locale, as cited, usually occurs singularly (i.e. the reinforcement of the condition in Venice or Dubai, respectively the reclamation of new land resources at Urk) or results in massive utilization of natural processes (i.e. the naturally generated salt, which is at length extracted from the ocean in Guérande). By contrast the achievement of any yield, in agriculture or trade, involves large parts of the urban society (capacity) at a permanent exertion (intensity); extensity is the product of capacity times intensity ( $Q = C \cdot I$ ).

<sup>393</sup> Following both KIRK and DAVIDSON (Kirk 1951; Davidson 1972).

From there, we easily affirm that this significant human approach towards the natural facts of a locale is ultimately related to the successful sedentation of man, and thus, as discussed before, takes great part in any conceptualization of urban development.

<sup>394</sup> A general principle regarding the economic impact on settlement patterns by Wilbur ZELINSKY (\*1921) states that within "the nexus of economic interchange, under the rules that vary from culture to culture, people tend to sort themselves out in an areal manner to attain the greatest efficiency, i.e. minimum cost and maximum return" (Zelinsky 1966: 35). We surely can translate this to the inner-settlement development under the same constraint; for efficiency considerations see also discussion on page 89.

- with decreasing local dependency, we find an increasing external determination of a settlement.

A certain urban locale seldom allows for a true autarky regarding the discussed criteria. After all with the further urban development of a settlement, there will be a demand for goods, which go beyond a mere subsistence economy and cannot be satisfied by local products. Still the determination regarding some of these products is moderated by the fact that a settlement itself most likely offers goods extraordinary to other settlements.<sup>395</sup> A stringent economical occupation should be deviant in this thesis; still the export/import issue and the resulting balance of trade exceptionally determine not only the further development but the sheer *permanence*' of an urban locale. Without any local resource or yield the existence of a settlement would be completely dependent on supply from outside, which is inefficient and usually avoided.

Of course, throughout history we do find examples, where the occurrence of an important resource justified the establishment of a settlement in an otherwise poor environment, nowadays for instance represented by off-shore oil rigs, which also call for an enormous effort in improving the condition of an urban locale. Also the establishment of trading bases might be an example for developing a hardly suitable or inapt urban locale; here the permanence of an infrastructural system to distribute yield and thereby sustain other urban locales can give reason for the external maintenance. However, any support is ceased as soon as the benefit from the development of these urban locales ends, viz that the maintenance becomes inefficient – in any case, it will be started only, when there is the expectation of a benefit for an uncertain but predictable duration.<sup>396</sup>

Summarizing these criteria we recognize the importance of the urban locale and the resulting implications of an efficient utilization of its aspects. The urban locale has to enable and to ensure an urban development exceeding a first sedentation and grant subsistence and persistence for a longer time period. The significance of certain features within an urban locale, of course, will vary according to changing purposes and demands; however, substantially there will always be the necessity for an urban locale itself including a certain condition, varying resources, and sufficient yield. Translating this into a parametral statement, we understand *permanence*' as the most *conclusive* concept: we find it as an underlying matter of course within the examined aspects as well as the constituents of urban form itself.<sup>397</sup> This *permanence*', of course, is determined not only by the scope of the involved persons, but also by unavoidable natural incidents, which change the criteria of an urban locale and cannot be compensated otherwise. *permanence*' ultimately must be seen as the precondition for any urban development.

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<sup>395</sup> see also (Pirenne 1925: 130)

<sup>396</sup> These examples only take efficiency considerations into account, that is that they remain with the discussion about condition, resources, and yield. Of course, there are other examples, which result from other considerations to be discussed in the following.

<sup>397</sup> In this context see also HOFMEISTER's understanding of "Langlebigkeit" of the urban physis, from where we shall induce the applicability of *permanence*' to all parameters of urban form (Hofmeister 1969: 38).



### 3.1.2 attractiveness' (Attraktivität')

A city can only be where man wants it to be.

Almost synchronically to the investigation whether man can be and persist in a certain locale there will be an orientation about the assets and obstacles of abiding in this locale, which are judged upon due to a sometimes inscrutable or irrational, at any rate complex reasoning.<sup>398</sup> This situative *orientation* (Befindlichkeit) already played an important – if not *the* important – role in the pre-urban period, when nomads had to choose a locale for their bivouac or a periodical dwelling. Firstly, safety, health and aesthetical aspects led to the appeal of a certain place. Considerations about the nutrition only came second, as nourishment had to be hunted or collected and was eventually brought to the locale of accommodation within short intervals.

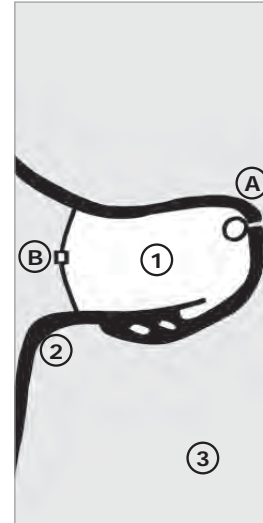
With the change towards a sedentary life in the proto-urban period the exigencies of orientation were more and more considered in relation to the yield opportunities, ultimately to permanence of a locale. Nevertheless, out of many possible locales, the chosen one had to have a significant appeal, that is an *attractiveness'*, to eventually remain for a longer, indefinite period of time and to produce a settlement: Do I feel safe where I am, that is do I have natural shelter from human adversaries, dangerous animals, extreme weathers or potential natural disasters – now and in the foreseeable future – or do I have to produce this shelter myself? Will this place make me sick, when I stay here for a longer time? Do I like this place because of its natural beauty or my cultural understanding, my history or my historicity?

We shall refer to the subsequent depictions of *attractiveness'* as suggestive situative criteria, as their offspring is related to the human perception of tangible as well as intangible natural facts, which are consequently subject to potential interaction. Focusing on the geogenic features of a location without initial human transformation one also might call them subjective-passive.<sup>399</sup> Their underlying aspects reflect fundamental human requirements, such as safety, inviolability, healthiness, as well as the impetus of legitimizing one owns existence by religious or philosophical considerations: it is the prevention of human, bestial and natural dangers, and the assurance of collective convergence or seclusiveness; the prevention of natural stresses, such as a damage by constant shadow, wind, rain, sun, or humidity; ecological as well as medical considerations to maintain the health of the inhabitants; and eventually the aesthetical interpretation of a locale. These aspects lead to a reflection of necessary or desired building activity in regard to the existing technological as well as scientific and cultural standards.

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<sup>398</sup> This specific reasoning, of course, represents another interesting field of research. Yet, a closer investigation cannot be undertaken in this thesis apart from the criteria that are to follow. At this point we shall confine ourselves to the statement that in addition to hard location factors, predominately resulting from utility considerations, there is a wide range of soft location factors, including the locale's atmosphere, cultural or religious appeal etc., which are harder to grasp.

<sup>399</sup> Subjective, as they originate in personal or collective perception – passive, as they at first do not cause human alteration.



- 1 Zähringer City
- 2 Aare River
- 3 Hinterland
- A Nydegg Fortification
- B Zeitglockenturm (Clocktower)

country  
Switzerland

coordinates  
46° 56' 55" N – 07° 27' 08" E  
Rathausplatz

elevation  
542 m

population  
128,345 (2007)

size  
52 km<sup>2</sup>

density  
2,468 /km<sup>2</sup>

foundation / rst citing  
1191

source  
<http://de.wikipedia.org/wiki/Bern> (20.04.2008)



Berne  
Image © 2007 Geozen

**plate 47**



### 3.1.2.1 Safety

Urgent considerations regarding the perpetuation of a sojourn in a locale consider its shelter characteristics. Already in early times we typically find settlements in special locales, which on one hand stand out topographically from the environs but feature not too much exposure on the other hand: The first provides seclusion and control over expected external dangers; the latter grants protection from extreme weathers and natural impact as well as it should evade hostile attention. A common feature is the choice of an elevated place rather than settling in the plains, avoiding hilltops or peaks.<sup>400</sup> In addition we encounter the use of natural boundaries, such as coastlines, rivers, ranges, ravines or cliffs to seclude the settlement. Corresponding to the reinforcement of the condition of a locale, there are various examples of increasing a locale's natural safety characteristics through fosses, palisades, walls or embankments – typically to prevent from intrusion – as well as the production of substructures or platforms raising the settlement from the original level and thus additionally enhancing the observation of the surroundings as well as avoiding impact from floods.<sup>401</sup> Altogether, *Safety* describes those aspects of an urban locale, which suggest an undisturbed development, that is the prevention of intermittent violation from outside.

#### *Bern*

The impact of safety considerations can be observed easily with the localization of today's Swiss capital Bern.<sup>402</sup> The *Aare River* features two major sinuities within the area, both of which were chosen for settlement, the so-called «Engehalbinsel» already in the La-Tène period and remained until the Gallo-roman times.<sup>403</sup> The center of Bern, however, only was built from 1191 on, commissioned by BERCHTHOLD V von Zähringen (ca. 1160-1218), within a series of new urban foundations that sought to confirm the ducal status of the Zähringer family.<sup>404</sup> The naturally elevated oblong urban locale, on three sides encircled by the Aare, represented an ideal place for a medieval development, as only the smaller western face had to be artificially fortified. Hence, the city was well protected against foreign troops as well as the urban development could follow a simple and economic pattern following the topographic condition.

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<sup>400</sup> We often find the use of shoulder situations or plateaus with an orientation downhill. There, the ridges above shelter from extreme wind and weather and avoid easy access from the top. Downhill this location enables control over the environs; a renowned example for this should be the ancient Greek city of Priene. However, usually plateaus of this kind are limited in space, which leads to further settlement activity on the mountain foot and consequently to a differentiation between two nuclei, in German most often called "Ober-" and "Unterstadt"; since the early urbanization we already encounter the development of "akropoleis", which among other things results from similar devolutions.

Apart from the aspect of hostile invasion into a locale, we have here the previously excluded climatical features as a fundamental factor for the attractiveness of a locale.

<sup>401</sup> The occurrence of tells in Neolithic times, mostly in the area from the Indus valley to Southeast Europe, shall also derive from these considerations. The constant renewal of settlements on top of preceding ones, eventually produced artificial hills, which turned out to be opportune in the glacial valleys with their at that time still variable stream courses; see e.g. (Link 2006) and (Jansen 1993: 20). Still, in addition to these evolutionary elevations through the erosion of the used mud-brick structures, we encounter also initial productions of artificial plateaus, for instance at Moenjodaro (Jansen 1987).

<sup>402</sup> for a short account on the city's development see (HHS 1996: 68-76)

<sup>403</sup> see (Stähli 1977) and (Fellmann 1992)

<sup>404</sup> see (Weber 1976; Divorine 1991) and (Egli 1962: 150-153)





- 1 Mississippi River
- 2 Flooded Area  
(Sealevel as with Hurricane Katrina)
- 3 Unaffected Area
- A Superdome

country  
USA / Louisiana

coordinates  
29° 57' 03" N – 90° 04' 52" W

Super Bowl

elevation  
-2 to 6 m

population  
223,388 (2006)

size  
907 km<sup>2</sup>

density  
973 /km<sup>2</sup>

foundation / rst citing  
1718

source  
[http://en.wikipedia.org/wiki/New\\_Orleans](http://en.wikipedia.org/wiki/New_Orleans) (20.04.2008)



New Orleans LA  
Image © 2007 DigitalGlobe

**plate 48**

Despite the often adjuvant urban locales, medieval and early modern cities usually featured fortifications, as did many of preceding epochs.<sup>405</sup> Hence, the production of fortificatory systems cannot be seen only as an outweighing of inexistent natural safety attributes; in fact these more and more elaborate earthworks and buildings represented an affirmation of the dwellers safety requirements, which subsequently found their continuation in territorial safeguarding by citadels, fortresses, and eventually by antiaircraft, as well as missile defense and satellite shields in the 20th and 21st centuries, the latter two, however, with manifold provisos as regards their immediate urban scope.

Comparable effort has been and still is undertaken to prevent from potential effect of natural forces at a certain urban locale; with advanced forecasting, special building codes, and protection infrastructures, such as dams and levees as well as an organized emergency management, one seeks to avoid heavy damage of urban nuclei and their population. This effort, however, due to the randomness of catastrophes, betimes tends to fail: Eruption of volcanoes (e.g. Vesuvio 79 CE erasing Pompeii, Herculaneum, and Stabiae; Nyiragongo 2002, devastating large parts of Goma), earthquakes (e.g. Tokyo 1703; Lisbon 1755; San Francisco 1906; Tangshan 1976; Bam 2003), storms (e.g. Galveston 1900; Vilankulo 2007), floods (e.g. Hamburg 1962; Banda Aceh and Meulaboh in course of the 2006 seaquake in the Indian Ocean), as well as avalanches and landslides (e.g. Blons 1954; Yungay 1962; Mameyes 1985; San Antonio Morignone 1987; Bingöl 1991; Galtür 1999; Chittagong 2007) thoroughly affect settlements and cities, sometimes leading to a total destruction or eventual abandonment because of reoccurring incidences.

#### *New Orleans*

A most sad example for a false estimation of natural impact onto an urban locale represents the devastation of New Orleans, Louisiana, in course of the irruption of hurricane Katrina on August 29th 2005. New Orleans is situated in the Mississippi delta between *Lake Pontchartrain*, the second largest salt-water lake in the U.S.A., and the river itself.<sup>406</sup> The urban development started in 1718 on an elevation within the estuary's swampland, strategically significant because of its control of the ship traffic from the Mexican Gulf into the Mississippi-Missouri River-system.<sup>407</sup> Due to the gradual compression of the environing swamp and the urban growth into this area, several parts of the city nowadays lie under sea level and have to be protected from floods by embankments and levees. Still, due to the specific topography, several urban districts form depressions, out of which permeated water cannot evade naturally. Eventually this circumstance and the contingent initial burst of two channel embankments in succession of impounded water from the lake caused these depressions to flood; the failure of the existing pumps increased the impact: some 80% of the city's surface ultimately were covered by water, up to 7,60 m high, and led to a vast destruction of buildings and infrastructures worsened through initially poorly coordinated civic protection and

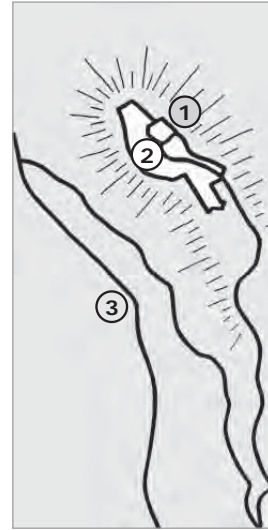
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<sup>405</sup> This often led to the supposition that a fortification is an indispensable urban constituent, which we shall not acknowledge, as already discussed (see discussion on page 15). Nevertheless, the antique authors usually include city walls in their considerations about urban features; see for instance (Arist.pol. 1330b17-1331b19) and (Vitr. 1, 5).

<sup>406</sup> see (Kelman 2003; Colten 2005; Campanella 2006)

<sup>407</sup> see (Kendall 1922; Lewis 1976; Garvey 1988)





- 1 Castello Caetani
- 2 City
- 3 Strada Pedemontana  
(parallel to Via Appia)

country  
Italy / Lazio

coordinates  
12° 32' 60" N – 12° 59' 03" E  
Castello Caetani, Maschio

elevation  
257 m

population  
7,480 (2007)

size  
44 km<sup>2</sup>

density  
170 /km<sup>2</sup>

foundation / rst citing  
ca. 1200

source  
<http://it.wikipedia.org/wiki/Sermoneta> (20.04.2008)



Sermoneta  
Image © 2007 DigitalGlobe

**plate 49**



followed by increased epidemic danger and anarchic conditions.<sup>408</sup> It took more than six weeks to repair the levees and to exhaust the invaded water; the reconstruction work has not yet been completed.<sup>409</sup>

### 3.1.2.2 Health

A criterion, which occurs in the first writings about the establishment and layout of settlements, is the healthiness of a locale to its dwellers: the treatise "On Airs, Waters, and Places", which is ascribed to the physician HIPPOCRATES of Kos (ca. 460–375 BCE), already gives a comprehensive account on the according knowledge in antiquity, broaching the issue of exposure to sun and winds, the quality of water and soil, as well as those local attributes causing malaises and diseases (Hippokr.aer.aqu.loc. 1,1-11,5); VITRUVIUS, again, translated this knowledge into planning instructions (Vitr. 1, 4), most notably regarding the layout of the streets considering the wind directions (Vitr. 1, 6).<sup>410</sup> With health considerations, we find the environmental aspect of the climate as a predominant feature, immediately through the impact of weathers, or indirectly through the affection of aliment, the climatical favoritism of etiologic agents, or the psychological detraction of the dwellers. Still, we shall consider *Health* a more indirect criterion in comparison to *Safety*, as its impact has an effect generally only on a longer run and is at times not foreseeable in the beginning of an urban development. On the whole, *Health* describes those aspects of an urban locale, which suggest a sustainable development, that is the avoidance of enduring vitiations.

#### *Sermoneta*

The *Agro Pontino* south of Rome, Italy, for example, presented since Roman times a large marshy and inhospitable but strategically important area, whose brackish water caused the dissemination of malaria and thus was unsuitable for urbanization – even though several attempts for melioration had been undertaken until the 20th century.<sup>411</sup> Therefore most historic settlements in this region locate immediately at the foot or on the first hilltops of the Lepinian Mountains,<sup>412</sup> which confine the plains towards the interior of the Apennine peninsula, overlooking the plain and controlling the chief Via Appia road, which since the 3rd century BCE leads from Rome to the Southeast of Italy, also connecting Naples, and is until today a major part of the Italian road network.<sup>413</sup>

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<sup>408</sup> see (Colten 2005; Childs 2005)

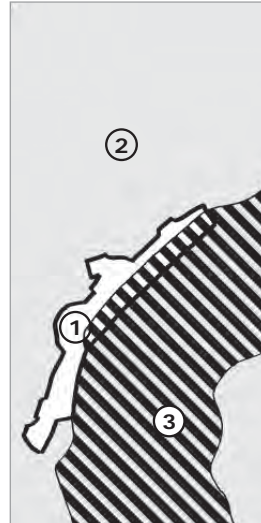
<sup>409</sup> The enormous devastation and necessary economic effort for reconstruction led Dennis HASTERT (\*1942), at that time president of the U.S. House of Representatives, to consider abandoning parts of the city, still presumably rather within an act of political profiling than realistic thought.

<sup>410</sup> for other accounts on cities and health see (Plat.leg. 778c-e; Arist.pol. 1329b34-1330b16; Strab. 6,2,4C269).

<sup>411</sup> In antiquity namely under CAESAR (see Cic.Phil. 5, 7), OCTAVIAN and NERO (see Plin.nat. 26, 19 and Tac.ann. 15, 42, 2), followed by THEODORIC THE GREAT at the turn of the 5th to the 6th century; papal commissions ensued under BONIFACE VIII (ca. 1295), EUGENE IV (since 1423), SIXTUS V (1586-89), and PIUS VI (since 1777); all these attempts did not succeed – eventually from 1928 on under the fascist rule of Benito MUSSOLINI (1883-1945) and with vast mechanical support the Pontine Marshes were reclaimed entirely (Massaro 1936; Skoneczny 1983; Pennacchi et al. 2001; Stabile 2002; Frandsen 2006).

<sup>412</sup> In addition to the disadvantage of having to cross the marshland to get access to the major road network, the coastline with the Tyrrhenian Sea was hardly used for settlements in regard of potential attacks by pirates.

<sup>413</sup> The Via Appia was commissioned by Consul APPIUS Claudius Caecus in 312 BCE and led initially some 200 km from Rome to Capua. In 265 BCE it was extended to Brundisium (Brindisi) in Puglia and thus became the major southern access of the whole Italian peninsula; see e.g. (Portella 2003).



- 1 City
- 2 Unbuilt Area
- 3 Shadow Area

country  
Italy / Piemonte

coordinates  
44° 58' 16" N – 06° 53' 41" E  
Via del Colle

elevation  
2035 m

population  
838 (2001)

size  
25 km<sup>2</sup>

density  
34 /km<sup>2</sup>

foundation / rst citing  
1935

source  
<http://it.wikipedia.org/wiki/Sestriere> (20.04.2008)



Sestriere  
Image © 2007 DigitalGlobe

**plate 50**

One of these settlements is the medieval town of Sermoneta, which situates some 250 meters above the sea level directly facing the marshland. Due to its elevation it profits from the permanent sea wind, which because of the higher mountains upland hardly attains storm quality. The town owes its development to the Caetani family, who there took their residence in 12th century and largely sponsored the town's economy.<sup>414</sup> Because of these strong ties between the landlord and the population as well as its advantageous and healthy location, Sermoneta was also chosen to accommodate rural settlers from the plains as well as great parts of the inhabitants of the nearby town of Ninfa,<sup>415</sup> who all had to abscond the impact of the Malaria. Only with the melioration in the 20th century the disease could be eradicated.

In addition of avoiding malicious impact, climatical aspects, which brace or stimulate man's health – such as those of maritime or mountainous urban locales – might as well be used for medical purposes. Similar to places with occurrence of sanative resources, there we encounter the development of sanatoriums and health resorts. Apart from cities and towns on the seaboard especially alpine towns and settlements base their development for a greater part on their climatic benefits.

#### *Sestriere*

After all these urban locales in the mountains, however, possibly experience also negative impact from their location, viz danger of avalanches (a safety aspect), as well as a lower average temperature, down-slope wind, and long-term shading. The shading issue can be observed well with Sestriere, a small winter sport resort in the Italian Piemonte region at an altitude of some 2.000 meters above sea level. The original agricultural settlement, which has been developed by the FIAT-founder Giovanni AGNELLI Sr. as a winter sport resort in the 1930s,<sup>416</sup> locates at the pass between *Val Chisone* and the Susa Valley, in midst of the mountain peaks of Monte Fraitève (2.701 m) northwest, and Monte Sises (2.658 m) and Punta Rognosa (3.280 m) in the southeast. This topographical situation leads to shortened sun exposure in the mornings as well as in the evenings, after all in winter time, when the sun raises not as high, and consequently limits the possible acreage of urban development.

Of course, due to modern amenities these restrictions are comparably easy to compensate, after all in regard to its periodical intensive inhabitation at winter times, when tourists sojourn on the ski slopes during daytime. Interestingly enough, the Val Chisone region shows settlement activity already in prehistoric times, namely, amongst others, at the close places of Allevè, Jousseaud, and Laval.<sup>417</sup> We shall assume that after all safety consideration sustained the utilization of these rather remote urban locales, as consequent and enduring habitation evolved only down-valley and at the passage from Val Chisone to the Piemontese plains (e.g. Pinerolo).

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<sup>414</sup> see (Pantanelli 1909; Stoob 1972)

<sup>415</sup> see (Stoob 1972; Fiorani 1991)

<sup>416</sup> see (Tirone et al. 1994: 82 ff.); architectural significance have especially the two hotel complexes, which have been constructed by Vittorio BONADE BOTTINO (1889-1979) in the rationalist style that was promoted by the Fascist regime of that time. These two «towers» as they are called until today, still dominate the urban townscape of Sestriere, that spreads over the whole valley, including the part of the village close to the pass, which is affected by the shading issue and illustrated on the left side; Sestriere became internationally known as venue of the Winter Olympics 2006

<sup>417</sup> see (Tirone et al. 1994: 33 ff. and 144 f.)



The shading issue is shared also by not high alpine towns, as for instance Rattenberg in Tirol, Austria. There large parts of the medieval town on the Inn River do not receive any sunlight in winter for some three months due to the Stadtberg, which rises more than 400 meters south of Rattenberg. After all the psychological effects of the lack of direct sunlight caused an immense decline of population, about 50% in the last 60 years. Therefore recently an Austrian firm specialized in light planning suggested the implementation of a Heliostat system to mirror sunlight into the shaded area (Bartenbach 2007).

### 3.1.2.3 Aesthetics

By far not the least criterion within this parameter is the aesthetical attractiveness of a locale; that is a sensory-emotional appreciation of sometimes a variety of local features, which tend to be subject to collective consideration and tradition. Obviously these aspects are often harder to reconstruct than safety and health aspects. They might derive from astrological as well as spiritual or esoteric reasoning, sometimes just from the arbitrary contemplation of a single person.<sup>418</sup> The according features eventually add up to what might be called a spirit of place or *genius loci*.<sup>419</sup> More than safety and health, which enable or suggest an enduring sojourn at a locale, aesthetical features eventually allow for the legitimization of a development, whose origin is sought to be found outside mere human discretion or historic fortuity. Reason for this behavior, which we find since earliest times and which only gradually became less important or covered by other, mainly techno-functional considerations, is the human peculiarity of demanding reassurance for one's actions; this reassurance is, of course, significant for the choice of the "Lebensmittelpunkt" (Mitscherlich 1965: 15),<sup>420</sup> most often immensely significant enough to introduce reassuring features or reasoning only after a locale has been chosen and inhabited for a longer time. Evidently, this reassurance extends over the mere relation between a community and a certain locale, often giving reasoning also for the dissociation from other communities (and sometimes their subjection). Not to be underestimated in this regard is the

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<sup>418</sup> For the latter, usually only autocratic rulers concentrate enough potency to principally cause an urban development at a certain locale having been chosen arbitrarily; this is due for several urban foundations in Antiquity, such as the vast number of cities and towns induced by ALEXANDER THE GREAT (356-323 BCE), or in modern times, here especially the early modern age: for instance Sabbioneta (1554), Freudenstadt i.W. (1599), or Richelieu (1630).

More often we encounter more or less spontaneous urbanization only after such localization for a ruler's residence or stronghold; especially the medieval urban development gives several examples for this (imperial palatinates, as well as princely castles and monasteries); however, also various absolutist residences only concurrently developed fully towns and cities: for instance Mannheim (from 1606 on), Versailles (from 1661 on), Saint Petersburg (from 1703/06 on), Karlsruhe (from 1715 on), Ludwigsburg (from 1718 on), or Ludwigslust (from 1724 on); for further details see (Egli 1967; Morris 1972; Benevolo 1975; Braunfels 1976; Delfante 1997). In addition to these sovereign decisions, we might argue that also those developments, resulting from a ritual inauguration, base on the individual arbitrariness of a priest or a small sacerdotal group, despite the fact that these persons surely did not have the power to generally cause the further development. Moreover, here we find the socio-political structures rooted in a religious awareness, notwithstanding a distinction between political actions taken because of a sacral impact and those actions determining sacral impact. We observe this well with the ritual foundation of Roman cities, which by inauguration, limitation, orientation, and consecration all passed through the same process of localization, nevertheless the actual geo-strategical or political reason for the urban development itself; see also discussion on page 111.

<sup>419</sup> In Roman mythology the *genius loci* was a protective spirit or god of a holy place or temple. A first account of the according usage of this term we find with Alexander POPE (1688-1744) and his "Epistle IV, to Richard Boyle, Earl of Burlington" on landscape architecture (Pope 1731); compare also NORBERG-SCHULZ's contribution (Norberg-Schulz 1979) and the according discussion on page 71.

<sup>420</sup> 'center of life', (author's transl.)

choice for cultic locales and/or burial places already in the pre-urban period, which we can ascribe to special appealing natural features including remarkable behavior within the local fauna, or outstanding cosmological occurrences – both usually superelevated through auspices or divination; different evolving rituals soon called for the establishment of residentiary priests or guards for the maintenance and custody of such a locale, often causing more permanent settlements in its vicinity and thus being another motor for sedentary life in general.<sup>421</sup> Eventually, we often find the need for religious assistance regarding the establishment of new settlements;<sup>422</sup> yet also consequent accumulation of other aesthetical traditions during the sedentary process (the corporative specificity of the place as well as the immediate relation to the ancestor) gradually produce stronger emotional bonds to the settlement and avoid from easy dilapidation or relocation, even though they may not necessarily have to be the origin for the localization itself. Consequently, *Aesthetics* describes those aspects of an urban locale, which suggest a legitimate development, that is the substantiation of continuation.

#### *Nikopolis*

That aesthetical aspects often go in parallel with socio-political practice can be observed well in the case of Nikopolis at the Ambracian Gulf in Greece. After having defeated his rivals MARC ANTHONY and CLEOPATRA VII in the sea battle of Actium,<sup>423</sup> OCTAVIAN (63 BCE-14 CE) only one year later commissioned the establishment of a city at the unpopulated and somewhat marshy feet of that hill, where his headquarter was established and from where he observed his fleet win. This site soon itself was transformed into a Victory Monument (Augustan Tropaeum), then overlooking not only the Ionian Sea and the Ambracian Gulf but also the new city, which was meant to celebrate his "triumph for all eternity" (Isager 2001b: 7).<sup>424</sup> To ensure a sound population, OCTAVIAN commanded the abandonment of the surrounding extant settlements as far as the former poleis of Alyzeia, Ambrakia, Argos Amphitochikon, Anaktorion, Cassope, Leukas, Oiniadai, Palairos, and Stratos,<sup>425</sup> producing a whole new quality of synoecism in Greece, which is the amalgamation of villages and towns into one urban entity.<sup>426</sup>

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<sup>421</sup> see (Mumford 1961: 6 ff.); we observe similar processes during the great migration after the fall of the Roman Empire and the early Middle Ages in Western and Central Europe, where the Christian church mainly sponsored the retention and new establishment of permanent settlements through their bishop's sees in extant Roman cities and towns as well as through the foundation of monasteries close to former settlements as well as in remote areas. Without going into much detail, in this case the development was, of course, supported through the formation of Christianity in the Hellenistic and Roman realm, where cities played a significant role in cultural and political understanding. Thus, urbanization at that time also was part of Christian proselytism; see (Braunfels 1976: 18 ff.), (Braunfels 1969: 201 ff.), (Schmieder 2005: 18), (Gleba 2002: 35 ff.), and (Morris 1972: 93 ff.).

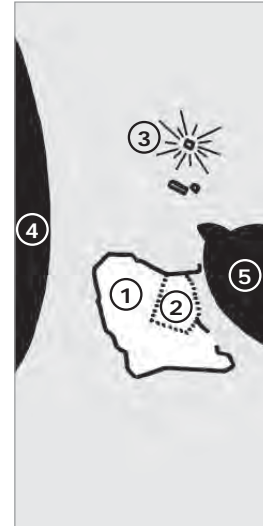
<sup>422</sup> see (Lorenz 1987: 13)

<sup>423</sup> The battle took place on September 2, 31 BCE, eventually granting military and political supremacy to OCTAVIAN, the later emperor AUGUSTUS, and heralding the end of the Roman civil war in course of the murder of Caius Iulius CAESAR (100-44 BCE), while ultimately ceasing the Roman Republic.

<sup>424</sup> for archaeological details, especially the excavation on Michalitz Hill, see (Murray et al. 1989; Zachos 2001); for more general information (Strauch 1996: 156 ff.)

<sup>425</sup> see (Strauch 1996: 157 f.), as well as a variety of ancient authors: Anth. Pal. 9, 553; Dio 51, 1, 3; Paus. 5, 23, 3; Paus. 10, 38, 4; Strab. 7, 7, 6.

<sup>426</sup> Whereas originally synoecism was meant to unify the countryside (demos) and the administrative, sacerdotal and military center (asty) into one communal structure (polis), with Nikopolis we find the unification of different extant cities (i.e. poleis) into one new city, while even physically dissolving them; compare also (Strauch 1996 170 ff.).



- 1 Roman City
- 2 Byzantine City
- 3 Tropeum Hill
- 4 Mediterranean Sea
- 5 Ambracian Gulf

country

Greece

coordinates

39° 01' 40" N – 20° 44' 08" E

Tropeum Hill

elevation

13 m

population

0 (today)

size

1,6 km<sup>2</sup>

density

0 /km<sup>2</sup>

foundation / rst citing

31 BCE

source

[http://de.wikipedia.org/wiki/Nikopolis\\_%28Epirus%29](http://de.wikipedia.org/wiki/Nikopolis_%28Epirus%29)  
(28.07.2008)



Nikopolis (Palaia Preveza)  
Image © 2007 DigitalGlobe

**plate 51**



Already the name Nikopolis, from Greek νίκη (victory) and πόλις (city), literally betokens the motivation as well as the localization for the city, which apart from the difficult ground condition, featured a benevolent situation at the narrowest part of the peninsula separating the Ambracian Gulf from the Mediterranean Sea, having a secure natural port towards the East. From the scarce archeological evidence we today suggest the establishment of a veritable orthogonal Roman street layout, adjusted to the Victory Monument, and expanding in a large *centuriation* over the whole plain with a city wall encompassing some 160 ha,<sup>427</sup> yet seeking to reconcile Roman and Hellenistic urban tradition through the employment of Greek building typology as well as artwork translocated from the abandoned cities.<sup>428</sup>

Considering the already advanced approach towards urbanization at the turn of the republican to the imperial Roman age, naturally the foundation of Nikopolis cannot be seen as a pure act of aesthetical reasoning – that would be completely depending on this suggestive and somewhat arbitrary situative factor of manifesting a great triumph in its situ. As pointed out by several authors before, OCTAVIAN pursued a distinctive socio-political undertaking to strengthen the declining region of Northwest Greece,<sup>429</sup> as well as to visualize the strong bonds between Rome and Hellas, which was to be transfigured as true antecessor of Roman tradition (deliberately neglecting the Italic and Etruscan roots).<sup>430</sup> Nevertheless, the choice for this specific urban locale immediately derived from its emotional and political significance that the later emperor shared with his coevals, and ultimately exemplifies the presented criterion. Additionally, the city's consecration to Apollo and the awarding of the Actian Games underlined this significance by means of bequeathed rituals, and eventually even mystified OCTAVIAN's success with the city as its physical expression. Arguably, we might find the importance of these circumstances for the foundation and development of Nikopolis also documented by the city's later decline, when the aesthetical aspects more and more paled beside growing health issues in course of several malaria epidemics caused by the still active marshes and a decrease of socio-economical importance within changing political situations; already in late Antiquity the city shrank to some 40 ha, while completely dilapidating after the late 9th century.<sup>431</sup>

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<sup>427</sup> see (Hoepfner 1990: 284 f.) and (Doukellis 1988)

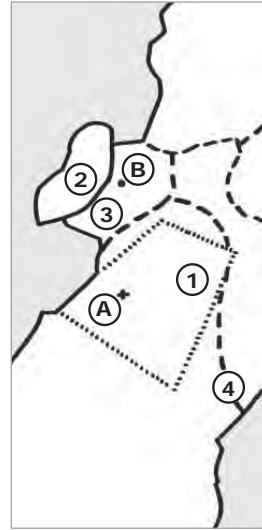
<sup>428</sup> see (Strauch 1996: 163 ff.)

<sup>429</sup> STRAUCH as well as ISAGER stress the fact, that despite a lacking overall strategical planning for the empire, the Roman foundation of cities always show regional planning approaches, likewise including military, economical, and political considerations, which can be observed well not only with the physical lay-out but after all with the different privileges and the assignment of a certain administrative status, such as *colonia*, *municipium*, *oppidum* etc. or, as the case with Nikopolis, the status of a *civitas foederata*, which at the time already was outdated, but awarded as a special recognition of the Greek inhabitants of the city of OCTAVIAN's victory, stressing an ideational *consanguinity* between Hellas and Rome (Servo Aen. 3, 501); see (Strauch 1996: 103 ff., especially 159) and (Isager 2001a).

<sup>430</sup> The tradition-conscious Greeks, however, always despised of this Roman endeavor – a circumstance we can also observe with the reception of Nikopolis' significance from Greek authors: especially Pausanias attends to the city, which at its time must have been at least the fourth largest Greek city with some 80-100.000 inhabitants, only several lines (Strauch 1996: 156).

<sup>431</sup> A new, so-called «inner-city-wall» was built after the siege by the Vandals in 474/75 under the Byzantine Emperor JUSTINIAN I (483-565). Still, ongoing external threat by the Saracens caused the population to withdraw to the hinterland, as the political and economic significance was taken over by the city of Naupaktos. When Ciriaco de' PIZZICOLLI visited the site in 1436, it latest was all ruins; see (Hoepfner 1990: 284 f.), (Strauch 1996: 184 f.) and (Soustal 1981: 213 f.).





- 1 Palatine Hill
- 2 Capitol Hill
- 3 Forum Romanum
- 4 Urbs Quattuor Regionum
- A Mundus
- B Comitium

country  
Italy  
coordinates  
41° 53' 34" N – 12° 29' 06" E  
Comitium  
elevation  
20 m  
population  
2,718,768 (2007)  
size  
1,285 km<sup>2</sup>  
density  
2,115 /km<sup>2</sup>  
foundation / rst citing  
753 BCE  
source  
<http://it.wikipedia.org/wiki/Roma> (28.07.2008)



Rome  
Image © 2007 DigitalGlobe

plate 52



## Rome

One of the most intriguing examples for the retrospective introduction and hyperbolization of aesthetical criteria, as well as their further development is Rome. From archaeological research we know about earliest traces of sedentary life at the Capitol Hill dating from the 14-13th century BCE; Roman tradition credited the foundation of this settlement to SATURN, the deity for agriculture and harvest, and acknowledged this by the erection of an altar and temple towards the valley, which granted access to all seven surrounding hills and which was to become the Forum Romanum.<sup>432</sup> However, despite the fortificatory favor of the Capitol and the populousness of all hills close to the Tiber River, the origin of the later metropolis has to be located on the Palatine Hill, from where the city was established through synoecism with the surrounding settlements, which altogether avoided the marshy lowland.<sup>433</sup>

Out of the other hilltops the Palatine Hill with its highest elevation of some 50 meters above sea level was the most suitable location for a settlement, due to its medium size and central situation, while additionally benefiting from still comfortable access and the close by ford through the Tiber.<sup>434</sup> Mythologically the original settlement is assigned to ROMULUS, who there as a child should have been nurtured by a wolf and a woodpecker together with his brother REMUS after being abandoned by his ruling uncle for reasons of political succession.<sup>435</sup> Ultimately, the grown ROMULUS founded a city named *Roma Quadrata*, in that place, where they were eventually discovered and which had been indicated to him through his auspices, that is the observation of birds. There he established a central sacred cavern, called *mundus*, and a quartered area which he surrounded by a holy fosse and wall.<sup>436</sup> Archaeological remains prove sedentary life into the Iron Age and thus roughly confirm the traditional foundation year of 753 BCE,<sup>437</sup> which among others has been passed down by VARRO;<sup>438</sup> yet, of course, this cannot corroborate the foundation act altogether. Still, the mythological localization and subsequent designation of the city developed an enormous impact onto the Roman urbanization in general: From *Roma Quadrata* on the Palatine Hill the aesthetical features were extended over to the *Urbs Quattuor Regionum* under SERVIUS Tullius (†535 BCE). The city then already comprised the seven hills and re-centered the city on the *Forum Romanum*, where, on the *Comitium* (and its closest vicinity), those elements testifying the mythological foundation were duplicated;<sup>439</sup> ultimately, we find according features within the then also geometrically, i.e. gromatically and cosmologically determined establishment of cities all over the Roman Empire, which until today can be observed easily with the reoccurring grid of *cardo* and

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<sup>432</sup> see (Coarelli 1974: 44)

<sup>433</sup> see (Coarelli 1974: 7)

<sup>434</sup> see (Coarelli 1974: 148) and (Lugli 1949: 88 ff.)

<sup>435</sup> also for the following see Titus LIVIUS (ca. 59 BCE-17 CE) "Ab Urbe Condita" (Liv. 1, 3 ff.) and PLUTARCH'S (ca. 45-125) biography of Romulus (Plut. Romulus)

<sup>436</sup> additionally see (Müller 1961: 22)

<sup>437</sup> see (Coarelli 1974: 150)

<sup>438</sup> VARRO chronicled the history of the ancient republic and introduced the legendary foundation year by referring to the Greek siege of Troia in 1193 BCE and applying a contemporary astrological period of 440 years for reincarnation; thus he deduced the development of Rome from the Troian dynasty (Varro ling. 5, 143), arguably to strengthen the Roman aplomb within a world, in which Hellenistic tradition stood for cultural superiority. The VARRONIAN chronology became canonized in the Roman Empire, despite its questionable methodology, that is characterized by unsecured mythological tradition as well as intercalation of months.

<sup>439</sup> see (Müller 1961: 27 ff.)



*decumanus*, radiating from an appointed zero-point;<sup>440</sup> a remarkable ordering principle, which shall be discussed in due course of this catalogue. Central aesthetic aspect within Roman urbanism, however, always remained the inquiry into the flight of birds for the exact localization of this origin point, which most often was to become the central forum.

Transcending Roman tradition we, of course, observe an ongoing practice of consecrating significant urban locales, if not the urban center itself: may it be in Christian tradition the altars of churches (especially the main church of a city or town) or in modern times the headstone of the primary building (town hall, parliament etc.), even the establishment of zero-points for the national mileages in capitals, which are the best examples for retroactive secular symbols.<sup>441</sup>

Interestingly, also within Rome's further urban history we encounter this apparently prevalent human exigency for legitimization several times, most prominent at the accepted grave of Saint Peter's, which authorized for the establishment of the most important and central Roman Catholic church, or at Piazza Campidoglio on Capitol Hill, which since Renaissance times serves as the secular, i.e. republican center of the city. – From there, at least nominally and ideologically, this notion overleaped the Atlantic Ocean to the political centers of the United States of America, which were created in the Age of Enlightenment and are epitomized in the federal parliament building in Washington D.C.<sup>442</sup>

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<sup>440</sup> see (Müller 1961: 21 and 9 ff.)

<sup>441</sup> In this context we should name amongst others the Place Parvis Notre Dame in Paris, the Puerta del Sol in Madrid, and the Grand Place in Brussels; at these locales the national surveying started in early industrial times and determined the geographical centers of those modern states.

<sup>442</sup> for further information see (Hitchcock et al. 1976; Longstreth et al. 1991; Hauck 1991; Scott 1993; Goodsell 2001), especially (Hitchcock et al. 1976: 3 and 64 ff.) and (Goodsell 2001: 15 f.)

While reviewing these criteria of *attractiveness*<sup>443</sup>, especially with the last criterion, we observe their reference to suggestive, that is ideational processes towards natural facts, which originate from human cogitations. Overall we recognize a decreasing importance of the immediate perception and consequent instant action in favor of considerations, which are affected by rational as well as irrational common knowledge and tradition: within *Safety*, even though also dependent on a feeling of well-being as well as growing understanding of defense potentials, usually we have an intuitive and almost instinctive human approach towards factual local conditions; within *Health* we already have to take into account a mid- and long-term experience as regards the physical impact of certain local features; within *Aesthetics* ultimately human perception and decisions build on a variety of intangible sometimes inconceivable sets of thoughts, which are shared by a certain group of people or are even product of a single mind. Moreover, where the first two criteria can be understood as indicating a human response towards local features, the latter largely implies an imposition of human thought onto the urban locale, supposably recognizing a metaphysical significance.

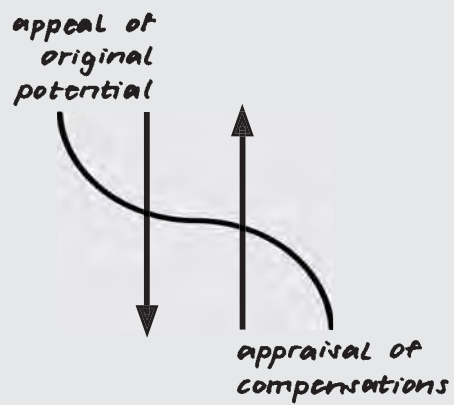
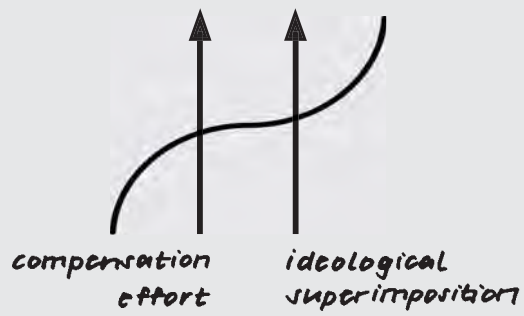
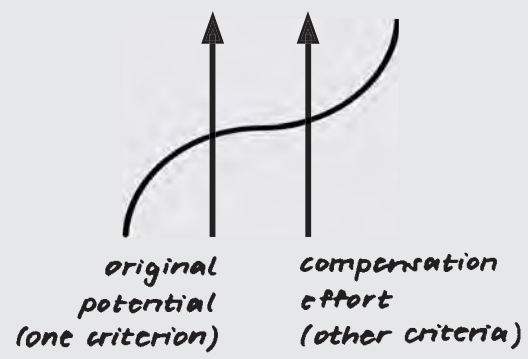
As stated earlier, the parameter presented in this catalogue are meant to be inclusive;<sup>443</sup> the consequential implications are very evident with the parameter of *attractiveness*<sup>443</sup>, which quickly refers to other urban aspects, viz the appeal of a very stable ground, plentiful resources, a high yield easy to achieve – only to name the precedent criteria. Of course, also all following aspects eventually enhance the attractiveness of a city and immensely enlarge the importance of this parameter. Within this consideration the presented idea of retrospective recognition of aesthetical aspects gains wider significance, as well do the legitimizing characteristics: Once a certain locale is chosen for and the first steps have been undertaken to induce urbanization, urban attractiveness itself exists, notwithstanding all considerations and approaches before; and every additional step adds up to it and usually strengthens the urban dwellers relation to the locale and to their commonwealth, despite even significant obstacles and setbacks.<sup>444</sup> Consequently the historicity of the human relation towards a specific locale produces another, constantly growing field for the suggestive perception of the locale. This retrospective attractiveness also often applies to the re-establishment or refurbishment of an extant settlement locale, where apart from mere infrastructural benefits the legitimating aspect is habitually well addressed and often definitely reinforced to circumstantiate the usually very costly urban projects.<sup>445</sup>

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<sup>443</sup> see discussion in 2.2

<sup>444</sup> Here we might quickly highlight the problems the first settlers must have faced, finding themselves firstly limited to specific local resources and yields, whereas before they savored the variety of different hunting and gathering grounds. As well we must take into consideration various presumably life-threatening incidents of crop and stocking failure due to mismanagement and unforeseen natural processes, or external destruction or deprivation of stored nourishment.

<sup>445</sup> We find this quite well illustrated with the birth places of European monarchs or rulers since early modern times, such as the already mentioned developments of Pienza under Pius II from 1459 on (see discussion on page 25), or Richelieu under Cardinal Armand-Jean I. du Plessis de RICHELIEU from 1631 on (see discussion on page 156) – for the latter, however, the factual birth at the locale of the later city is not even secured (Wischermann 1971: 141 f.). However, all of them share the circumstance that the contemporary significance of the person is reflected in the locale of his or her nativity, thus retrospectively producing a specific *genius loci*, which is likewise exalting locale and person by means of an urban development; for further information on these two cities see (Boudon 1978; Krufft 1989; Tönnemann 1990; Pieper 1997).





Within the suggestive situative criteria of *attractiveness*' we – similarly to the previous parameter – might encounter for instance these basic relationships:

- the better original safety or health characteristics, but after all the appeal from the aesthetical aspects of an urban locale are, the more likely there is an effort in active compensation of eventual deficiencies according to the other criteria;
- the larger the effort of active compensation of eventual deficiencies due to safety and health criteria are, the more likely there is an ideological superimposition with the aesthetics criterion;
- with decreasing appeal of the initial attractiveness, we find an increasing appraisal of the compensation actions, themselves becoming aesthetical values.

Within the parameter of *attractiveness*', however, we also observe a striking momentum, which is exemplified by the development of compensatory implementations to meet the according criteria. This might be explicated by means of the improvement of safety features within urban history: When initially safety requirements were met by a secure place that stuck out of a variety of other, less secure places, we soon encounter various means of fortifying the urban locale: fosses, walls, bastions etc. To the same extend these means were outdated by the further development of defense technology we encounter fast adjustment, which eventually exceeded imminent urban custody through a territorial defense by means of hinterland fortifications since the Early Modern Age and wide-area anti-aircraft stations, ultimately towards today's plans for satellite shields. Again, with growing size and complexity, as well as the fading immediate perception of safety features the urban nuclei also required interior safety, which evidently found its expression in the development of modern police services since the 17th century – given the increasing terroristic threat of our days also in several so-called «homeland security» organizations;<sup>446</sup> these, however, ensure not only urban safety but more precisely urban security,<sup>447</sup> of which we shall reason in due course of this catalogue.

Summarizing the presented criteria of *attractiveness*' we recognize the significance of the imponderability of the suggestive processes and the resulting appraisal of local aspects, as well as the ingenuity to make up for eventual deficits, when a certain aspect represents an overwhelming attractor. Still, the urban locale only presents a pool of features, which are transformed and customized to the actual human requirements. Even though we understand the ideological and emotional ambiguities within the conglomerate of local aspects, we are always able to determine the already proposed different degrees of immediacy, from the concrete integrity of human life at a certain moment towards the perpetual integrity of human existence. Translating this into a parametral statement, we understand *attractiveness*' as a most *invasive* concept: we find it as a significant matter within the examined aspects, hence from there meaningfully extending over all constituent of urban form, making them carrier of symbols or symbols themselves. *attractiveness*' ultimately must be seen as the motor for any urban development.

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<sup>446</sup> for further information see for instance (Lange 2000; Eick et al. 2007; Mladek 2007)

<sup>447</sup> The often repressive policy, which was and in several places still is maintained by help of the police services is not subject of this elaboration, however, has to be mentioned as a historic fact at this point; see for instance (Emsley 2007).

### 3.1.3 accessibility' (Erreichbarkeit')

A city can only be where man makes it to be.

Once a certain locale is investigated in respect of its possible and desirable development sufficient situative *access* (Erschließung) has to be proved.<sup>448</sup> Whereas in pre-urban times fixed routes and tracks existed only in so far as major topographical obstacles had to be coped with, a fixed dwelling locale imposes various restrictions towards personal movement and traffic, not only regarding its main entrances and/or exits, and its position towards the surrounding paths and roads, but also regarding its connection to the hinterland with potential neighboring dwellings as well as similar settlements at farther distance. Crucial for our understanding of a city, ultimately of civilization itself, is the notion that there is no city as a singular occurrence; from the beginning of urban development on, cities developed as part of a net of settlements, showing various levels of interaction and hierarchical differentiation.<sup>449</sup> Therefore there is an ultimate requirement for *accessibility'*: Where can I enter and exit the locale? What type of access is necessary or preferred? Can I provide for a good traffic flow or do I want to prevent from it? Do I want to seclude myself or do I want to integrate with my vicinity (or dominate it)?<sup>450</sup>

We shall refer to the subsequent depictions of *accessibility'* as anthropogenic situative criteria, as they result in the first indispensable human intrusion into the natural situation of a proposed accommodation. Thus, in comparison to the previous suggestive criteria, one might consider them also subjective-active: it is the total number and qualities of accesses to the locale; the relation to the surrounding grounds; the layout of the approaching roads and tracks; the relation between the locale and the major traffic routes; and eventually the connection to other settlements, villages, towns, and cities. These aspects eventually lead to considerations about access control as well as to the control of adjacent territories. Due to the fact that the further development of an urban nucleus is increasingly dependent on import of resources and goods, as well as on immigration of

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<sup>448</sup> As discussed earlier (see page 120), this catalogue is organized with the urban nucleus in focus. Within the logic of deducing from the general to the special, that is also following consequential necessities, a locale is the precondition for any development, the orientation within the locale is the precondition for a possible development, and the access the precondition for a specific development. Thus the parameter *accessibility'* comes third in this delineation, even though there is also good reason to categorize it primary to the actual formation process – from the perspective of the producer of urban form: Man has first to approach a locale before he can investigate it in terms of sufficient stability, resources, yield, safety, health, and aesthetics. Nevertheless, in this argumentation *accessibility'* includes more than the mere approach towards a locale, but all steps taken to eventually grant access to an already investigated and chosen locale including the inalienable qualification of ex- and interchange not only between the settlement and its surroundings, but also to other settlements.

<sup>449</sup> Here we might come back to Vere Gordon CHILDE's study on the *Urban Revolution*, in which the ascertained economic surplus, the use of writing, and after all foreign trade – all three preconditions for a city – result in a regional integration of a settlement and the exchange with other entities akin. Still fundamental for this understanding of regional nets is Walter CHRISTALLER'S (1893-1969) theory on "Central Places" from 1933 (Christaller 1933), in which he detected the dependencies of settlements among each other.

For an intriguing account on the territorial distribution of settlements due to economical considerations see also (Blouet 1972); further (Zelinsky 1966; Hudson 1969b; Hudson 1972), as well as (Rashevsky 1968: 130ff. and 135ff.).

<sup>450</sup> Even though today a vertical access is more than only an envisioned entry to a locale, may it be by elevator, aircraft, etc., we shall reflect in the following predominately the horizontal access, which still appears to be the principal one. Yet, without further investigation, we shall be obliged to assume that the statements, which are to be made, embrace all imaginable kinds of access.

inhabitants and commute of labor force,<sup>451</sup> the *accessibility*' ultimately determines the potential of maintenance, possible extension, and the overall standing of the settlement, more than the other situative parameters.

### 3.1.3.1 Aperture

Starting over from urban form as a product rather than from its course of production,<sup>452</sup> the first criterion within *accessibility*' reflects the modality of how a locale interacts with its immediate environs; that is the human arrangement of the peripheral transitional zone between town- and landscape with its disjunctive and conjunctive elements, which might be natural but are most often artificially produced. In this regard we recognize that most natural elements have to be attributed as disjunctive elements, such as water surfaces, acclivities or ridges, whereas conjunctive elements usually are introduced by the human establishment of tracks and routes – notwithstanding the fact that these habitually follow convenience considerations, which interestingly largely conform to those criteria depicted in the previous parameters. Disjunctive elements evidently play an important role also as an enhancement of local safety, while we should argue that in our delineation they at first affect the kind and number of access points to the settlement, by which the incoming and outgoing traffic is led and controlled;<sup>453</sup> only subsequently, and then especially the artificial disjunctive elements, they might compensate natural deficiencies as regards the *Safety* criterion. However, the evolving interrelation between the locale and its surroundings can be roughly distinguished into three groups according to the property of the transitional zone: absolute, relative, and scant aperture; they give an immediate idea about the grade, the locale is corresponding to the surrounding grounds or even depending on them.<sup>454</sup> Eventually, this designation of *Aperture* deals with those aspects of a locale that lead to the demarcation of the urban surface obverse the hinterland and for centuries, through the production of palisades, fosses, walls or elaborate fortifications, evidently determined the size of the urban locale altogether, especially where no natural boundaries did so.

Regarding their propinquity to the safety considerations, relative and scant aperture aspects usually can be observed well with those locales, which situate in a plain topography without major natural disjunctive elements and which have been undergoing an extreme reinforcement of their defence facilities – mainly after the settlement had already been established and in use for a substantial period of time and the redesign of the transitional zone cut off several earlier connections. This is not to say that we cannot find them with non- or less fortified examples,<sup>455</sup>

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<sup>451</sup> as we have seen earlier on page 139 ff.

<sup>452</sup> see discussion on page 120

<sup>453</sup> Control in general, appears to be an urban factor, which is composed by several criteria from different parameters, and shall be discussed later on.

<sup>454</sup> This can be observed easily with the difference of farmer's and seamen's towns, for instance in ancient times in the Northwest region of Greece, which we got to know earlier: Stratos, laying in the mainland, subsisted from farming, which was conducted by the urban dwellers; consequently the city wall featured many little gates, which allowed to easily reach the fields. The citizens of Alyzeia on the other hand, a port town, were keen on bulkheading off the goods they traded and stored and included into their city wall only three to four fortified gates; see (Ley 2008: 258 & 305 f.).

<sup>455</sup> Particularly towns on hilltops, as we have seen with Sermoneta earlier and will see with Palombara Sabina, owe their limited access to their topography rather than elaborated fortifications; evidently there is growing need for large defensive structures with settlements in the plain.





- 1 Medieval Fortification with Accessing Streets (dashed line)
- 2 Modern Fortification with Redirected Streets (continuous line)
- 3 Contemporary Motorstreet (chain line)

*country*  
 Netherlands / Noord-Holland  
*coordinates*  
 52° 17' 43" N – 05° 09' 44" E  
 Kerkpad  
*elevation*  
 4 m  
*population*  
 17,144 (2007)  
*size*  
 33 km<sup>2</sup>  
*density*  
 802 /km<sup>2</sup>  
*foundation / rst citing*  
 1350-1355  
*source*  
<http://nl.wikipedia.org/wiki/Naarden> (20.04.2008)



Naarden  
 Image © 2007  
 Aerodata International Surveys

**plate 54**

as well as with towns that did not substantially change their fortifications.<sup>456</sup> Yet, especially in the 16th-18th century urban transformation through modern fortifications, which sought to produce wide distances between the invading forces and the cities in regard of the advanced firearms technology and thus immensely extended into the surrounding grounds, likewise minimizing and deviating the existing accession,<sup>457</sup> we find epitomized blocking transitional zones that despite any earlier street net functionally and formally detached the urban areas from their neighboring grounds.

#### *Naarden*

All this is the case with the city of Naarden in North Holland.<sup>458</sup> While the original settlement from the 8th century situated some two kilometers north,<sup>459</sup> immediately exposed to the former Zuiderzee,<sup>460</sup> today's Naarden was newly planned from 1350-55 after Old Naarden was destructed in an armed conflict between different groups of the Dutch gentry. The urban locale of the new city, commissioned by WILLIAM V (1330-89), was better protected against seawater and wind by locating on the upland plain, but still lacking further natural safety characteristics. Thus the city was confined by a large medieval wall with five gates, granting an additional small access from the port side. Still, Naarden heavily suffered from more sieges and occupations during the 16th and 17th century, leading to several modernizations of the fortification, until at the end of the 17th century Naarden was encircled by two lines of defense involving several walls and moats as well as detached entrenchments, according to the contemporary state of military art developed by the French Sébastien Le Prestre de VAUBAN (1633-1707) and the Dutch Menno van COEHOORN (1641-1704),<sup>461</sup> then minimizing the access to only two gates and detouring the according roads to allow for a maximum possible bombardment. Naarden, sustaining its status as fortification until 1926, never forfeit its now landmark defense architecture due to its discreet population; only in 1939 a third automotive access was established to connect directly with the neighboring city of Bussum, yet following the same manner as the earlier accesses and little impacting the architecture itself.

When adopting that we can observe relative and scant aperture best with those urban examples that show an artificial enhancement of their safety requirements through fortifications, then we arguably find absolute aperture demonstrated well by cities without built confinement. As a matter of fact, while the 17th and 18th century European urbanism produced the last intriguingly complex defense belts,

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<sup>456</sup> Here again we have to refer to ancient Greek and Roman cities; for the latter the *Corpus Agrimensorum Romanorum* (Hyginus Gromaticus, *Constitutio Limitum*, 9th century) gives an intriguing account on the relation between the city and its territory by focusing on the accessing streets, i.e. *cardo* and *decumanus*, and the city wall; see especially (Biblioteca Apostolica Vaticana, Cod. Pal. Vat. Lat. 1564, c. 89v) as well as (Guidoni 1978: 133 ff.).

<sup>457</sup> for further reading on early modern fortifications in German language see (Neumann 1988; Neumann 1990; Biller 1996), as well as (Binding 1978: 159-162) and (Braunfels 1976: 138-152); the plentiful publications in other languages cannot be included here, but at interest one shall refer to (España 1968; Kenyon 1978; Viganò 1994)

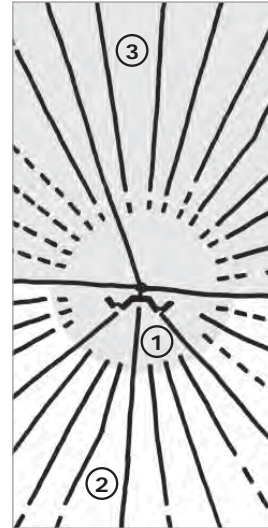
<sup>458</sup> for further information see (Bruijn et al. 1950; Maas et al. 1950; Vrankryker 1965; Maessen 1973; Pikkemaat 1997)

<sup>459</sup> see (Pikkemaat 1997: 6 f.)

<sup>460</sup> As we read earlier, the *Zuiderzee* used to be a large North Sea bay, which only after the construction of the *Afsluitdijk* was turned into the sweet water *IJsselmeer*; see on page 137.

<sup>461</sup> for Vauban see (Blomfield 1938; Bornecque 1984; Hebbert et al. 1989; Barros et al. 2006; Griffith 2006); for Coehoorn see (Hoof 2004)





- 1 Palace District
- 2 City
- 3 Park

*country*  
 Germany / Baden-Württemberg  
*coordinates*  
 49° 00' 50" N – 08° 24' 16" E  
 Palace (Tower)  
*elevation*  
 115 m  
*population*  
 286,327 (2006)  
*size*  
 173 km<sup>2</sup>  
*density*  
 1,651 /km<sup>2</sup>  
*foundation / rst citing*  
 1715  
*source*  
<http://de.wikipedia.org/wiki/Karlsruhe> (20.04.2008)



Karlsruhe  
 Image © 2007 AeroWest  
**plate 55**



it also afforded the first modern examples of interwoven town- and landscapes. This completely new understanding originated practically from the invention and consequent application of the perspective in urbanism and ideologically from the universal claim of human ingenuity over nature, ultimately seeking for the creation of a visual unity of the cultural landscape.<sup>462</sup> Greatest possible aperture, in any case, can be created only by radiating every urban street into the hinterland, thus, for this purpose Baroque urbanism employed axes, radial streets and avenues also for extant medieval cities.<sup>463</sup>

#### *Karlsruhe*

This new understanding is epitomized by the development of princely residence cities, such as the Southwest German Karlsruhe.<sup>464</sup> This model city goes back to Margrave Charles William of Baden-Durlach (1679-1738), who in 1715 commissioned the establishment of a new palace, town and garden, which was to communicate a completely new understanding of the relation between the state and its populace.<sup>465</sup> According to the contemporary compass rose,<sup>466</sup> the urban layout comprises 32 radial streets and parkways emanating from the central tower of the palace building; a circular street confines the princely district with palace, pleasure garden to the South and park to the North. Only the southern eight plots outside the circle towards the extant country road were designated to accommodate the city's buildings, whereas the other 24 fan shaped areas remained forest and hunting ground. When the southern streets within the housing district accordingly became subject to extension considerations altering the original fan-shape and also featured so-called «gates» yet merely for demarcation purposes,<sup>467</sup> still the overall scheme produced a previously unknown integration of the city into the surrounding landscape, seminal for the following centuries as regards the disappearance of physical urban delimitation and the new significance of traffic distances for the size of a city.

#### 3.1.3.2 Relation

After transcending the city limits, however they are defined, the urban accesses interact with the immediate surrounding route network, eventually producing a *Relation* to these traffic lines, which thus represents the second criterion within *'accessibility'*. This conclusion, of course, bases on the notion of routes, that is solidified paths beyond ephemeral tracks,<sup>468</sup> which usually develop in course of

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<sup>462</sup> compare (Benevolo 1991: 35 ff.), (Benevolo 1994: 92 ff.) and (Benevolo 1993a: 163 ff.) as well as (Steenbergen 1996: 136 ff.)

<sup>463</sup> see for instance the royal axes in Paris (Braunfels 1976: 268 ff.), (Kieß 1991: 37 ff.), (Sutcliffe 1993: 29 f.) and (Hall 1997: 55 ff.); see also plate on page 32; or the royal extension of Munich (Braunfels 1976: 183 ff.) and (Kieß 1991: 73 ff.), as well as (Nerdinger 2000: 271 ff.), (Hederer 1960: 46 ff.) and (Hederer 1976: 81 ff.); see also plate on page 24. MUMFORD stresses the importance of this development with his considerations of "Movement and the Avenue" (Mumford 1961: 367 ff.); the author earlier worked also on the significance of the axis for urbanism treating several Baroque examples (Ley 2005a: 29 ff.)

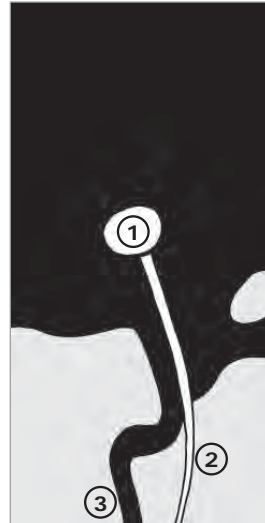
<sup>464</sup> see also (Fecht 1887; Ehrenberg 1909; Merten 1990; Leiber 1990; Leiber 1996)

<sup>465</sup> This is laid down in the so-called «Privilegienbrief» (letter of privileges), which besides several economic benefits that were very common already in medieval times to activate the urban development granted personal and religious freedom as well as juridical equity; see (Karlsruhe 2004).

<sup>466</sup> Originally the compass division was not into 360 degrees, but into 32 nautical points (=11.25°).

<sup>467</sup> for the large city extension under Friedrich WEINBRENNER (1766-1826) see (Valdenaire 1919; Leiber 1996; Leiber 2002) as well as (Kieß 1991: 87 ff.)

<sup>468</sup> compare (Jansen 2002: 5)



- 1 Island
- 2 Dam
- 3 Coast Land with Couesnon-Estuary

country  
France / Basse-Normandie  
coordinates  
48° 38' 10" N – 01° 30' 41" E  
Minister's Intersection  
elevation  
5 to 80 m  
population  
43 (2006)  
size  
1 km<sup>2</sup>  
density  
13 /km<sup>2</sup>  
foundation / rst citing  
708  
source  
<http://fr.wikipedia.org/wiki/Mont-Saint-Michel> (20.04.2008)



Mont-Saint-Michel  
Image © 2007 DigitalGlobe

plate 56

the establishment of limited entrances to a settlement, forcing traffic flows to merge before permeating the urban boundary. When the different grades of *Aperture* however refer to the possible number of access points, e.g. one and discretionary many, *Relation* bases on the geometrically definable positions of the main routes to the locale, that should be the access line and the at least imaginary urban boundary. Thus, we can determine three classes: orthogonal, tangential and skew relations, while orthogonal means that the main access leads directly into the city, and tangential that the main access contacts the city only on its periphery, skew describes that the city sits aside the main regional access routes and is only accessed by secondary roads. Naturally, this simple theoretical classification brings about interpretative quandaries in actual examination of urban examples, especially where during centuries the accessing routes have been changed or transferred to either enhance or reduce traffic flows,<sup>469</sup> while additionally different main routes might access the locale in different modes simultaneously. Similarly we have to take into account other means of traffic but road based ones, such as rail, shipping and air traffic; here, we of course should consider the location of the stations or landing piers on one side and for the latter two the variability of the according routes that always remain ephemeral and are also more dependent on the varying economic significance of the locale than country roads and railways, which, once established, usually induce a quite high threshold for discontinuation.<sup>470</sup> With the regular road access, however, we shall also consider possible topographical impact, that is whether the relation occurs on the same level or features differences in altitude.<sup>471</sup> Altogether *Relation* represents the logical and indispensable continuation of the *Aperture* criterion, describing those aspects of an urban locale that determine the interaction of the settlement and its hinterland with solidifying traffic routes.

#### *Mont-Saint-Michel*

To give a plausible illustration to this criterion, notwithstanding the discussed eventual complexity, we shall focus on examples with scant aperture and consequently obvious relation to the according main access route. Expounding in this regard, not only in aerial photography or maps but also when physically approaching is the monastery and town of Mont-Saint-Michel, which locates on a rocky island one kilometer off the northwestern French coast at the *Couesnon* estuary.<sup>472</sup> The important Benedictine abbey dating from 708 already early caused significant pilgrimages, also economically maintaining the concurrently built town. While since its foundation for the large part being reachable only during low tide crossing the dangerous watts on the shortest possible track, the ongoing medieval

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<sup>469</sup> The ubiquitous development of bypassing roads since the 1970s give a vivid example for this, while 19th century as well as the 1940-60's planning on the contrary sought to widen an straighten existing traffic routes.

<sup>470</sup> As for the landing piers, we should additionally determine their significance within the *Aperture* criterion, as they represent another form of transgressing the peripheral transitional zone between town- and landscape, that would be here between the locale and the surrounding waters respectively airspace.

<sup>471</sup> Here, in the context of skew relation, we might discern two strikingly different approaches in relating locales to main country roads on hilly terrain: While in Lazio since Roman times the uphill settlements were accessed mainly by country roads in the valleys and plains, the Napoleonic street development for instance in East Belgium or West Germany predominantly choose for roads on the hill ranges, accessing the locales situated beneath in the valleys or on the slopes; see also the following example of Palombara Sabina.

<sup>472</sup> for further information see (Foucault 1941; Quétel 1991; Leloup 2004; Legros 2005; Sbalchiero 2005)





- 1 City
- 2 Road to Rome
- 3 Road to Tivoli (S.S. 636)

*country*  
 Italy / Lazio  
*coordinates*  
 42° 03' 58" N – 12° 45' 57" E  
 Basilika San Giovanni in Argentella  
*elevation*  
 372 m  
*population*  
 12,084 (2007)  
*size*  
 75 km<sup>2</sup>  
*density*  
 161 /km<sup>2</sup>  
*foundation / rst citing*  
 1029  
*source*  
[http://it.wikipedia.org/wiki/Palombara\\_Sabina](http://it.wikipedia.org/wiki/Palombara_Sabina) (20.04.2008)



Palombara Sabina  
 Image © 2007 DigitalGlobe

**plate 57**

and early modern fortification of the town in course of the constant warfare in Normandy during the Hundred Years' War limited this walking access to the sole coast-facing Porte du Roy.<sup>473</sup> Only in 1879, a two kilometer long dam made the entry of the rock easier to undertake.<sup>474</sup> This construction eventually consolidated an immediate access towards the town, orthogonally transgressing the urban boundary, and thus representing an ideal instance of the above mentioned first relational class. Obviously the Mont-Saint-Michel also epitomizes criteria discussed earlier, such as less benevolent features regarding natural *Resources* and *Yield* yet favorable *Safety* and *Aesthetics* characteristics, without going into a detailed examination; within our *accessibility*' considerations so far, however, we have to ascertain that despite its scant aperture, the Mont-Saint-Michel experienced a very prosperous development during the Middle Ages as well as in our days, at first as religious and now as touristic pilgrimage place, which hence explains the eventual effort to produce a direct access line that is also significant part of the exiting regional route network.<sup>475</sup>

#### *Palombara Sabina*

Very similar to the Mont-Saint-Michel in shape and topographic setting is the Italian town of Palombara Sabina in Lazio, whose development, however, very much resembles the one of Sermoneta: in 11th century ensued a fortification of the whole Sabina region against the Saracen encroachment, of which the original Castrum Palombarum represents one example.<sup>476</sup> Only in 1276, after an interregnum of the Ottaviani, the Savelli family overtook the urban locale on top of an elevation overseeing a busy valley in the Monti Lucretili to establish their residence and safeguarded their prosperity through the control of the passing traffic and adversary troops.<sup>477</sup> The peculiar street layout of the town with the major streets spiraling uphill towards the castello with its main tower and several steep minor shortcuts is a remarkably uncommon feature of European urbanism and can be well explained through the above mentioned clash of Western and Islamic cultures in the early Middle Ages.<sup>478</sup> The town, consequently, produces a prominent vertical accentuation within the extensive hilly landscape producing central significance,<sup>479</sup> notwithstanding the later extensions and some uncontrolled urban spread, which is very typical for this region encircling the Italian capital. Nevertheless, we can easily discern that the main access routes, especially today's Strada Statale from Riti to Tivoli, always remained in the valley and only peripherally touched the hill with its independent street network, at very few points calling for permeation the original urban boundary. Within our criterion consideration, consequently, Palombara Sabina shows a true tangential relation to the surrounding traffic lines.

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<sup>473</sup> Contemporary research singled out four major fortification phases: the first dating back into the 13th century followed by works 1390-1441, 1481-93, and 1523-25; compare (Legros 2005: 95 ff.) as well as (Sbalchiero 2005: 87 & 99 ff.).

<sup>474</sup> compare (Sbalchiero 2005: 181)

<sup>475</sup> On the other hand, during the decline of monastic life enforced by reformation, enlightenment, and ultimately revolutionary secularization the Mont-Saint-Michel also faced a decline in its overall development (Sbalchiero 2005: 117 ff.), from 1472 until 1863 serving as one of the most remote state prisons of France (Legros 2005: 188 ff.).

<sup>476</sup> see (Pompili 1990: 17 ff.)

<sup>477</sup> see (Pompili 1990: 30 ff. & 68 ff.)

<sup>478</sup> see also (Guidoni 1978: 83 ff., especially 89)

<sup>479</sup> see (Norberg-Schulz 1979: 173)





- 1 Roman City
- 2 Road to Salona
- 3 Road to Burnum
- 4 Hinterland Road

country  
Croatia / Zadarska županija

coordinates  
44° 06' 56" N – 15° 13' 25" E

Forum

elevation  
3 m

population  
90,916 (2001)

size  
194 km<sup>2</sup>

density  
469 /km<sup>2</sup>

foundation / rst citing  
59 BCE

source  
<http://en.wikipedia.org/wiki/Zadar> (20.04.2008)



Zadar  
Image © 2008 DigitalGlobe

**plate 58**



### 3.1.3.3 Connection

Consequently following the understanding of a city as a part of an urban network and pursuing the line of sight from the urban nucleus outwards, the last criterion of this parameter deals with the integration of a locale with its hinterland into the wider region. Especially for this consideration, which is mainly a matter of geographical research, we can refer to according authors. Brian W. BLOUET for instance gives an intriguing account on the "Evolution of Settlement Patterns" while presenting an abstract model of the distribution of settlements and towns in a given territory (Blouet 1972),<sup>480</sup> while Walter CHRISTALLER already earlier produced a theory on the hierarchical dependencies within such a regional net of different places (Christaller 1933).<sup>481</sup> The *Connection* of locales among each other eminently supports the wider understanding of the presented *Yield* criterion and ultimately the parameter of *permanence*.<sup>482</sup> Yet, its stand-alone significance within *accessibility* is evident, especially when we, after the review of the number of permeating points and the characters accession lines, consider the indispensable trans-urban communication.<sup>483</sup> Here, only a magnification from the examination object, despite its aperture and relation, allows us to identify the quality of its overall integration. Then we might discern single, double, or multiple junctions, which subsequently determines, whether the locale represents a terminal, transit, or connecting regional entity. Accordingly, *Connection* describes those aspects of a locale that determine the possible interrelation with other locales. For non street based traffic, along our earlier discussion,<sup>484</sup> we now have to carefully consider larger implications; while for the inland navigation we can at least rely on easily detectable water ways, such as rivers and canals, high sea and air traffic cause a discreet examination of the size and arrangement of the according ports as well as the streets leading there, to induce their possible role for this criterion.<sup>485</sup> However, in this context we might ultimately establish the premise that while the integration within a road network is facultative, *Connection* in general is obligatory to any urban locale.

#### *Zadar*

Obviously, the connection of a town within a regional net is strongly dependent on its topographical setting on one side and the political-economic conditions on the other; while the first establishes the integration potentials of an urban locale, the latter determines the actual (and variable) utilization of these potentials. Here especially ephemeral traffic routes can play an important role, as they are epitomized with the example of the Dalmatian coast town of Zadar, which is situated on a peninsula at the Adriatic Sea. It owes its urban development to the Romans, who during their conquest of Illyria seized the original settlement and transformed it into a *municipium* and in AUGUSTAN times into the colony Iadera.<sup>486</sup> During the Roman Empire with its immediate port on the Adriatic and two major streets

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<sup>480</sup> There BLOUET bases on ideas from HUDSON and ZELINSKY (Zelinsky 1966; Hudson 1969a; Hudson 1969b; Hudson 1969c; Hudson 1970; Hudson 1972).

<sup>481</sup> see also discussion on page 166

<sup>482</sup> see discussion on page 131 ff.

<sup>483</sup> compare again (Jansen 2002: 5)

<sup>484</sup> compare discussion on page 173

<sup>485</sup> as we have seen earlier with Duisburg; compare discussion on page 143

<sup>486</sup> see (Wilkes 1969: 198, 200, 207 ff.; especially 367 f.), (Brunelli 1913: 121 ff.), and (Miroslavljec et al. 1970)



- 1 City
- 2 Lago di Como
- 3 Grigna Massiv
- 4 Combined Acces Lines

*country*  
 Italy / Lombardia  
*coordinates*  
 45° 54' 44" N – 09° 19' 09" E  
 Piazza Roma  
*elevation*  
 200 m  
*population*  
 10,457 (2007)  
*size*  
 42 km<sup>2</sup>  
*density*  
 246 /km<sup>2</sup>  
*foundation / rst citing*  
 2nd century BCE  
*source*  
[http://it.wikipedia.org/wiki/Mandello\\_del\\_Lario](http://it.wikipedia.org/wiki/Mandello_del_Lario) (20.04.2008)



Mandello del Lario  
 Image © 2008 Cnes/Spot Image  
**plate 59**

accessing the inland, Zadar and its fertile hinterland represented a significant connecting urban locale within the Roman network, maintaining trade relations to Northern and Central Italy with Rome as well as to the neighboring provinces on the Balkans with Greece, and ultimately the East Mediterranean altogether.<sup>487</sup> Yet, during the following centuries, the port town, now on the border between the East- and West European realms, experienced remarkable clippings of these connection routes: in late Antiquities becoming part of the Byzantine Empire Zadar suffering from its loss of maritime significance regarding the Appenin Peninsula, while in the following affiliation with the Venetian reign from the millennium on the road connection to the mainland withered. Subsequently almost regularly by century the control of Zadar changed between East and West,<sup>488</sup> when after the conquest of the Balkans by the Osman Empire in the early 16th century Zadar became a Western stronghold almost exclusively accessed by sea and gradually forfeiting its connecting significance as well as its economic importance.<sup>489</sup>

#### *Mandello del Lario*

As we have seen also with other examples described in this catalogue connecting urban locales within a regional network are most common, notwithstanding political-economic occasions that alter the connecting potential;<sup>490</sup> a much smaller though still significant number of terminal locales add up to these, very illustrative in this context is the already described Mont-Saint-Michel. Transit urban entities, however, are rare, especially due to the fact that original transit settlements, e.g. resting places on country roads through remote areas, while becoming true urban nuclei soon produce manifold communication with other cities and settlements and thus multiply their access routes accordingly. Significantly, urban settlements usually remain transit locales only when topography constrains them to one thoroughfare,<sup>491</sup> then also largely restricting the urban development altogether; in these cases access routes often ramify at every potential situation or instantly radiate when the adversarial topographic impact ceases altogether. We can observe this well in mountainous areas, for instance with the North Italian town of Mandello del Lario on the Ramo Lecchese of the Lake of Como. The originally Gaulic settlement, which was later colonized by the Romans, is closely bordered through the Grigna Massif in the East and the lakefront on the West. While the Lake of Como never induced greater shipping traffic, Mandello remained solely dependent on the routes paralleling the lakefront producing one of the few immediate Alpine connections of Milan to the north. The town's development, at first based on the importance of the San Lorenzo abbey and since 1921 sponsored by , the Moto Guzzi motorbike factory, however, provided for an intensive utilization of the available building ground between rocks and water.<sup>492</sup>

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<sup>487</sup> see (Wilkes 1969: 210, 355f., and 408f.);

Zadar is documented in the *Tabula Peutingeriana* for its street access to Burnum and Salona as well as in the *Itinerarium Maritimum* with two shipping routes to Ancona and Pola; compare also (Löhberg 2006; Carro et al. 2008)

<sup>488</sup> especially between Hungary and Venice; see also (Brunelli 1913: 401 ff.)

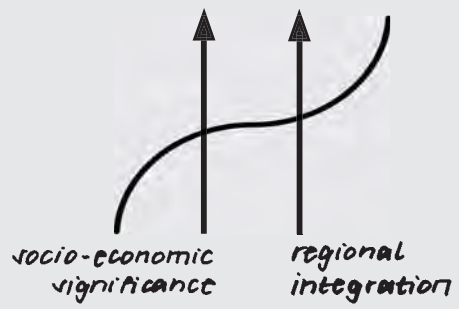
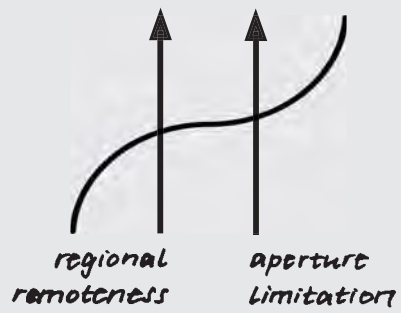
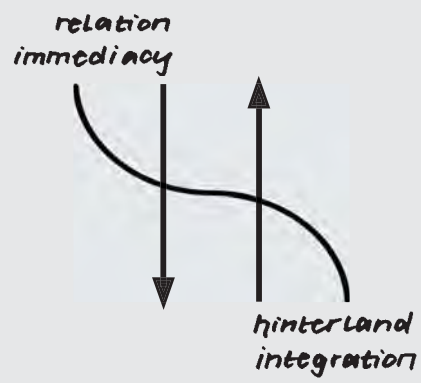
<sup>489</sup> As a matter of fact, Zadar continued to be a geopolitical cue ball also in the industrial age, being claimed by Austria-Hungary (1797 and 1813), France (1805), Italy (1920), and ultimately Yugoslavia (1945), when again the shipping routes disrupted in course of Cold War and Iron Curtain; only since the mid 1990s, due to the pacification after the Croatian War Zadar regains also maritime significance for the Adriatic Sea.

<sup>490</sup> compare for instance Soest and Duisburg on page 141 ff.

<sup>491</sup> see for instance (Curdes 1993: 24)

<sup>492</sup> see (Zucchi 1931; Donato 1994; Bianchi Buzzi 1996)





After having assessed these three criteria of *accessibility*', one might argue that their features are not too much distinctive from each other for granting them such advertency in this catalogue and that their impact might be as well incorporated in one by merely determining the grade of integration of an urban locale in its regional context. Still, notwithstanding our perception starting from the urban locale outwards and thus discerning increasing dependences within an urban network – not only in a geographical but also in a historical perspective,<sup>493</sup> we might observe different modes of interrelation between these three criteria, which not necessarily exponentiate the urban accessibility but again produce a differentiated causal direction. Hence we can find outmost «apertured» locales, such as an oil rig for instance, which are thus accessible from all sides and have possibly multiple relations to traffic routes and yet feature only negligible connection to other locales; on the other extreme we examined locales with scant aperture, such as Sermoneta, Palombara Sabina, and the Mont-Saint-Michel, which all, despite their varying relation to the main access lines, integrate well into the surrounding urban network, either dominating a certain portion of the route net or representing a major destination within it.<sup>494</sup>

Still, beyond exceptional developments, some basic relationships according to the anthropogenic situative criteria of *accessibility*' might be:

- the less immediate the urban locale's relation is to the main access line, the more likely it develops a large integration with its hinterland, regardless its possibly benevolent situation within the region;
- the more remote an urban locale is within a certain regional network, the more likely its aperture is limited to few access points, despite its actual socio-economic significance;
- the greater the socio-economic significance of an urban locale is within a regional network, the more likely it will show additional connections to other urban locales, notwithstanding its actual geographical position.

Summarizing the presented criteria of *accessibility*' we understand the importance of human activation of traffic routes not only to reach an urban locale, but also to maintain it. With the different levels of this accessibility consequently we recognize the further development of this locale subsequent to its initial occupation and utilization. Translating this into a parametral statement, we perceive *accessibility*' as the most *extensive* concept: we find it reaching from the immediate entry into the urban locale via its interrelation with the hinterland towards the possible exchange with far other urban entities, and recognize its importance for the urbanization process altogether. *accessibility*' ultimately must be seen as the provision for any urban development.

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<sup>493</sup> This notion bases on the understanding of a chronological development from a settlement towards a town or city, while the urban locale gradually physically but also communicatively expands into the region.

<sup>494</sup> We saw that Sermoneta as well as Palombara Sabina served as the residence of noble families, which after all in the Middle Ages earned their livelihood as robber-knights and later on still relied on tolls and taxes from the passing good traffic. As for the Mont-Saint-Michel we have to consider its pilgrimage significance attracting a multiple of its inhabitants, what already in medieval times produced several defined routes from as far as Cornwall, Portsmouth through Cherbourg and Barfleur, Caen, Rouen, Cologne and Brussels through Paris, Rome and Lyon through Chartres, as well as from Santiago de Compostela back through Saint-Jean-d'Angely and Rennes; see (Legros 2005; CMSM 2006).

The second parameters determine the quality of a certain distribution within a situation, which represents the elementary urban development and is *constitutive* to a city. They presuppose the situative and entail the creative parameters, as they affect the physical layout of a city: the way how it is.

Distribution appears to be a highly demure term in this abstract employment, and it is moreover extremely comprehensive in comparison to the antecedent situative implications, as it does not only comprise a given locale and the human interrelation to it, but refers to the initial human transformation of this locale and thus exponentiate the number of possible examination objects. Plentiful contributions, definitions and categorizations from urbanism as well as other disciplines present its contents, as abundant as the different examples of urban development in different urban cultures. Again, we find a lot of information on what we name distribution in the archaeological field, after all dealing with the demarcation and deployment of land, different settlement patterns, and the organization of early settlements themselves.<sup>495</sup> However, according to the advancement of urbanization and change of urban forms, cognitions out of this field can only partially be employed; they somewhat form the basis for a reflection, which has to be generalized for a wider understanding. The strict distinction between city and landscape through a city wall for instance, which appears to have been a rather ubiquitous feature from early times on,<sup>496</sup> does not apply to industrialized or post-industrialized urban entities any more. Today we hardly find walls, palisades, or fosses to mark the whole of an urban area – city limits are set by legal terms and official surveying. Yet for our employment with urban form, we still can assess them as one specific sort of borders or demarcations, visualizing the confrontation of different uses and functional intensities, of which today we find many varying forms; however, these demarcations are subject to investigation and interpretation, which usually base on individual questioning and objectives.

Altogether the following taxonomy bases on a more geographical understanding of settlements, towns, and cities, being nowadays also largely employed in urban planning; Brian J. BERRY (\*1934), for instance, already singled out "dimensions" of urban systems, thereto belonged also size, as a heterogeneity inducing category, and density, as a category relating society to the urban surface.<sup>497</sup> Again, these considerations shall help us pursuing our specific urbanistic approach, while we in this context encounter a remarkable propinquity to the VITRUVIAN definition of architecture. His term of "utilitas" stands for the functionality and convenient arrangement of the rooms within a building (Vitr. 1, 3, 2).<sup>498</sup> Analogically, the distributive parameters and their criteria determine how an urban development is laid out, yet reflecting the flexibility and complexity of an urban entity that evolves and develops more thoroughly during time than a single architecture and refers to larger group of users.

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<sup>495</sup> compare for instance (Childe 1934; Childe 1936; Childe 1950; Douglas 1972; Heighway 1972; Ucko et al. 1972; Davidson 1972; Wheatley 1972; Flannery 1972; Rowlands 1972; Tringham 1972; West 1972; Schwerdtfeger 1972; Blouet 1972; Tosi 1974; Tosi 1979; Fritz 1980; Tosi 1982; Tosi 1983; Jansen 1986; Dostert 2001; Untermann 2004; Scholkmann 2004)

<sup>496</sup> compare the definitions in Part 1 of this thesis, where we only found Sparta as a prominent exception; see discussion on page 15 ff., here especially page 17

<sup>497</sup> see (Berry et al. 1970; Berry 1972), as well as (Lichtenberger 1986: 87 ff.)

<sup>498</sup> "utilitas" translates expediency or utility.



### 3.2.1 structuredness' (Strukturiertheit')

A city comprises a framework for its uses.

When a locale is chosen for sedentary activity after examining the situative aspects, the inner organization is determined by the development of a settlement fabric or distributive *framework* (Rahmen),<sup>499</sup> which represents another major constituent regarding urban concepts. The establishment of such a framework is the first activity within an urban development exclusively introducing artificial features to the natural environment, notwithstanding on one site the employment of extant natural characteristics nor on the other an often alleged imperative of comprehensive preparatory planning: while in several cases of Western urbanism we can exclude the notion of an overall plan prior to execution, we still ought to understand the measures undertaken to establish this framework as a true tactical endeavor, which results in the deliberate distinction of different sites within a settlement context, even when not producing a generally and often also geometrically defined pattern.<sup>500</sup> This distinction is produced by confinements of different sorts,<sup>501</sup> besides natural borders we find abutments marked through walls and fences, but also solely by boundary signs, yet usually it primarily follows the internal accession net; here the relation to the parameter of *accessibility*', especially in its aperture aspect is obvious, as the internal net has to be linked to the regional net. *structuredness*' eventually gives answers to questions, such as: How can one differentiate between different sites within the settlement? How does one move through and between these sites and does this ability to move along or into already imply a certain hierarchy between different sites? How does one produce the urban fabric and do I apply any distinctive methods for this production?

We shall refer to the subsequent depictions of *structuredness*' as constitutive distributive criteria, as they principally determine the form-functional relations within a sedentary context. Similar to the last situative parameter of *accessibility*' they originate from human intervention, in the same manner all successive parameters and criteria do, and thus must be considered subjective-active:<sup>502</sup> it is the manner different plots and sites are distinguished from each other; the evolving sizes and forms of these plots, including their perimeter-surface relation and the proportion amongst each other; and the overall relation between the different surfaces. In addition the consequent structural fabric represents the overall layout of the settlement, and the pattern, which is produced by the different sites, and hereby already implies for instance the relationship between privacy and community, between several functions, and between center and periphery; altogether we find with this parameter the segmentation of space by means of boundaries for the various utilization purposes of man.<sup>503</sup>

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<sup>499</sup> The term urban fabric, which is largely used in English urbanistic literature, gives a plausible description of the structural basis of sedentary activity, which induces interwoven infrastructural lines resembling textile structures, notwithstanding an underlying overall design.

<sup>500</sup> Here we might remember the various distinctions between *spontaneous urban development* versus *planted town* or the widely discussed issue of *planned* and *non-planned* cities; see discussion on page 80 and on page 88, as well as for instance (Kostof 1991: 10) and (Alexander 1965: 58); ultimately, we should argue that all of these distinctions rather refer to the realm of *motivations* than to our considerations on abstract causes.

<sup>501</sup> Compare also BENEVOLO's publication to this subject, where he, however, deals with inner boundaries but also with their general significance within any cultural topography (Benevolo 1994).

<sup>502</sup> Consequently this statement shall not be repeated with the following parameter descriptions.

<sup>503</sup> compare (Simmel 1908: 694)





- 1 Transit, e.g. Kleiststraße
- 2 Junction, e.g. Goethe- / Schillerstraße
- 3 Terminal, e.g. Stormhof

*country*  
 Germany / Lower Saxony  
*coordinates*  
 52° 25' 44" N – 10° 47' 19" E  
 Willy-Brandt-Platz (Train station)  
*elevation*  
 63 m  
*population*  
 120,493 (2006)  
*size*  
 204 km<sup>2</sup>  
*density*  
 591 /km<sup>2</sup>  
*foundation / first citing*  
 1938  
*source*  
<http://de.wikipedia.org/wiki/Wolfsburg> (20.04.2008)



Wolfsburg  
 Image © 2008 GeoContent

**plate 61**



### 3.2.1.1 Lineage

Scrutinizing the initially two-dimensional urban fabric for ever-occurring components, we soon recognize the preconditionary significance of boundary lines, which within the overall context distinct single sites from each other. These lines might represent an immediate transition from one site to the other, a clear cut, which is physically produced by means of fences, hedges, walls, or other built facilities, as well as non-physical limitations, such as surveyed confinements of private and public properties, which are usually at first materialized by means of demarcation stones or other natural and artificial marks on an otherwise equal surface – only a specific, hence more obvious and extremely significant kind of boundary lines are paths and lanes, which comprise their own spatial quality and quantity resulting from the indispensable internal access of the locale after its investigation and determination;<sup>504</sup> all boundary lines together, for which we eventually shall use the term *Lineage*, serve as divisors for any subsequent utilization activity, also when those featuring their own quality and quantity appear to sustain longer periods than the others, especially when they exhibit infrastructural and accession importance.<sup>505</sup> Crucial for the understanding of a framework, however, is that the established structure, in this context the term fabric is even more informative, consists of a continuous lineage (or threads), that is linear elements, which not only allow for the distinction of the remaining grounds, but show themselves different characteristics appearing during their course as transit-, junction-, or terminal entities. As argued earlier, for our purpose these circumstances are well illustrated with pathways that, within the framework, over again produce corridors, intersections, and dead ends, likewise ensuring the structuring and the accession of the locale as well as they determine hierarchical dependencies within the different plots; however, we should again straighten out that *Lineage* as a criterion affects more than this urban street-network:<sup>506</sup> it altogether refers to those aspects of an urban framework that allow for its subdivision.

#### *Wolfsburg*

The hierarchical dependencies within the lineage of an urban framework are ubiquitous with built urban form. A good illustration we find, however, with the city of Wolfsburg, planned by Peter KOLLER (1907-96) and founded 1938 by the German Fascist regime to accommodate the main factory and its workers of the KdF-automobile industry, which today is known as Volkswagen.<sup>507</sup> While as a result of

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<sup>504</sup> compare also "edges" and "paths" with LYNCH, while for his argument he chose to first introduce paths, being urbanistically the more amenable term, and only later defining edges as "linear elements not considered paths" (Lynch 1960: 49 ff. & especially 62); for our approach, however, it is seemingly more appropriate to initially focus the dividing character and thus employ the reverse sequence

<sup>505</sup> Especially looking from a planner's perspective, who is used to apply to the city a planimetric view employing building lines and boundaries, one might argue that also paths and lanes can be understood as another yet special kind of building ground, which is also separated from the adjacent plots by one line rather than representing the division line itself. As valid as this understanding of course is, we should bear in mind that such a planimetric approach is on one side very specific and in addition gained its importance only with the urbanistic idea of the *functionalist city* and its implementation in the *structured and aerated city*, in which the traditional immediate street-building relation got exchanged for a free disposition of infrastructural and building areas within the locale – apart from several benefits with the result of decreased contextuality and increased land consumption; compare discussion on page 39 as well as on page 45.

<sup>506</sup> The street as an urban constitutive, obviously, would deserve an additional scientific occupation due to its far-reaching impact on urban forms; compare (Kostof 1992: 189 ff.).

<sup>507</sup> see (Schneider 1979; Kautt 1983) as well as (Trommer 1997; Durth 1997)





- 1 Irregular Medieval City
- 2 Fine Borso-extension
- 3 Coarse Ercolean-extension

*country*  
 Italy / Emilia-Romagna  
*coordinates*  
 44° 50' 15" N – 11° 37' 10" E  
 Castello Estense  
*elevation*  
 9 m  
*population*  
 133,266 (2007)  
*size*  
 404 km<sup>2</sup>  
*density*  
 330 /km<sup>2</sup>  
*foundation / rst citing*  
 ca. 753  
*source*  
<http://it.wikipedia.org/wiki/Ferrara> (20.04.2008)



Ferrara  
 Image © 2007 DigitalGlobe

**plate 62**



World War II the original plan was never fully implemented and thus does today not feature the initially envisioned large axes and squares for military deployment and party rallies with bordering representative buildings, the city gives today an even more obvious interpretation of an «aerated» and «organic» urban structure, in which the streets play a predominant role as feeding veins, just as it had been contemporarily prepared by REICHOW and presumably already influenced KOLLER in his design (Reichow 1948).<sup>508</sup> Accordingly Wolfsburg lineage ramifies from major to minor transit streets and ultimately accesses the inner building plots with cul-de-sacs, when especially the housing development mainly succumbs to similar forms and heights notwithstanding their location and relation to the street-network. Thence the differentiation of the overall framework is almost solely determined by the lineage itself.

### 3.2.1.2 Texture

The next criterion evolving from these considerations regarding the quality of the lineage itself is focusing on the relation between the different lines, which allows statements on the *Texture* of a framework by qualitatively assessing the ratio of the lineage versus the encompassed surface; in this context we should refer to LYNCH, who talked about the "grain" of a texture, that according to him might be "fine" or "coarse" (Lynch 1981: 265).<sup>509</sup> For our review of the urban framework, evidently, here the distances between the different junction- and terminal points play the determining role as those reoccurring like elements, which are dispersed among other unlike elements within a certain locale: then, a texture should be called fine, when the according significant lineage points show similarly small distances towards the neighboring ones, leaving relatively small plots within the framework; and coarse, when the according distances are wide and leave relatively large plots within the framework. These descriptions, however, tend to insinuate a certain regularity within urban textures, which evidently in many cases does not meet the reality of urban phenomena with their often varying textures. Thus, we should add to LYNCH's delineation the term *irregular* for those frameworks that show textures with varying grain, may it be because of different development stages of one urban entity due to changing motivations, or even different planning intentions within one urbanization phase, which might result from topographical implications, divergences from the envisioned utilization, or historical or traditional proprietary constraints;<sup>510</sup> altogether *Texture* refers to those aspects of an urban framework that establish a differentiation within its subdivision.

#### *Ferrara*

An intriguing example for a successive integration of different textures into one urban framework as well as the diversity of textures within one planning process, both ensuing grain-alterations, gives the North Italian city of Ferrara in the Po Valley (Pianura Padana). While a concrete date for the original establishment of the city is unclear, the street-net of the old part immediately on the northern Po bank accounts for a post-Roman development, lacking the otherwise ubiquitous

<sup>508</sup> compare (Kautt 1983: 131 ff. especially 137); see also discussion on page 45; interestingly in the early post-war period REICHOW himself suggested the further development of the urban torso of Wolfsburg according to his 1948 book, which was largely implemented; see (Kautt 1983: 152 ff.)

<sup>509</sup> LYNCH, however, approximates "grain" with density, and refers to elements, that largely vary from activities over building types to persons and features – for our purpose this reference is seemingly too broad, when, however, it perfectly fits the description of the texture of a framework; for "grain" see further (Lynch 1960: 22).

<sup>510</sup> for the first see discussion on page 131 ff.; for the latter two see the following on page 211 ff.

castramentation layout but following the course of the river with longitudinal streets and many cross streets in short sequence.<sup>511</sup> This delicate yet geometrically flexible urban framework rather allows for an assignment into the early Middle Ages, what is also supported by the first literary documentation under the Lombard king AISTULF (†756). In early modern times the prosperous economic and political development of the city sponsored two main urban extensions: the first smaller one in the south of the extant asset on an exhausted anabranch of the river, which was commissioned by Duke BORSO D'ESTE (1413-71), and the second one, more than doubling the urban surface towards the north by Duke ERCOLE I (1471-1505). When the first only complemented the medieval fabric, yet already following the modern rectangularity, the second, called ERCOLEAN Addition, introduced an urbanistic understanding along the rediscovered VITRUVIUS, further developed and enlarged by the notion of perspective by Biagio ROSSETTI (1447~1516).<sup>512</sup> The extension, featuring a new model fortification encircling the 230 hectares, is structured by wide and rectilinear streets leaving substantially large plots in between and connecting the old layout with new Renaissance development. The thence new urban framework produces, despite its non-rigid rectangular layout, an overall axial determination resembling the *cardo-decumanus*-scheme, intentionally reconciling all parts of the total layout.<sup>513</sup> When highlighting the street intersections, we can, however, in respect to the texture easily recognize the irregularity of the grain; that is very fine with the medieval development, still fine with the BORSO-extension that integrates into the extant scheme, and somewhat coarse with the ERCOLEAN Addition, in which, notwithstanding the building development until today, gardens took up larger plots. In addition to these ideas on *Texture*, we recognize with the varying formal layout of Ferrara's streets already the following criterion of the urban framework: the pattern.

### 3.2.1.3 Pattern

When *Lineage* refers to the qualitative aspects of the structuring elements themselves and *Texture* to the qualitative aspects of the relation between the structuring elements and its surroundings, the *Pattern* criterion reflects the qualitative aspects of the accordingly evolving two-dimensional form of the framework.<sup>514</sup> This is accordingly dependent on the modality the boundary lines are conducted from one junction- or terminal point to another. As for the double function as limitation of plots and possible accession of the locale, we should be able to distinguish three main groups of patterns: the first group includes patterns, which are determined by the topography of the locale, that is that boundary and inner accession lines usually situate along the

<sup>511</sup> compare also the basic description of Ferrara to become part of the UNESCO World Heritage List (ICOMOS 1995)

<sup>512</sup> see (Benevolo 1975: 556-563) and (Rosenberg 1997: 130-140), as well as (Zevi 1971; Marciano 1991; Rosenberg 1999); for ROSSETTI see also (Zevi 1960)

<sup>513</sup> compare (Benevolo 1975: 556)

<sup>514</sup> At this point we ought to clarify that the here suggested criterion *Pattern* is initially quite different from the understanding introduced by ALEXANDER (ALEXANDER ET AL. 1977; ALEXANDER 1979), similar to aforesaid quandary with the terms "texture" and "grain" in LYNCH's works. Without scrutinizing their approaches, which apparently both sought to combine urbanistic thought with socio-economics, developing their theories starting from human behavior to oppose the hollow formalism that earmarked urban projects at their time causing, as we have seen, manifold urbanistic failures, the present occupation has to deliberately exclude any notion referring to these terms that goes beyond mere formal and factual description, due to the explained difficulty that is induced by reviewing the motivations for any urban development. Evidently, starting from the quality of forms we sooner or later also encounter the significance of human behavior and activity, yet without analyzing their undoubted significance for the production of urban form, but as more as its consequence.



contour lines or orthogonal to them, while for any movement the first typically allows for the most convenient transition within a given terrain, the latter for the most direct transition of possible differences in altitude – regularly such patterns derive from an intuitive approach towards the structuring of a framework, reflecting already extant pathways;

the second group includes patterns, which are determined by historic land tenures or claims, that is that boundary and inner accession lines of a framework are laid out in such a way that they avoid to change extant property limits and the therewith expected disputes among the populace – notwithstanding the relation between author- and ownership of and within a framework, this represents a possessive approach towards the production of an urban pattern;

the third group, ultimately, includes patterns, which are determined by a certain design idea that generally results in appointed forms; these might as well be laboriously imposed onto a hilly terrain, that is that boundary and inner accession lines are geometrically (not necessarily rectangularly)<sup>515</sup> defined to meet an envisioned overall layout – these patterns surely derive from a reflective approach towards the creation of a framework.

Altogether, the *Pattern* criterion refers to those aspects of a framework that determine the form of its subdivision.

### *Lisbon*

Urban patterns tend to be one primary source for urbanistic research, as they often also allow for an easy historical classification, especially with those factual cities that underwent several additions and changes throughout their development. Still, we should here carefully prevent from oversimplifying analysis that does not account on the motives to use this or that pattern. As a matter of fact the presented pattern-groups ought to be understood as initially non-historic to unfold their significance for the criterion of a parameter, even though in the case of Lisbon, which illustrates the concomitance of different patterns in one urban framework, we have to rely on historic occurrences to better understand the irregularity of patterns within the overall urban framework.<sup>516</sup>

When the first settlement dates back to the Iron Age and located on a some 100 meters high hill on the northern bank of the Tagus River (Castelo de São Jorge); in Phoenician and Ibero-Roman times the city of Lisbon (Alis Ubbo/Olissippo) occupied the southern and western slope of that hill, which itself became used for a fortification, overlooking the estuary of two tributaries to the Tagus forming a natural harbor.<sup>517</sup> Only in early Middle Ages under the Moors, the adjacent South-eastern slope of the hill attracted major settlement activity relocating the

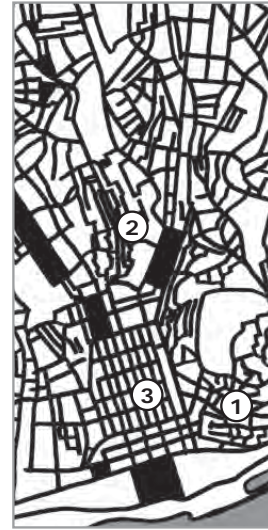
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<sup>515</sup> see the presented medieval planning, for which HUMPERT & SCHENK were able to trace well geometrically defined construction methods, even though until today the resulting urban forms appear to be unplanned; compare discussion on page 113

<sup>516</sup> That such an oversimplified classification can be misleading is obvious, when we remember that we can find similar urban patterns in very different historic circumstances, such as the rectangular grid in Greek and Roman antiquity as well as in modern North America, or curved layouts in the Middle Ages as well as the 1960's car-friendly Western planning or in contemporary suburbia; compare discussions on page 27 and 111, as well as on page 45, 51, and 113.

<sup>517</sup> see (Missler 1997: 54) and (Calado 1993: 46 ff.)





- 1 Intuitive - Alfama
- 2 Possessive - Pena
- 3 Reflective - Baixa

country  
Portugal

coordinates  
38° 42' 27" N – 09° 08' 12" W  
Praça do Comércio

elevation  
0 to 226 m

population  
509,751 (2006)

size  
84 km<sup>2</sup>

density  
6,368 /km<sup>2</sup>

foundation / rst citing  
205 BCE

source  
<http://pt.wikipedia.org/wiki/Lisboa> (20.04.2008)



Lisbon  
Image © 2008 DigitalGlobe

**plate 63**



city-center to the Alfama district.<sup>518</sup> When there is little evidence for larger changes to the layout with the *reconquista* in the 12th century, ultimately the growing wealth in the 16th century, also in course of the Portuguese conquest in Asia, Africa, and the Americas, caused the city to expand paramount West over the other surrounding hills, forming the new quarters of Bairro Alto and Chiado and making the depressed area of the, in the meantime silted up and developed, estuary to the economic center.<sup>519</sup> While the quick growth ceased as a result of the Spanish occupation 1580-1640, the big earthquake in 1755, which was followed by a flood and a devastating fire, destroyed large parts of the extant city and killed more than 10% of the population.<sup>520</sup> Particularly the city-center in the depressed area completely fell victim to the catastrophe. Immediately after the clearing of the debris, the Prime Minister Sebastião José de Carvalho e Mello (later Marquês de POMBAL; 1699-1782) commissioned the engineer Manuel DA MAIA (1680-1768), as well as the architects Eugénio DOS SANTOS e Carvalho (1711-60) and Carlos MARDEL (1696-1763) with the reconstruction, using a modern rational master plan for a new city-center in the valley that had been fully implemented and constituted today's Baixa POMBALina.<sup>521</sup> At that time, however, also started the further urban development towards West, beyond the already extant districts of Bairro Alto and Chiado, as well as towards the North, which later experienced a Belle-Époque reformation through the alignment of the Avenida da Liberdade and the Rua da Palma/Avenida Amiral Reis.<sup>522</sup>

Looking at the urban framework of Lisbon today, we are able to distinguish at least two of the earlier classified pattern groups: The now oldest parts at Alfama and Castelo de São Jorge show a topographic-intuitive pattern, which follows mainly the contour lines of the fortified hill. Yet the early modern districts of the Bairro Alto and Chiado already follow a geometric-reflective pattern with a rectilinear street-layout, similar to the one we became acquainted with earlier at the ERCOLEAN Addition of Ferrara;<sup>523</sup> most strikingly for this group, however, is the Baixa POMBALina with its rigid grid-iron of eight by eight blocks that despite its main orientation neglects all topographic features (especially to the framing hills) as well as it overrode the land tenure from before the earthquake – still large squares on the grid's periphery support the new streets' connection to the extant network.<sup>524</sup> As for the geometrically equivocal districts to the North (Pena and Anjos) we shall presume a classification as topographic-intuitive, if not, as a third, historic-possessive, notwithstanding the evidently reflective alignment of the two main Avenidas. Through the different urban development phases, consequently, Lisbon's urban fabric gained very different weaving patterns, which despite their evident dissimilarities integrate into one urban framework.

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<sup>518</sup> see (Egli 1967: 81), (Benevolo 1975: 609), and (Schau 2002: 209 ff.)

<sup>519</sup> compare also (Calado 1993: 50 ff.)

<sup>520</sup> compare (Wimmer 1993: 1918 f.)

The earthquake and its consequences shocked the whole Western world having tremendous effects on the contemporary societies, in literature as well as theology, philosophy and political sciences; see for instance (Breidert 1994; Günther 2005; Braun et al. 2005); in addition the documentation of the earthquake by the Prime Minister induced first seismological analyses.

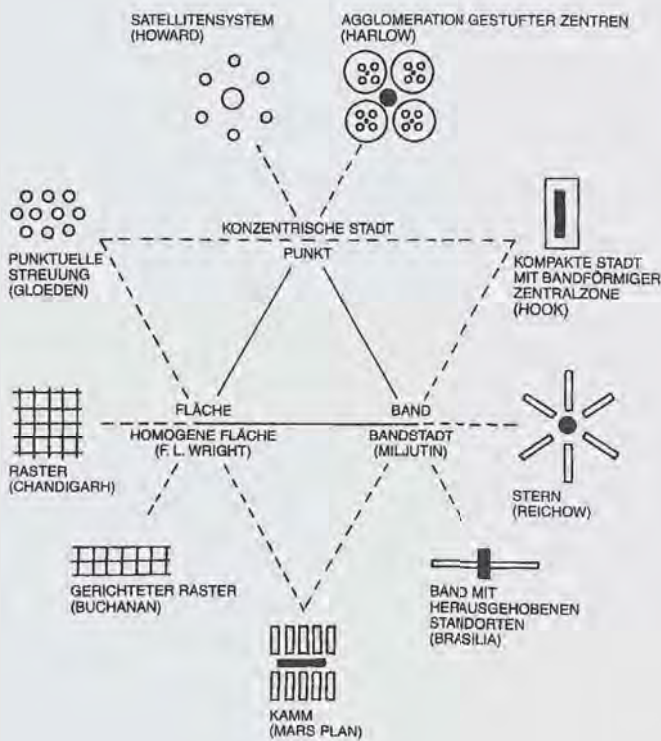
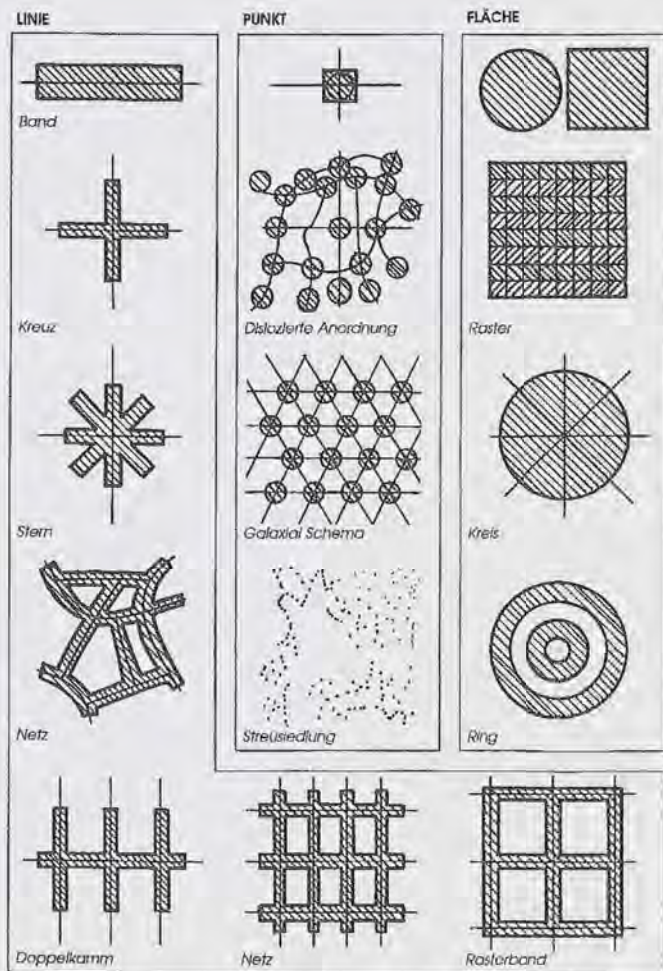
<sup>521</sup> see (França 1965) as well as (Missler 1997: 56 ff.)

<sup>522</sup> At that time also the *Rua Garrett* was burst through the Chiado district; see (Missler 1997: 51).

<sup>523</sup> see again Benevolo, who dates the start of work at the Bairro Alto in the year 1513; (Benevolo 1975: 609) – as for the Chiado we should notice the persistence of the traditional fabric even though a fire in August 1988 destroyed large part of the district's architecture; compare (Missler 1997: 51)

<sup>524</sup> see (Egli 1967: 81 f.)





Morphological Categories  
according to CURDES and ALBERS  
(Curdes 1993: 25; Albers 1988: 217)

plate 64

While the parameters in this catalogue so far predominantly base on perceptions influenced by a variety of approaches as well as disciplines, the here presented *structuredness*' has ever since been part of urbanistic research,<sup>525</sup> and in one way or the other subject to plentiful contributions.<sup>526</sup> Out of this vast amount of treatises we should have, as an apposition, a quick glance at two compilations of possible urban models:

Gerhard CURDES classified with all possible urban structures three main formal principles – *Linie* (line), *Punkt* (spot), and *Fläche* (area) – which yet might show different arrangements, such as *Kreuz* (cross), *Stern* (star), *Netz* (net) and *Raster* (raster), *Ring* (ring), and *Kreis* (sphere).<sup>527</sup> In his argumentation these structures represent the basic repertoire for urban form and urbanistic analysis.

Gerd ALBERS augments such an approach by including the same formal principles into a systematic typology of possible urban models, referring to prominent urbanists, respectively urban design projects – thus he illustrates possible double dependencies of more elaborate models to the primary principles, as, for instance, the *Punktuelle Streuung* (punctual diffusion), which has earlier been suggested by Erich GLOEDEN,<sup>528</sup> similarly depends on the notion of *spot* and *area*.<sup>529</sup>

Both treatises build on similar perceptions, which we also employed for the description of the parameter *structuredness*': the significance of the inner accession (*System der Erschließung* with CURDES and *Verkehrssystem* with ALBERS) on one side, and the dissociation and limitation (*Versammlung* with CURDES and *Anordnung* with ALBERS) on the other;<sup>530</sup> and both conclude from here, as we will do, the further importance of density and diversity for the urban framework.

For our understanding of parameters and criteria these formal determinations of urban structures, however, appear to be already too concrete, too much induced from the factual urban results than abstracted from the suggested ideal course of urban formation. As Erich RAITH pointed out, they derive from a true morphological understanding and analysis of urban form,<sup>531</sup> which is in search for answers regarding the "Formwillen" (will to form) of the producers and looks to reconsolidate the additive steps of which the city is a formal product (Curdes 1993: 24).<sup>532</sup> Here we have to conclude that *Stadtstruktur und Stadtgestaltung* (urban structure and urban design) are valid and necessary employments that start from the notion of *structuredness*', which thence also suggests itself as a true parameter of urban form, while we shall feel encouraged to generalize its criteria to the mere existence of *Lineage*, *Texture*, and *Pattern* instead of getting involved into another analysis of formal models, which have been already profoundly elaborated and discussed.

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<sup>525</sup> compare discussion on page 31 and 57

<sup>526</sup> compare for instance (Lynch 1960; Muratori 1960; Krier 1975; Caniggia 1976; Rowe et al. 1978; Kuhnert et al. 1978; Caniggia et al. 1979; Lynch 1981; Malfroy et al. 1986; Caniggia 1986; Malfroy 1986; Whitehand 1987; Albers 1988; Curdes et al. 1989; Kostof 1991; Kostof 1992; Whitehand 1992; Curdes 1993; Curdes 1995; Whitehand et al. 2001; Krier 2003)

<sup>527</sup> see (Curdes 1993: 24 ff., especially 25)

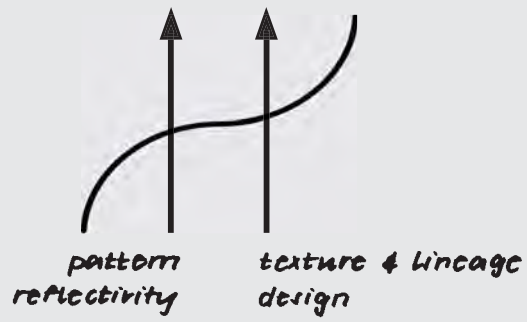
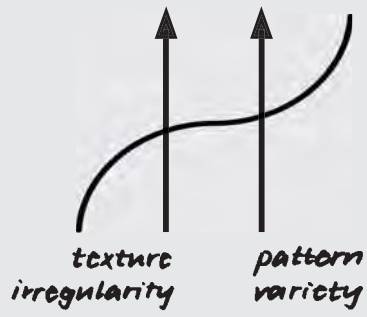
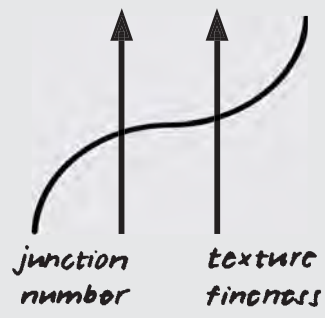
<sup>528</sup> see (Gloeden 1923)

<sup>529</sup> see (Albers 1988: 208 ff., especially 217)

<sup>530</sup> see (Curdes 1993: 24) and (Albers 1988: 208)

<sup>531</sup> see (Raith 2000: 12 ff.); compare also (Raith 1996)

<sup>532</sup> compare also (Curdes 1993: VII), as well as (Albers 1988: 193 ff. and 219 ff.)





With the three criteria of *structuredness*', we experienced the significance of the line as structurizing element of the urban framework in its own quality, its connectivity among other lines, and its formal layout. The focus on streets, as specific boundary lines, which we recognize with the description of *Texture* and *Pattern*, however, represents no contradiction to the aforesaid applicability for any other boundary line and was chosen only for better illustration – ultimately all boundary lines are subject to the grain- and the pattern-classification, even when, as already stated, the course of streets tends to be altered rather seldom in relation to property limits.<sup>533</sup> The line as a thread constitutes the whole urban fabric, and no matter with what criterion we approach this thread and the consequent fabric, we find that its primary relation to the urban locale might be either immediate, that is resulting from the existing topographical features of the locale, habitual, that is resulting from the extant disposition or utilization of the locale, or formative, that is resulting from the future proposition or design approach towards the locale; here, we again perceive the capacity of the distinction into a situative, distributive, and creative realm that determines the whole approach presented in this thesis. Nevertheless, generalizing from the presented understanding of non-physical boundaries, *structuredness*' might as well refer to actions within the urban framework, while the physical framework is overlaid by several non-physical frameworks likewise structuring the city as a living system.<sup>534</sup>

Still, beyond these general considerations, we might encounter with the constitutive distributive criteria of *structuredness*' exemplarily the following basic relationships:

- the more junction points a lineage of an urban framework features, the finer appears its texture, regardless the approach towards the urban pattern;
- the more irregular a texture of an urban framework is, the more likely we find different kind of patterns, usually allowing to distinguish different development phases and thus different approaches to an urban layout;
- the more reflective the establishment of a pattern is, the more likely also the texture and the lineage are established according to a specific design intention, seeking to fully prearrange the whole urban framework as well as it often tends to anticipate the further urban development.

Summarizing the presented criteria we should again stress the notion that *structuredness*', starting from the drawing of simple distinction lines, soon extends over to the whole determination of the urban framework, affecting not at least as well immaterial frameworks, which still are quite often subject to quick changes. Translating these considerations into a parametral statement, we perceive *structuredness*' as the most *descriptive* concept: it comprises possible statements to physical components of the urban framework as well as initial and collateral non-physical components preparing the formation of the city. *structuredness*' ultimately must be seen as preparatory to any distribution within any urban development.

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<sup>533</sup> see also discussion on page 185

<sup>534</sup> as we understood with the contributions of LYNCH and ALEXANDER; compare discussion on page 187 and 188; urban form being our primary focus, however, we can only quickly refer to this nevertheless important field of urban research.

### 3.2.2 density' (Dichtigkeit')

A city comprises a varying intensity of uses.

Immediately after the set up of a framework it will enfold various activities, edificial as well as non-edificial, utilizing the distinct plots, while, of course, the edificial activities are more obvious, more sustainable, and usually also more intense than the mere utilization of the natural ground.<sup>535</sup> The higher distributive *intensity* (Wirkungsstärke) with edificial activity also results from the often multiplication of useable area through the production of several floors within a plot, when even supposing only a one-story development, we shall assess higher activity rates with the enclosed surfaces due to their independence from different daytimes as well as varying weather events. Here, we also recognize the significance of possibly varying sizes of the plots and their situation within the framework.

With the introduction of intensity in this catalogue, yet, we encounter a similar definitory difficulty as with *permanence'* before: while there we had to clarify that *permanence'* refers to the persistence of a potential development and not to the constancy of every development occurred,<sup>536</sup> intensity features a notion of quantity, which at first is hard to correlate with our qualitative approach. As a matter of fact, within the phenomenological understanding we should perceive the existence of different intensities, which relate to each other within the framework, as a true quality of the abstractum urban form notwithstanding their concrete measurable appearances with different factual cities. Altogether these intensities tantamount to a distributive density, which especially distinguishes urban form in relation to other sedentary forms; the parameter of *density'* thus determines the use intensity of a lot, of a block, and of the urban entity in general in the relation amongst each other and the surrounding ground beyond the urban locale, comprising considerations such as: Where is, if there is, a center of the framework? How, if at all, is the periphery of the framework defined against the surroundings? What kind of transitions are there within the framework from one plot to another? Where, if any, are plots with higher distributive intensity within the framework?<sup>537</sup>

We shall refer to the subsequent depictions of *density'* as variable distributive criteria, as they describe the varying modes, in which the plots of a framework might be utilized: it is the evolvment of areas of higher edificial and activity intensity within the framework; the possibly varying intensity during different time periods, that is diverse daytimes as well as diverse seasons; and the intensity of functions on the different plots. *density'* also predominantly determines the monetary value a certain plot has within the overall framework, and – regarding the relation of the size of the plot in relation to the accession – for which functions the plot suggests itself;<sup>538</sup> ultimately, this parameter describes the overall distribution within an urban framework.

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<sup>535</sup> Here, we should differentiate after all between the construction of buildings and the preparation for traffic requirements versus the use as agricultural acreage, gardens, and parks.

<sup>536</sup> compare our discussions on page 131; as well as on page 89, on page 99 and on page 122

<sup>537</sup> The last question already refers to a significant relation between the infrastructural lineage and the adjacent plots: usually plots close to major traffic routes feature a higher density than others, while, per definition, the infrastructural lineage always features an equal or higher density than any adjacent plot, due to the fact that the infrastructure will be used at least by the users of the adjacent plot.

<sup>538</sup> see for instance (Knos 1968)

### 3.2.2.1 Systemicity

When with the structure of the framework, which is established by its lineage, texture, and pattern, significant features of the evolvement of an urban density might be already anticipated, it is only the enfolded intensity of activities that consequently determines the system of the framework; here again, for our considerations on urban form, especially the set-up of buildings and other, mainly infrastructural construction, but also landscaping give the easiest access to the criterion of *Systemicity*, as these forms make intensities very evident. The evolving distribution within the framework, ultimately, produces different recognizable distribution-systems, which might result in simple *center-periphery* relations as well as more complex multi *center-interspace* relationships. From there we understand that only the density, in which the different urban plots are utilized, might call for different sharp boundaries within the urban development and towards the surrounding along with the aforesaid structurizing lines; but we might find also blurred transitions within urban conglomerates that are in general more difficult to define and whose total perimeter is often unclear.<sup>539</sup> Altogether, *Systemicity* describes those aspects of a framework that determine the factual distribution altogether in intrinsic relation to the framework's lineage, texture, and pattern, evincing unique relations of different plots within the framework as well as noticeable relations of the whole framework with its hinterland;<sup>540</sup> for the three different criteria, which are presented for the *density'* parameter, the key question for *Systemicity* might be: where allocate higher and where lower distributive intensities?

#### *Lennepe*

The possibly intrinsic connection between the pattern and the systemic intensity of an urban framework can be observed well with medieval radio-concentric layouts such as the town of Lennepe. Being situated on an important traffic route almost in the middle between the Hanseatic cities of Cologne and Dortmund,<sup>541</sup> the town, which was first cited to have municipal rights in 1276,<sup>542</sup> gained soon greater economic significance through its own textile industry and became one out of four capital cities of the Duchy of Berg.<sup>543</sup> With some 1.200 inhabitants and significant land use by the resident manufacturers, all of the plots within the city walls, with its length of some 1.000 meters, were occupied until the 18th century, having the central market and the main church as a true formal and functional focus. Despite some interim loss of population due to a big fire in 1746, the razing of the fortifications from 1790 on allowed for a gradual extension of the city: namely spontaneous industrial development towards the Southwest, a 19th century expansion of a *Neustadt* in the South and East of the medieval city center, with for that time typical perimeter-blocks, and several villas and mansions to the North in open cut. These extensions almost tripled the perimeter of the whole city

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<sup>539</sup> Compare here our discussion on urban sprawl on page 51 and 71; the differentiation between sharp and blurred transitions also refers to LYNCH's understanding of grain, which we in the previous description of *Texture* limited to the set up of the urban framework; now with our review of the significance of activities within the framework, of course, his broader reasoning on the grain of a texture becomes fully applicable; see (Lynch 1981: 265 f.) and our discussion on page 187.

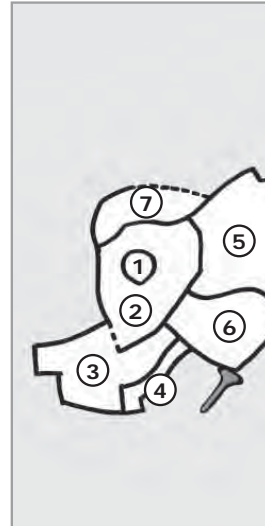
<sup>540</sup> see also (Tringham 1972)

<sup>541</sup> see (Lorenz 1981: 14 f.) and (Metschies 1991: 6 ff.)

<sup>542</sup> compare also (Lorenz 1980)

<sup>543</sup> see (Stursberg 1956; Berg et al. 1956; Schmidt 2004), especially (Metschies 1991: 4 ff.)





- 1 Old City
- 2 New City
- 3 Industrial Area
- 4 Höhenweg
- 5 Hackenberg
- 6 Hasenberg
- 7 Northern Extension

country

Germany / North Rhine-Westphalia

coordinates

51° 11' 34" N – 07° 15' 28" E

Main Church (Tower)

elevation

318 m

population

23,349 (2006)

size

12 km<sup>2</sup>

density

1,909 /km<sup>2</sup>

foundation / first citing

1230

source

<http://de.wikipedia.org/wiki/Lennep> (20.04.2008)

[http://de.wikipedia.org/wiki/Liste\\_der\\_Stadtbezirke\\_und\\_Stadtteile\\_von\\_Remscheid](http://de.wikipedia.org/wiki/Liste_der_Stadtbezirke_und_Stadtteile_von_Remscheid) (18.07.2008)



Lennep

Image © 2008 AeroWest

**plate 66**

and accommodated some 10.000 people at the end of the 19th century,<sup>544</sup> altogether pursuing the radio-concentric systemic lay-out, which was established in medieval times, being then disturbed only by construction of a rail-road in the West. Then the 20th century brought several independent housing developments, each following another urbanistic Leitbild,<sup>545</sup> and altogether diverging from the otherwise compact circle form, when lately the construction of single-family houses in the North partly readopted the overall scheme.

Beyond a survey of population densities within the urban framework, which shall be subject to the following criterion, the different intensities of the building development give a vivid illustration about the systemic intensity of Lennep that is determined by a true center-periphery relation, which, notwithstanding the several extensions, never troubled the higher systemic significance of the central 'Old Town'. Of course, this is also thoroughly connected to the pattern of its framework, which from the beginning maintained its focus of market square and church, over again producing new urban limits to the hinterland, which until today can be observed well through circular roads tracing the original boundaries, such as the Wallstraße, which was built on the filled-up fosse of the medieval fortification, or the Ringstraße, which was established to delimit future development steps. Remarkably, even including the different housing projects outside the circular scheme, with the case of Lennep we discern an immediate decrease of *density*' from the peripheral urban plots towards the adjacent agricultural or forestal areas, what allows us to confirm the importance of *Systemicity* aside the *Pattern* criterion. Ultimately, also from this example we can extrapolate similar center-periphery relations within a grid pattern, in which then a systemic intensity overrules the otherwise ubiquitous texture and pattern.<sup>546</sup>

### 3.2.2.2 Periodicity

In addition to the systemic intensity we find with any urban framework different intensities of plot-utilization during varying times of the day as well as with reference to different seasons of the year and the according weather circumstances, which depends on the varying sojourn of people within the urban framework: may it be, as a result of the functional segregation since the industrial era, a shift of the populace from the residence to the working areas in the morning and back in the evening, including higher frequencies of the street network in between (rush hours), a greater sharing of open space plots respectively field work during the summer term, or the concentration of the inhabitants in the residential areas for security reasons (curfew), which we know not only from modern conflict areas, but which was a regular institution for instance in medieval cities.<sup>547</sup> All these alternating intensities occur periodically and do not affect the overall intensity, with which the urban plots are utilized. Also well-established since early times, however, is the accumulation of non-residents in cities because of singular or periodic festivities, exhibitions, or fairs, which often results in immense overpopulation of the cities during these days that, of course, also periodically increases the overall intensity, leading to an escalated utilization average of urban

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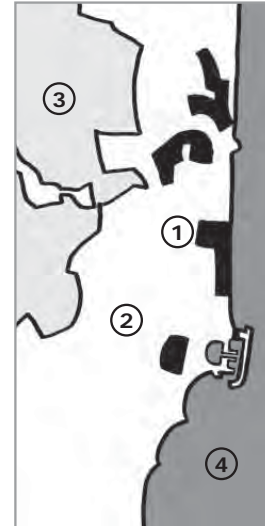
<sup>544</sup> 10.427 in 1890; compare Brockhaus' Konversationslexikon, 14th ed., 1894-1896, vol. 11, pg. 83

<sup>545</sup> *Hasenberg* structured and aerated, *Hackenberg* with housing high-rise, and suburban *Höhenweg*; compare our discussion on page 39 ff.

<sup>546</sup> In this context we shall already refer to the example of Birmingham AL, which with its gridiron is cited in the following.

<sup>547</sup> see for instance (Kühnel 1984; Schubert 2002; Pauler 2007)





- 1 Settlement Nuclei until 1957
- 2 Urbanized Area since 1957
- 3 Hinterland
- 4 Mediterranean Sea

*country*  
 Spain / Andalucía  
*coordinates*  
 36° 35' 54" N – 04° 30' 45" W  
 Av. del Puerto/Calle de la Fragata  
*elevation*  
 49 m  
*population*  
 60,010 (2007)  
*size*  
 20 km<sup>2</sup>  
*density*  
 3,001 /km<sup>2</sup>  
*foundation / rst citing*  
 1748 / 1988 (Independency from Málaga)  
*source*  
<http://es.wikipedia.org/wiki/Torremolinos> (20.04.2008)



Torremolinos  
 Image © 2007 DigitalGlobe

**plate 67**



plots in respect to utilization of the urban dwellers themselves; relatively new in this context is, despite pilgrimages, scientific expeditions, and *Grand Tours*,<sup>548</sup> a continuing tourism, at first for health treatment in spas and sanatoriums, and latest since the early 19th century for vacation reasons to recover from every day (working-) life, what since the mid 20th century developed enormous temporary migrations leading to the phenomenon of mass tourism.<sup>549</sup> Altogether, the criterion *Periodicity* describes those aspects of a framework that relate to the aspects of temporality within the distribution, which, however, are less evident with the urban pattern, but already lead to the following considerations of functional intensity; within the criteria that are presented for the *density*' parameter, the key question for *Periodicity* obviously is: when do certain distributive intensities occur where?

#### *Torremolinos*

While different periodic intensities within an urban framework, due to the variety of functional approaches, must be considered normal and somewhat negligible for the overall relationship among the different plots,<sup>550</sup> especially when merely the urban populace is involved, larger streams of visitors usually have an immense impact onto urban form: in particular towns and small cities, which represent touristic resorts and thus economically base significantly on the periodic influx of additional dwellers either in summer or in winter, show notable aberrances – as well in the development of the urban framework itself as in the utilization of the intermediate plots – predominantly because they are not able to integrate the extra number of people in their regular urban set-up.<sup>551</sup>

A distressing example for the nowadays very familiar phenomenon of summer tourism represents the former fishers' village of Torremolinos, which locates 18 kilometers southwest of Málaga on the Costa del Sol and was firstly named on an official document, a geographic map, only in 1748; the village remained economically undeveloped until the 1950s, when its benevolent situation on the Mediterranean Sea in close reach of one of Spain's economic and cultural centers and the immediate vicinity to a soon international airport laid ideal ground for one of Europe's first mass tourism resorts.<sup>552</sup> While then accommodating a mere 2.700 inhabitants, having several spontaneously developed small nuclei at the Calle San Miguel, El Calvario, and La Carihuella, as well as some villa-based housing at Montemar that was also sparsely rented out to tourists, one decade later the population rose already to 8.000 to cope with the demands of an immensely increased inrush of tourists.<sup>553</sup> Lacking any planning strategy the urban development, which had to accommodate not only the almost tripled populace but also the tourists, merely followed the existing land ownership pattern and "speculative private

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<sup>548</sup> The Grand Tour, which originated in Great Britain in the 17th century, represented an educational rite of passage for young noble men before entering society; compare (Trease 1967; Black 1985); for the significance of pilgrimages also in respect to the evolution of tourism see for instance (García de Cortázar et al. 1992; Georgi 1999; Gensini 2000; Webb 2001; Ahn 2003).

<sup>549</sup> see for instance (Berghoff et al. 2002; Bauerkämper et al. 2004; Kufeld et al. 2005)

<sup>550</sup> Of course, the framework itself is always subject to infrastructural issues, which generally address traffic problems, such as the unimpeded flow of vehicles versus pedestrian security, the sufficient accession of plots according to their functional significance etc.

<sup>551</sup> Large cities, which also develop major tourism, are not considered resorts and habitually cope well with the additional dwellers; on one side they feature a larger overall framework as well as they on the other side already maintain plenty facilities for their own substantial population.

<sup>552</sup> for mass tourism see for instance (Boissevain 1996; Bramwell et al. 2003; Chai 2007)

<sup>553</sup> see (Pollard et al. 1993: 254)

interests along any 'open' lines of communication" (Pollard et al. 1993: 255), and within some 30 years completely conurbanized the small nuclei with high-rise hotel developments to the ocean as well as several low rise detached residential summer estates upland.<sup>554</sup> In 1990 1.56 million tourists spend their vacation in Torremolinos,<sup>555</sup> most of them during the summer months, leaving significantly large parts of the town deserted in winter – at the same time Torremolinos suffers not only urbanistically from its misplanned urban layout, but in continuation of changing touristic demands also economically from the depreciation of its mass tourism itself, resulting in major vacancies (52 % in 1990).<sup>556</sup> Looking at its urban framework today, we easily recognize the irregularity of Torremolinos textures and patterns, which neither show a clear systematic intensity; yet the periodic accumulation of dwellers (and thus activities in specific locations) explains the high utilization of those plots, which have access or view onto the shore, while, what should be the systematic nuclei, fade in the overall picture. These, also edificial aspects of the urban framework, evidently go hand in hand with the specific touristic functions, which situate on these plots, what leads over to the third criterion, with which we should like to describe the parameter of *density*'.

### 3.2.2.3 Functionality

In contrast to the systemic intensity, which bases on the structure of the framework, and the periodic intensity, which results from the mere allocation of people and activities within the framework, the functional intensity refers to those intensities that are result of a specialization of different activities – when, however, we should not yet examine what different use-classifications these activities induce. At this point it seems to be sufficient to refer to commonly understood uses, as we just have seen in the case of Torremolinos with larger intensities through tourism or in the case of Wolfsburg with the fundamental significance of automobile industries; both of which illustrate predominant uses within the according framework that account for a unique specialization beyond the preconditionary urban dwelling and subsistence functions and result in an accordingly specific utilization of larger parts of the framework's plots. Especially this specific feature of what we should like to sum up amongst other functional intensities under the criterion of *Functionality* led to a variety of city-classifications in urban geography and planning; these seek to describe cities through statistical examinations in monothetic taxonomies, diversification indices, specialization indices, and multi-variable statistics.<sup>557</sup> While evidently these methods allow with their classical factor-analysis, based on specific time spans and regions as well as very contemporary use-categories, only for limited evidence as regards a general perspective onto the whole urban development and comply, with their eventual devotion in strategic planning in particular, hardly with our focus on urban form as an abstractum.<sup>558</sup>

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<sup>554</sup> for "the built environment of Torremolinos" see (Pollard et al. 1993: 253 ff.)

<sup>555</sup> see (Pollard et al. 1993: 247)

<sup>556</sup> see (Pollard et al. 1993: 248)

<sup>557</sup> see in the order of quotation (Harris 1943; Matilla et al. 1955; Ullman et al. 1962; Bahrenberg et al. 1975); compare also discussion on page 20 and 182

<sup>558</sup> The scope of BERRY's as well as HADDEN-BORGATTA's work extends merely over the United States, and, despite their ever-growing methodological attractivity in other territories, there seem to be arguably misplaced in their full consequences; compare (Hadden et al. 1965; Berry 1972).

Still, also with rather non-specialized urban entities we might discern different intensities of regular functions; to this end particularly the Anglo-American development of Central Business Districts (CBD), which tend to concentrate the main economic activities in a particular, but other than through this accumulation itself undefined area of the city, give plausible examples;<sup>559</sup> these CBD stand in contrast to European cities, where the main economic functions usually locate in the systemically defined city center, or where the major economic activities outside the systemic center do not trouble the latter's overall significance.<sup>560</sup> Parallel to this we might remember the construction of sole housing estates, mostly on the peripheries yet similarly random in respect to the extant frameworks, which became fashionable especially since the 1920s.<sup>561</sup> Summarizing and generalizing all these considerations under one criterion, we recognize that this *Functionality* especially leads to reflections regarding an added-value to urban areas that intrinsically determines also the land-value of the plots themselves. Altogether, the criterion *Functionality* describes those aspects of an urban framework that relate to different utilizations within the distribution, which can be usually traced by means of plot- as well as the subsequent building typologies; within the criteria that are presented for the *density*' parameter, the key question for *Functionality* evidently is: what distributive intensities occur where?

#### *Birmingham AL*

As observed before, several considerations on *density*' can be studied well with grid-patterns, which from their systemic set up initially show homologous plots that receive their framework significance only by the different modes of functional distribution that might also vary during time or might relocate main intensities from one area of the urban framework to another. A good illustration for this is the city of Birmingham in Alabama, which until today features not only the original grid, but also one of the just described CBDs that changed its location several times with the city's development. Birmingham owes its late emergence in 1871 (late also for the urbanization of the southern states) to two circumstances: on one side the immense deposits of iron and open seams of coal, which also caused the ground to be inefficient farmland, and on the other the crossing of two major railways, which accessed the developing South and were laid out to allow for a some 3.5 km long joint track that produced the orientation of an orthogonal grid with almost square plots on both sides.<sup>562</sup> The first buildings of the city were constructed synchronically with the joint railways, immediately on the site of the tracks to accommodate and sustain the rail-workers (the so-called «Railroad Reservation»). Also after the completion of the railworks, its economical importance as main means of transportation led to higher densities close to the freight station on Morris Avenue between 19th and 20th street (Wholesale District),<sup>563</sup> when the other plots developed housing activities or remained in reserve for future development. Then the formation of large blast furnaces on the eastern periphery of the early city in the 1880s by James W. SLOSS (1820-90), capitalizing on the

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<sup>559</sup> see for instance (Murphy et al. 1954; Murphy et al. 1955; Bohnert et al. 1964)

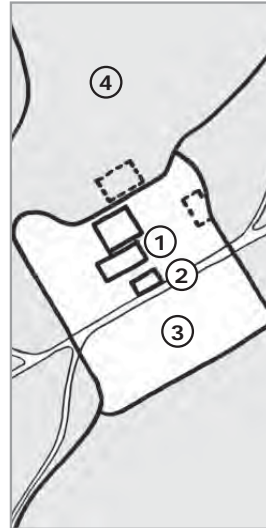
<sup>560</sup> compare (Hofmeister 1969 67 ff.) and (Lichtenberger 1986: 29 ff.)

<sup>561</sup> compare discussion on page 41 ff.

<sup>562</sup> The lay-out was proposed and surveyed by Major William P. BAKER, who was also responsible for the South and North Alabama Railroad survey; see (White et al. 1977: 4 ff.).

<sup>563</sup> see (White et al. 1977; White 1981)





- 1 Shifting CBDs
- 2 Railway Reservation
- 3 Urbanized Area
- 4 Suburbia

country  
USA / Alabama

coordinates  
33° 30' 48" N – 86° 48' 21" W  
Morris Avenue (train station)

elevation  
140 m

population  
229,424 (2006)

size  
394 km<sup>2</sup>

density  
583 /km<sup>2</sup>

foundation / rst citing  
1871

source  
[http://en.wikipedia.org/wiki/Birmingham%2C\\_Alabama](http://en.wikipedia.org/wiki/Birmingham%2C_Alabama)  
(20.04.2008)



Birmingham AL  
Image © 2008 EuropaTechnologies  
/DigitalGlobe

**plate 68**

coincidence of coal, iron ore, and limestone,<sup>564</sup> almost suddenly provoked an out-ranging urban growth, for which the initial layout but provided enough utilizable plots, yet no land-use guidance nor development target.<sup>565</sup> Somewhat randomly the growth of "Boomtown Birmingham" concentrated on the northern side of the rail tracks (White et al. 1977: 18), forced to accommodate a populace that jumped from some 3,000 in 1880 to some 50,000 in 1886 (!),<sup>566</sup> quickly filling up the reserve parcels and shifting the limits of the CBD to Fifth Avenue and its center away from the railroad. Then, the turn of the 19th to the 20th century brought to Birmingham three remarkable urbanistic features: at first we have the construction of skyscrapers gradually increasing in height that until today give evidence to the center-shifting of the CBD; secondly, with the State authorization of district separation of races, Birmingham developed a stand alone Black Business District in the Northwest of the CBD of that time; and thirdly, the regional railway company opted for the construction of a Terminal Station on 26th street at the eastern side of that CBD to also follow the city's expansion to the North.<sup>567</sup> Ever again experiencing economic depressions and subsequent development slow-downs as a result of the dependency on the steel industries, these steps, however, did not lead to a consolidation of the city center but its disintegration; this was neither stopped by the establishment of a large federal building complex on Fifth Avenue as a compensation for the failed attempts to move the State's capitol from Montgomery.<sup>568</sup> Only after World War II the thus projected site of Central Park was developed as a municipal complex with city hall, courthouse, and public library, representing a new city center, which then in the 1960s and 70s attracted larger companies. The decline of railway passenger transportation and dominance on automobile traffic, which started in the United States already in the 1940s, likewise never induced the anticipated development of the Eastside of the city, calling for the demolition of the large Belle-Époque station in 1969 and the substitution of the tracks by an elevated highway that soon bordered the city center on three sides. In the 1970s then a large civic center, north of the highways in continuation of the central axes of 19th and 20th street, already foresaw predominantly car access that actually contravened its prominent location. Concurrently, downtown Birmingham, while still being the CBD, lost all its residential and commercial intensity and consequent public street activity to suburban estates outside the highway ring and strip malls on the periphery, both basing on car traffic as sole transportation. All this leaves the city center today as a conglomeration of few mono-functional high-rise office building in between several parking lots surrounded by low-rise warehouses, flanked by suburban housing estates, and thereby epitomizing segregated functional intensities within the urban framework.

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<sup>564</sup> SLOSS was former president of the South and North Alabama Railroad and thus gives a vivid example for the industrial tycoons that shaped the 19th century United States, profiting several times from the same benevolent circumstances and positions; compare also (Lewis 1994; McKiven 1995).

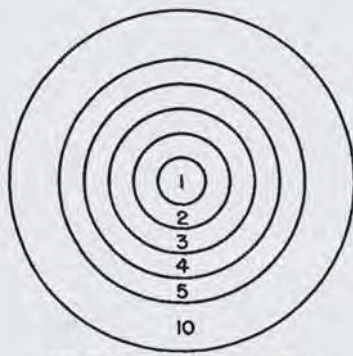
<sup>565</sup> BARKER's plan only foresaw areas reserved for the railroad and mechanical enterprises along the central tracks, as well as three parks (East – now Guglielmo Marconi, Central – now Woodrow Wilson, and West – now Kelly Ingham), while elsewhere the layout consisted of blocks of 8 plots each; the only additional feature to the street grid, however, represent small alleys that bisected the avenues, which run parallel to the central tracks, providing ventilation as well as delivery facilities to the plots; see (White et al. 1977: 4 ff.).

<sup>566</sup> see (White et al. 1977: 17 f.)

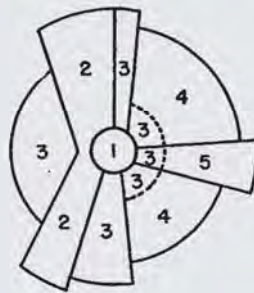
<sup>567</sup> see (White et al. 1977: 33, 111 & 99)

<sup>568</sup> see (White et al. 1977: 88 & 118)

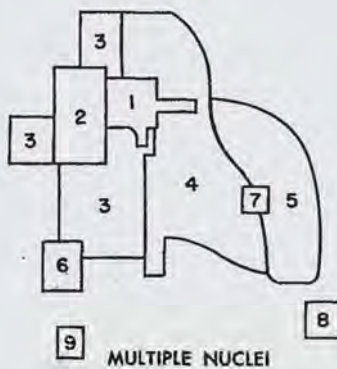




CONCENTRIC ZONE THEORY



SECTOR THEORY



MULTIPLE NUCLEI

### THREE GENERALIZATIONS OF THE INTERNAL STRUCTURE OF CITIES

#### DISTRICT

1. Central Business District
2. Wholesale Light Manufacturing
3. Low-class Residential
4. Medium-class Residential
5. High-class Residential
6. Heavy Manufacturing
7. Outlying Business District
8. Residential Suburb
9. Industrial Suburb
10. Commuters' Zone

GDH-ELU 1945

Distributive Models  
according to HOYT, BURGESS,  
and HARRIS & ULLMAN  
(Harris et al. 1945: 13)

**plate 69**



Almost analogue to the relation of *structuredness*' with urbanistic research, we find plentiful examinations on what has been presented for the criteria of *density*' with urban geography,<sup>569</sup> when, however, the latter discipline ought to largely consider socio-economical as well as socio-ecological, cultural, and political issues, which we seek to exclude from our approach; as well several of them, as Elisabeth LICHTENBERGER pointed out, are subject to an explorative research on quickly changing circumstances, whence three distributive models persisted notwithstanding their specific time-space context of the United States of America in between the two World Wars before the massive suburbanization and the invention of metropolitan areas.<sup>570</sup> Still, in the current context we should like to quickly show the propinquity of some threads, we presented earlier, to the findings of these three models, which today can be considered basic knowledge in urban geography:

At first we shall have a look onto that model that time-wise represents the middle one; in 1941 Homer HOYT presented his examination of 30 US-American cities in their development between 1900-36 and from his findings induced a "sector theory" that described the distribution within a city according to sectors that reflected the main feeding accession routes as well as a center-periphery gradient (Hoyt 1941). Again, we cannot go into detail of his observations on the reasons for this, at his time, re-distribution of certain urban functions and societal strata in the American city. However, we instantly understand that the distribution model he describes bases predominantly on the notion of benevolent and less favorable situations within the urban framework, that mostly depend on the systemic set-up of this framework and consequently relates closely to our systemic criterion of *density*'.

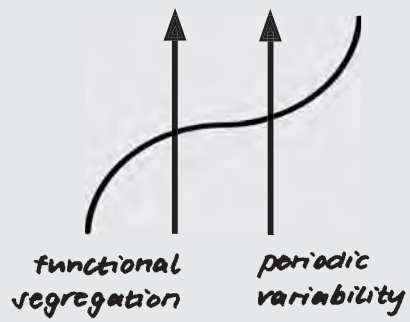
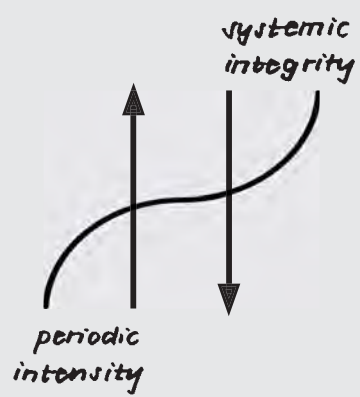
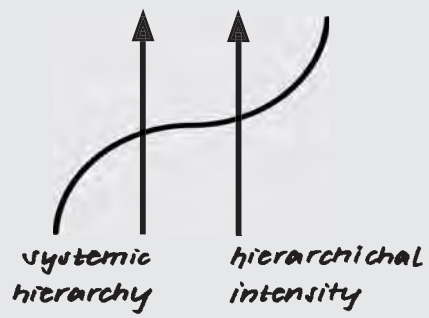
Secondly, we should have a look onto Ernest W. BURGESS' "concentric zone theory", which dates 16 years earlier (Burgess 1925). This model at first sight appears to be even more systemic than the one HOYT suggested; however, the proposed rigid concentric model with its supposed center-periphery gradient, turns out to be deduced from the basic hypothesis of functional repression generated by the CBD. The resulting zones in transition, which feature dilapidation and slumming, immediately surround the city center, while more peripheral zones again show higher intensities and also land values. Itself, yet, this zone might become subject to an extension of the CBD and thereby pushes its outer limits as well as the following zones further outward. This distribution model ultimately gives one idea of possible changing intensities within the very same urban framework but at different closely succeeding time steps and thus well relates to our periodic criterion of *density*'.

When the two first models originally stressed social distributions, the last model to be presented, bases on urban functions: In 1945 Chauncy D. HARRIS and Edward L. ULLMAN published their "multiple nuclei theory" (Harris et al. 1945); this model followed, that according to the growing use-specialization of cities and the corresponding requirements, urban frameworks are bound to develop more than one center, to which then other functional zones either immediately relate or indirectly connect by means of motorized traffic. These nuclei, however usually show another use specialization, such as civic, business, or entertainment center. With this distribution model the significance of different uses is thoroughly evident, and even with its notion of multiple but yet more specialized centers within one framework exemplifies a possible relation to our functional criterion of *density*'.<sup>571</sup>

<sup>569</sup> the citations on the preceding pages give a good reference to that

<sup>570</sup> see (Lichtenberger 1986: 54 ff.)

<sup>571</sup> All three schematic illustrations of the different theories derive from (Harris et al. 1945: 13).



While truly acknowledging the significance of socio-economical as well as socio-ecological, cultural, and political reasons for different densities within an urban framework, however, we shall in this thesis come back to their immediate determination onto urban form by the parameter of *density*', which is prescribing the existence of intensities within structured plots of a framework to make this framework actually urban (or as we argued earlier: potentially urban).<sup>572</sup> Our consultation of urban geography, yet, also shows that the presented criteria might intrinsically relate to one another, aggravating unique classifications – what is anyway not object of the proposed delineation with reference to our understanding of the parameters forming a conditioning system of interrelated factors. There, ultimately, *density*' provides for the variability of a distribution, which evidently has direct affect onto the formal appearances, and moreover, also actually determines the boundaries of an urban development (rather than the *structuredness*' of the framework or the *accessibility*' of the locale): It is the change from one intensity to another that produces a possible differentiation between an urban and a non-urban framework; either by the *Periodicity*, that makes it more often utilized (and here we might begin with the first, still somewhat temporary settlements at the beginning of the urban age), by the *Functionality*, that makes the framework filled with several different functions rather than few ones (and here the widely agreed imperative of specialization and segregation that was already introduced by the first urban researchers from history and geography comes into play), or ultimately by the *Systemicity*, that by the set-up of the urban fabric determines its boundaries (and thus represents the first means of distinction between urban and non-urban areas people come across, what makes them tend to equate walls and palisades with this border, when we should like to perceive them merely as an additional feature to the apparent density-change).<sup>573</sup>

Notwithstanding the large amount of potential relations between them, as we can easily induce from aforesaid considerations, we might discern with the variable distributive criteria of *density*' for instance the following basic relationships:

- the more hierarchical a systemic set-up of an urban framework and thereby the systemic intensity at certain plots is, the more likely these plots show also an additional specifically hierarchical periodical and functional intensity, regardless the actual urban pattern;
- the higher the periodic intensity of an urban framework and thereby inconsistent the functional exploitation is, the more likely the significance of its systemic set-up is alternating with the periodicity, producing different hierarchies at different times and potentially corrupting the system in the end altogether;
- the more distinctly functional intensities occur in an urban framework and thereby form multiple hierarchies, the more likely there is a largely varying periodic intensity, usually resulting from inner-urban shifting populace but also from a varying visitor influx from outside.

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<sup>572</sup> compare our discussion on page 21, 83, and 88

<sup>573</sup> We opted for an enumeration of the criteria-impact in a different order from the original presentation as in the catalogue we obliged ourselves to follow the product's perspective, in which the systemic, that is texture and pattern based density comes before originally rather non-physical densities; whereas here the criteria-impact follows more of a supposed historical process: first the camp, based on temporal considerations, than the settlement, based on functional considerations, and ultimately the city, based on tactical or already design considerations.



Summarizing the presented criteria we thus ought to consider that *density'*, being logically the next step after the establishment of the structure of an urban framework, is the first factor dealing with an actual distribution of activities within this structure, also inhering an ongoing process of re-distribution as the activities and intensities within the framework change. Translating this into a parametral statement, we perceive density' as the most *variable* concept: we find with it from the mere difference between town- and landscape to the establishment of different zones or nuclei within the urban framework those features addressed that result from the development of the urban plots. *density'* ultimately must be seen as consequential to any distribution within any urban development.

### 3.2.3 diversity' (Vielfältigkeit')

A city comprises a variety of uses.

As already insinuated by *Functionality* with the previous parameter, the activities, which are enfolded by the structure of a framework, feature in addition to producing certain overall densities such peculiarities that make them distinguishable amongst each other and also affect the framework itself in much more detail. Following the common usage these distributive contents can also be called uses or *utilizations* (Nutzungen), while we should refrain from the use of the often equally applied term *function*, for its earlier employment in the elaboration of the present approach where it exhibited a much broader notion.<sup>574</sup> Still, with its resemblance of the mathematical term function, we can perceive the utilizations of a plot as the dependency of two variable values, as Klaus BOESLER pointed out, a "wirtschaftlich bewertete Tätigkeit einer kurlandschaftlichen Einheit, die von dem Umfang und der räumlichen Struktur der Nachfrage abhängig sind" (Boesler 1960: 12),<sup>575</sup> while we ought to understand his economical evaluation in the broadest sense as beneficial for the common good.<sup>576</sup>

These activities, of course, emanate from all areas of life, when for an urban environment we assume an occurrence of utilizations that outnumber non-urban environments not only in scale but truly in diversity, which evidently best summarizes the according parametral quality. Consequently, an urban environment includes a variety of utilizations, which at first have to be seen in their relation towards the different kind of users respectively those persons, who activated or prepared for the different plot utilizations. These usually cover all human activities at a certain locale within a certain framework; in other words, they take place within the «stitches» of the urban fabric, while evidently the accessing activities, that is the traffic between the different stitches, occurs larger parts of the fabric's «thread», i.e. where the structure of the framework allows for its own spatiality.<sup>577</sup> In addition to the single use determination of one plot, *diversity'* might include also several uses in one plot that then, of course, interact in a specific manner. The parameter thus addresses issues, such as: Who activates or maintains certain utilizations on a plot? What kind of activities occur on a plot? How do different activities interact within one plot or among neighboring plots?

We shall refer to the subsequent depictions of *diversity'* as individual distributive factors, as they describe different overall aspects of the variety of single utilizations, which are undertaken on the plots of a framework: it is the inducement or authorship of the activities; the character of the activities according to basic classes; and the kind of interrelation amongst the different activities. *diversity'* eventually describes the particulate distribution that completes the structural urban framework and its changing intensities with a variety of contents.

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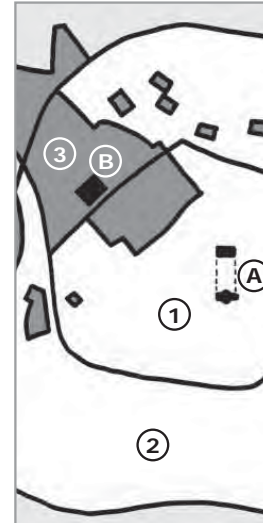
<sup>574</sup> see discussion on page 81

<sup>575</sup> 'economically evaluated activity in an entity of the cultural landscape, which is dependent on the extend and the spatial structure of the occurring demand', (author's transl.)

<sup>576</sup> This amplification of BOESLER's proposition shall be further explained by the review of the cooperative instigation of activities.

<sup>577</sup> In this context compare also the definitory difficulty of the term *function* as it has been described by Burkhard HOFMEISTER: he addresses its ambiguity in reference to "Raumbedarf" (spatial demand) and "Raumüberwindung" (spatial traversing); both understandings, according to the content as well as to the range, can be expressed in the same word and thereby trouble a correct employment, if the scope is not clearly defined (Hofmeister 1969: 139 f.).





- 1 Medieval City
- 2 Medieval City Extension
- 3 University "Central Campus"
- A Carolingian Palace
- B Main University Building

*country*  
 Germany / North Rhine-Westphalia  
*coordinates*  
 50° 46' 29" N – 06° 05' 02" E  
 Cathedral  
*elevation*  
 125 to 410 m  
*population*  
 257,645 (2007)  
*size*  
 161 km<sup>2</sup>  
*density*  
 1,602 /km<sup>2</sup>  
*foundation / rst citing*  
 1th century BCE  
*source*  
<http://de.wikipedia.org/wiki/Aachen> (20.04.2008)



Aachen  
 Image © 2008 AeroWest

**plate 71**



### 3.2.3.1 Instigation

When talking about the diversity of uses within a framework we should, with our procedure from the general to the special, at first consider the varying forms of sponsor- or authorship, which occur with the distribution of activities. This consideration appears to be crucial for the genesis of urban diversity as well as for the formularization of the framework and the subsequent edificial development, as different sponsors evidently have different approaches to the variety of urban uses and possess different financial and political means to pursue these approaches.<sup>578</sup> Again, looking for the most general description to this point, the instigation of activities can be attributed to either the community of the urban populace or to individuals out of this populace, or simplified to the public and the private.<sup>579</sup> Within a framework the public usually is able to afford larger and more extensive as well as usually pre-planned activities, while the private, as particulate and relatively small its activities might be, generally outnumbers the public endeavors. While before the industrialization the public sphere might be understood in a broad sense, including in addition to the truly public sponsorship by state, civic, and urban institutions also clerical organizations, the ongoing societal differentiation until today makes the dichotomy somewhat blurring. This becomes evident taking into consideration those sponsors, such as large enterprises, that produce their own particular sub-community,<sup>580</sup> or the recent development of public-private-partnerships in market economy;<sup>581</sup> reflecting these developments, we feel obliged to introduce, as a third group of *Instigation*, co-operative sponsors, who, when not arranging facilities for whole public good, at least provide for activities from which significantly benefit major societal groups. Altogether, *Instigation* deals with those aspects of an urban framework that identify the different kind of producers as well as users of the framework's plots.

#### *Aachen*

This differentiation can be observed well with the city of Aachen, at which since the establishment of the Carolingian palace under CHARLEMAGNE in the 8th century the public sponsorship had a significant stake in the urban development; already the palace itself with its *Aula Regia* and chapel, situated in the center of the city, shows a juxtaposition of secular and sacred power that determined the whole Middle Ages on the public side, and especially affected the further development of Aachen.<sup>582</sup> When already with the appointment to the rights of a Free Imperial City in 1166, obliging to produce a fortification (1171-75), the private hand must have risen to a significant level, providing not only for a sufficient number of edificial construction but also economical power, latest with the transformation of the ruinous *Aula Regia* into a city hall from 1300-46 we find the public-private dichotomy mainly destined by the urban citizens themselves, contrasted in the communal facilities of market, city hall and city wall versus the surrounding individual

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<sup>578</sup> compare for instance (West 1972)

<sup>579</sup> Already Greek philosophy brought up this dichotomy referring to the world of politics and the world of the family; see for instance ARENDT's contribution regarding "The Public and the Private Realm" (Arendt 1958: 50-68) or HABERMAS' thoughts on "The Public Sphere" (Habermas 1964).

<sup>580</sup> compare the evolvement of paternalistic urbanism, see discussion on page 25

<sup>581</sup> see for instance (Fosler et al. 1982; Pegels 2004; Budäus 2006)

<sup>582</sup> compare also the discussion on city-shaping energies on page 98; in urban research see for instance (Pirenne 1925: 56 ff.), (Gruber 1952: 21 ff.), (Egli 1962: 17 ff.), and (Meckseper 1982 44 ff.); for the relation between the CAROLINGIAN palace and the city compare among others (Wynands 1982: 12 ff.), (Binding 1996: 72 ff.), and (Curdes 1999: 50 ff.),

houses, flanked, however, by the edificial development of parishes and inner-city monasteries.<sup>583</sup> Until today these circumstances can be traced with the urban framework, complemented by the construction of a second wall 1257-1357 and the development beyond the medieval fortifications from 1841 on.<sup>584</sup> At that time, though, we find already co-operational forces involved, in form of the railway development that also stimulated new private activities in the South of the city; the establishment of railways with their considerable edificial facilities represents an obvious public-private hybrid that, particularly in its beginnings as well as nowadays, is sponsored by commercial corporations for their own profits but adds onto the public services. Much larger co-operational impact onto the urban framework in Aachen had the foundation of the Polytechnic School in 1865 (today's RWTH Aachen University):<sup>585</sup> While originally situated in one building in the less developed Northwest of the city, an area within the second fortification that in course of the abating medieval and early modern urban expansion had not yet been developed, its growing space demand led to a building incrementalism that quickly occupied more and more adjacent plots as well as extant buildings. Eventually from 1964 until 1977 a whole inner-city block, which partly suffered from air-raids during World War II, got cleared from its historic buildings for a large auditorium complex.<sup>586</sup> Today the university, besides several substantial edificial developments outside the city center including a clinical center with 1.600 beds (1971-79),<sup>587</sup> takes up almost one eighth of the medieval city center; it reaches from the center far across the second city wall to the peripheral Königshügel. Its impact onto Aachen's framework, however, is obvious not only by the sheer mass of its total buildings, but evidently by the size of the individual buildings, serving the educational and the (mostly large-scale engineering) research, as well as by the heterogeneity of building forms that is owed to the iterative expansion in course of gradually increasing space demand and the lacking of an overall development plan.<sup>588</sup>

### 3.2.3.2 Characterization

When the instigation of urban diversity is relatively easy to assign as it does not yet comprise any immediate statement regarding the kind of utilization on the plots within a framework, a generalized *Characterization* that seeks to include all times at first appears to be a more difficult task. Yet, approaching this task from our today's understanding of urban planning gives a valuable cue: legal terms in Western countries usually lead to the assignment of land-use plans, comprising groups of residential, commercial, and manufacturing utilization, when often the legal specifications reflect also plots with mixed utilization or with central significance as well as open space and recreation, transportation and facilities, or parking and vacant land.<sup>589</sup> These groups obviously reflect the ongoing functional segregation that started with the implementation of the functionalist city,<sup>590</sup> we thus might also consult the underlying Athens Charter, in which LECORBUSIER and

<sup>583</sup> see (Poll 2003: 35 f. & 46)

<sup>584</sup> see (Poll 2003: 41 & 143 ff.)

<sup>585</sup> see (Klinkenberg 1970)

<sup>586</sup> see (Schild et al. 1994: 3 ff. & 24 f.) and (Curdes 1999: 153 ff.)

<sup>587</sup> see (Schild et al. 1994: 26 f.) and (Winn 2005)

<sup>588</sup> see (Curdes 1999: 158)

<sup>589</sup> We shall base these classifications for the English nomenclature of the updated New York City Zoning Law from 1961, while the German Federal Law (BauNVO) from 1961 uses almost identical primary determinations, coming however to different detail designations.

<sup>590</sup> compare discussion on page 39

his colleagues appointed living, recreation, working, and circulation as basic urban uses, which should situate in different areas to allow for their best possible arrangement with not disturbing interference from other utilizations.<sup>591</sup> As congruent as these wordings appear to be from a functionalist perspective, for our general review they induce another significance when neglecting the segregational attitude: housing, working, recreating, and moving represent activities, which within the overall framework occur not only at an almost similar level of intensity, also share the same plots – hence, not only in the preindustrial non-segregated city, we can understand the streets as such locales, in which people commute, but also work (e.g. roadmen, street vendors), recreate (e.g. flaneurs, ramblers), and live (e.g. derelicts); likewise an apartment house building accommodates urban dwellers, but also provides for temporal as well as permanent work (e.g. craftsmen, housekeepers, janitors), individual and common leisure (e.g. on balconies, roof gardens, social rooms), and of course movement (e.g. corridors, staircases, elevators).<sup>592</sup> When, naturally, certain utilizations prevail others in certain plots, a circumstance that persists until the early urban development, an exclusionary strict classification, as it is insinuated by current building legislation as well as by functionalist theory, is seemingly inappropriate for our considerations.<sup>593</sup> Still, we do not come by this general *Characterization* as a means of approximating the predominant use designation of urban plots; likewise only this allows us to at all approach the various, often very specialized activities within a city expressing themselves formally within the urban environment in different plot sizes and shapes. It thus altogether reflects those aspects of a framework that through its set-up determine the there evolving utilizations in reference to the principal activity groups of human life, while we shall always consider the vast variety of human activities that can evolve especially in an urban context.

#### *Brasília*

While all implications of the characterization of *diversity*, as argued before, is generally hard to illustrate with urban examples for the simultaneity of activity groups, functionally segregated urban frameworks still allow for the most plausible account on the predominance of certain utilizations versus others, through their distinct land-use assignation. As an epitome of functionalist urban design and planning at large scale we until today consider besides LECORBUSIER's 1951 plan and 1966 completion of Chandigarh in India the Brazilian capital Brasília by

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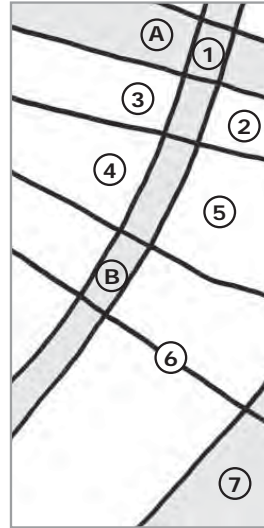
<sup>591</sup> see (LeCorbusier 1943); with the geographer Roger E. DICKINSON the same categories read: dwelling, work, recreation, and transport (Dickinson 1964: 227);

we, however, should not forget GARNIER's vision for an 'Industrial City' from the beginning of 20th century, which already largely anticipated the later common segregation of main urban functions, there especially by use of topography (Garnier 1917); compare on page 37

<sup>592</sup> Even when we find leisure being a somewhat modern aspect of our working life, especially through its commercialization in the 19th and 20th century, it naturally always existed as recovering time from all sustenance activities – otherwise we would not be able to explain the origin of arts already in pre-urban societies; for an intriguing account on "Freizeit" see (Reinhard 2004: 469 ff.).

<sup>593</sup> In this context neither considerations reflecting the economic impact of urban functions is of help, as for instance DICKINSON describes them with "basic" and "non-basic activities", whereas "the basic activities account for the very existence of the city since they bring in income from outside" and "the non-basic activities service the essential workers and their dependents" (Dickinson 1964: 68); such an understanding, as applicable as it is also to the mentioned quadrilateral, demotes several of the very urban utilizations to mere economy supporting activities and perceives city as enterprises rather than a form of living.





- A Eixo Monumental
- B Eixo Rodoviário
- 1 Urban Center (Bus Terminal)
- 2 Cultural Sector
- 3 Hotel Sector
- 4 Hospital Sector
- 5 Commercial Sector
- 6 Housing Sector (Superquadras)
- 7 Schools, Academies, Embassies etc.

country  
Brazil

coordinates  
15° 47' 39" S – 47° 52' 58" W

Main bus station

elevation  
1,050 to 1,200 m

population  
199,062 (2005)

size  
472 km<sup>2</sup>

density  
422 /km<sup>2</sup>

foundation / rst citing  
1922 / 1960 (Start of Construction)

source  
<http://de.wikipedia.org/wiki/Bras%C3%ADlia> (20.04.2008)



Brasília  
Image © 2008 DigitalGlobe

plate 72



Lúcio COSTA (1902-98). While the establishment of a new federal capital in the center of the country had been an old desideratum,<sup>594</sup> it was only in 1954 that the Brazilian president Juscelino KUBITSCHEK de Oliveira (1902-76) promoted the relocation of the government from coastal Rio de Janeiro to the central high plateau, likewise to escape the prejudicial complexity between economy, military, and administration that featured traditional Brazilian policy as well as to initiate a new socio-economic development of the hinterland.<sup>595</sup> In only three years time from the urban design competition 1957 until the formal foundation in 1960, COSTA with architectural support from Oscar NIEMEYER (\*1907) laid ground for a full city in a remote and non-urbanized area that initially should accommodate 500.000 people. When the overall layout, called *Plano Piloto*, features two main axes, the straight *Eixo Monumental* with the representative, administrative, and cultural buildings and the curved *Eixo Rodoviário* accessing the residential and commercial areas, all urban uses are strictly sectorized and distinct from one another: on the monumental axis we find from the railway station in the Northwest lined up the smaller industries and warehouses, military functions, sport facilities, the city hall, a television tower, the federal ministries, parliament, federal court of justice, presidential palace and eventually on the lakeside the residence of the president and a larger recreation sector; the road axis accommodates the *Superquadras*, high rise residential blocks with some daily life commercial utilization, public services, and small parks and sport facilities, as well as several low-rise developments for the diplomatic corps, administrative executives and senior management; the very city center, where the two axes cross, ultimately features the central bus terminal in the middle clockwise surrounded by the amusement sector, the cultural sector with the cathedral and the broadcasting services, the commercial and the hotel sector, and the fair ground. All these sectors can be easily raced by means of the employed building typologies, when the segregation is underlined by the vast traffic facilities that following the functionalist principle also divide through traffic from local traffic, yet harshly neglecting any potential pedestrian traffic, what even more stresses the functional isolation of the different sectors within the urban framework and thus highlights their specific use prevalence.<sup>596</sup>

### 3.2.3.3 Interaction

When the example of Brasília thus shows a distinct utilization characterization, which we today do not consider any more benevolent for an urban distribution, we recognize the significance of the third diversity aspect, which, in succession to the various authors criticizing the functionalist city,<sup>597</sup> HILPERT calls the 'forgotten fifth function' (Hilpert 1978: 286 ff.): the interaction of uses. This interaction, as we understood earlier, is already a feature of the earliest residential entities and thus on a small scale occurs with any plot of a framework. There, however, the interdependence and interference of housing and working was of interest, especially when the working induced molestation by sound, smell, or dirt (for instance the tannery business in ancient and medieval cities). Of more significance, whatsoever, was the scale escalation of manufacturing works since the industrialization, which also resulted in enormous emissions, disturbing not only urban dwellers

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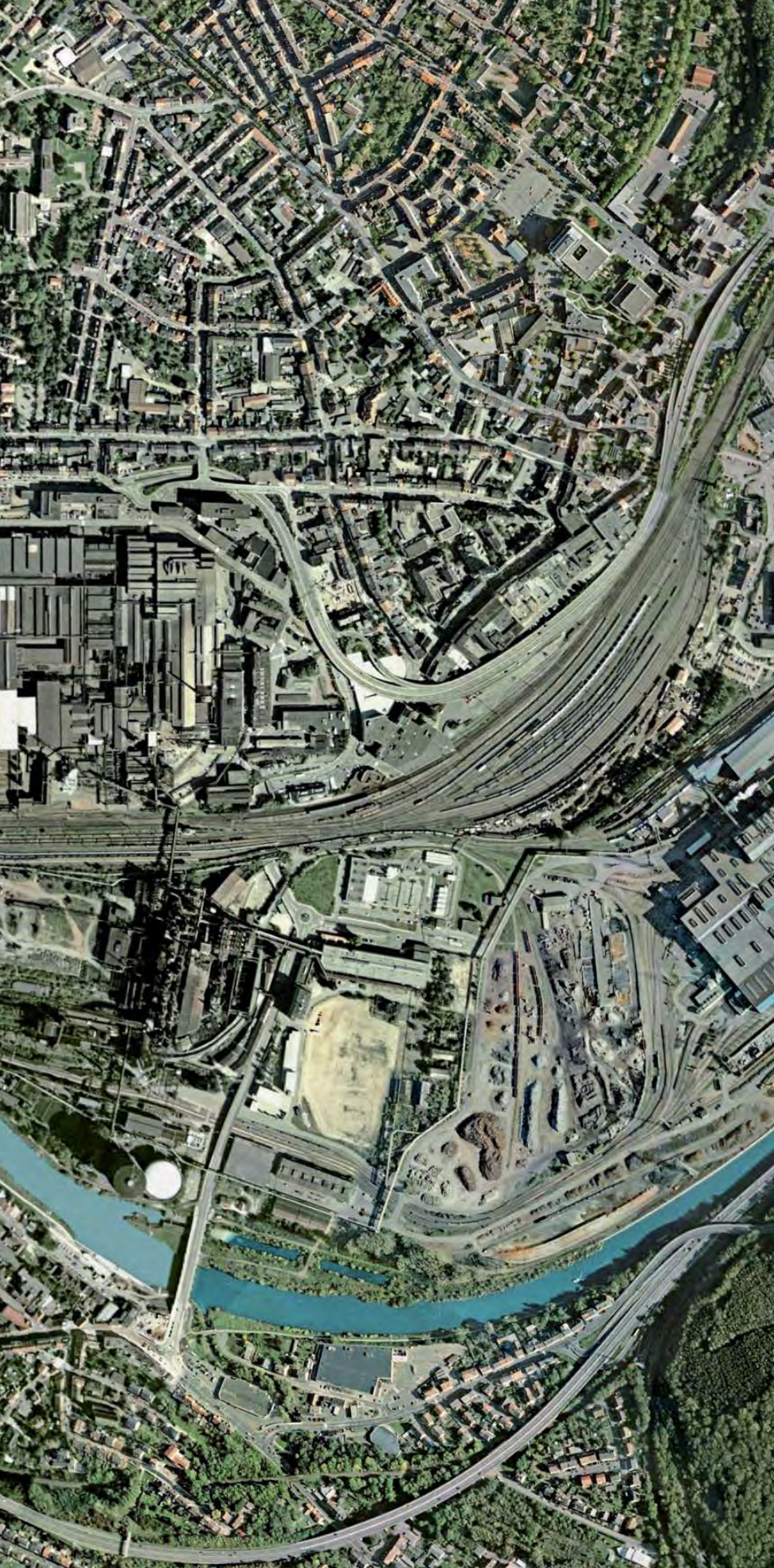
<sup>594</sup> While the idea for a central capital existed since the early 19th century, the 1891 republican constitution already expressed the appointment for such a federal district with governmental function; compare (Egli 1967: 383 ff.) and (Fils 1988: 89 ff.).

<sup>595</sup> see (Fils 1988: 98 ff.)

<sup>596</sup> compare also (Delfante 1997: 249) and (Bacon 1967: 237 f.)

<sup>597</sup> compare discussion 63 ff. & 67 ff.





- 1 City
- 2 Industrial Area
- 3 Railway

*country*

Germany / Saarland

*coordinates*

50° 05' 10" N – 14° 24' 40" E

Old town hall (Bismarckstr. 1)

*elevation*

182 to 328 m

*population*

40,453 (2006)

*size*

67 km<sup>2</sup>

*density*

603 /km<sup>2</sup>

*foundation / rst citing*

822 / 1873 (Ironworks)

*source*

<http://de.wikipedia.org/wiki/V%C3%B6lklingen> (20.04.2008)



300 m

Völklingen

Image © 2008 GeoContent

**plate 73**



but often turning out to be hazardous to human life and thus laid a new focus on the interaction of the prevailing activities among the plots, mainly those immediately neighboring each other. Yet, also the increase of functional intensity rendered the then traditional understanding of interaction as obsolete, for instance with the hygienic issues of overcrowded housing or the traffic issues of the commercial centers.<sup>598</sup> Particularly the city of the early 20th century represented a laboratory for according solutions, resulting in an incremental segregation (as opposed to the functionalist approach), which is well illustrated by the earlier cited distributive model by HARRIS & ULLMAN that described the evolvement of multiple nuclei according to the predominant utilization.<sup>599</sup> Notwithstanding these special considerations regarding the US-American city between the two world wars and their impact on urban planning until today, we are able to generalize three groups of activity interactions that apply to all urban levels, from the plot to the whole framework: that is a supporting-, a disturbing-, and a neglecting interaction; with reference to the diversity of a city, evidently the first two groups have a more immediate impact on the overall development of the layout, while the latter rather indirectly affects the socio-cultural development – positively or negatively.<sup>600</sup> Altogether, the criterion *Interaction* refers to those aspects of a framework that describe the relations between the different utilizations of plots.

### *Völklingen*

Intriguing examples for the problematical interaction of activities within an urban framework represent the heavy industrial towns of the 19th century with their large pollutive enterprises, such as chemical factories, steel works, or coking plants. Völklingen, in the iron and steel industry region of the Saar River, is such a town, which until today suffers from the disturbance of the primary urban uses through the local industrial metallurgy that developed since 1873;<sup>601</sup> when, of course, this industry simultaneously sponsored the town's prosperity for years before the steel industry declined, today, on reverse, the town regains its ecological balance but undergoes extreme economic difficulties for the lack of adequate job offers.<sup>602</sup> Originally, Völklingen was a village with large agricultural use, when in early modern times the region additionally prospered due to small iron furnaces, glass works, and opencast coal mining. At the end of the 19th century the town benefited largely from its close vicinity to the Lorraine region with its iron ore deposits that allowed with the Thomas process for greater steel production.

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<sup>598</sup> compare discussion on page 29

<sup>599</sup> As for the preciseness of their description, we shall give the exact wording:

"1. Certain activities are tied to particular sites because they have highly specialized needs – such as the retail district (access), the port district (water front locations), the manufacturing district (transport facilities).

2. Certain kindred activities tend to segregate in the same district since they can be more efficiently carried on if in a cohesive unit. This is particularly true of the location of the central business district.

3. Certain unlike activities are detrimental to each other, as for instance the antagonism between factory development and high-class residential development. Retail trade districts, with their heavy traffic congestion, are antagonistic to the means of loading and unloading of the wholesale services.

4. Certain activities are unable to afford the high rents of the most desirable sites, this factor working in conjunction with the foregoing third factor" (Harris et al. 1945: 14 f.,) cited after (Dickinson 1964: 129).

<sup>600</sup> This is due to the fact that frameworks, which feature supporting or disturbing interactions, usually feature a higher potential for layout changes, whereas neglecting interactions seldom do so, but might, along with the functional segregation, also result in rigid societal segregation – eventually opposing an urban diversity.

<sup>601</sup> see for instance (Pauly 1975; Mörscher et al. 2001; Lauwe 2004)

<sup>602</sup> compare (Schönbauer 1994)

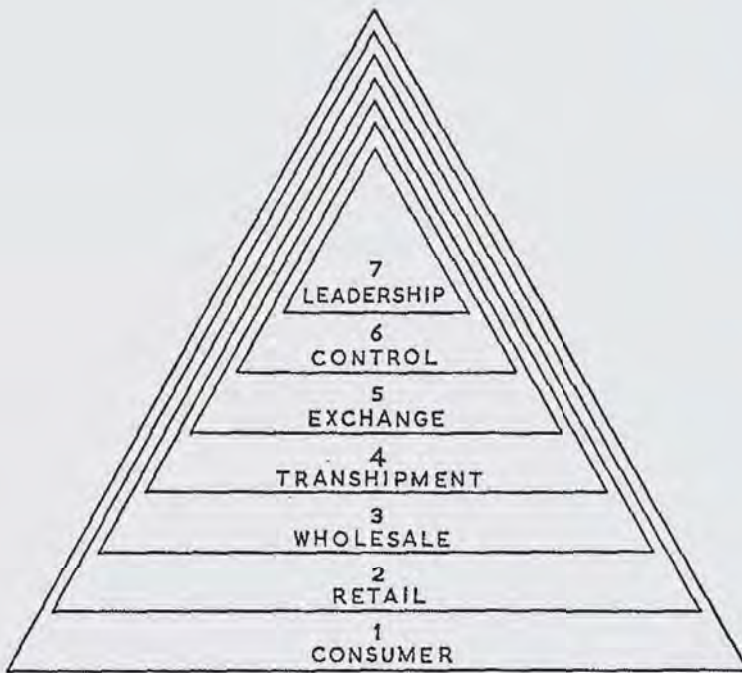
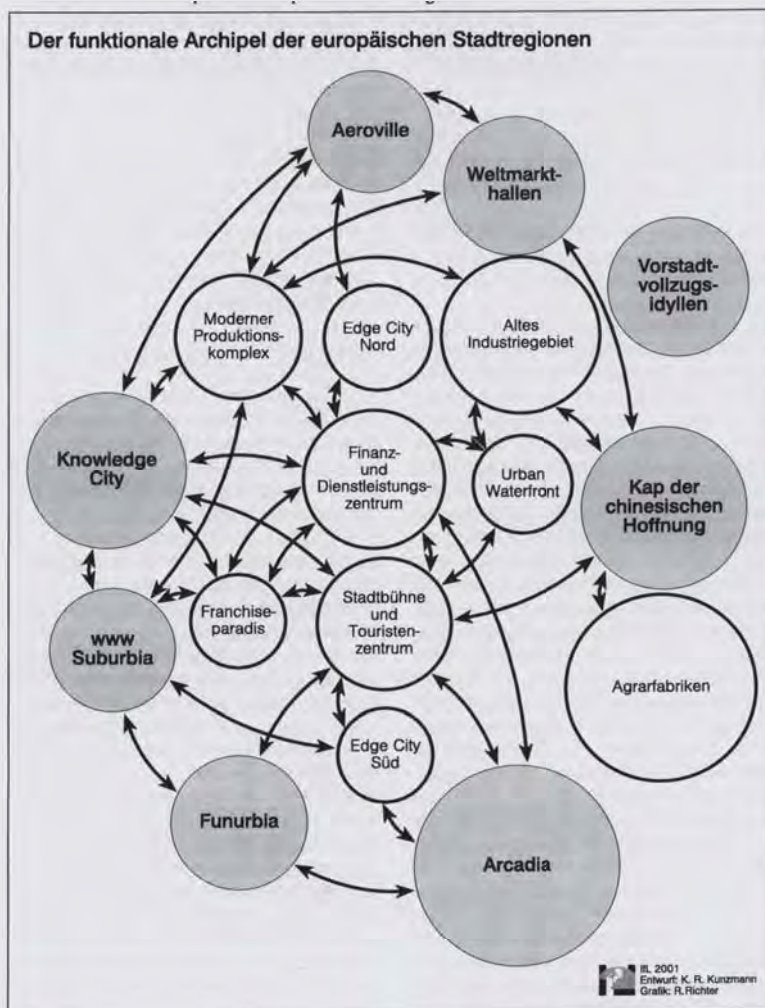


FIG. 5. The Sevenfold Hierarchy of Nested Functions (after Philbrick).



Nested Functions  
according to PHILBRICK and  
Functional Knots  
according to KUNZMANN  
(Philbrick 1957; Kunzmann 2001: 215)

This soon resulted in an extreme growth of the *Völklinger Hütte*, which comprised more and more industrial buildings and facilities (coke batteries, suspension and railway tracks, powder metal facilities, stockpiles, etc.) at times employing some 70.000 workers in the ironworks themselves and related enterprises; the industry in the immediate vicinity of the town center thus rapidly surmounted the cityscape in surface and silhouette. In 1986 the ironworks were closed in course of the on-going steel crisis in Europe, leaving the city with considerable environmental damages and immense unemployed rates. When the enlisting of the Völklinger Hütte as World Heritage in 1994 today is sought to be utilized as a new location factor, still Völklingen stands for many other urban entities, in which prevailing heavy industrial working utilization sustainably affected other urban activities, evidently in an enduringly disturbing manner; from here we can easily extrapolate the significance of the interaction of activities, which in addition to the characterization and instigation, might produce a balanced or an imbalanced diversity of an urban framework.

Compared to our situative considerations, the here outlined distributive factors have been already subject to urbanistic as well as largely to geographic research, as we have already seen several times before. Now, before looking into some relationships, which evolve among the criteria of *density*, it seems worthwhile having another short glance at two ideas from urban geography regarding the implications of the diversity of utilizations:

Following CHRISTALLER's understanding of *central places*,<sup>603</sup> Allen K. Philbrick in 1957 suggested a "Sevenfold Hierarchy of Nested Functions" among the urban entities of a wider urbanized (or metropolitan) region, insinuating a correspondence not only between the aerial units but also between the according functions (Philbrick 1957). Starting from consumption as ubiquitous use within an area, we find the development of focal places, to which the consumers relate for goods, they cannot produce within their area, then clusters of focal places, which are determined by wholesale activity, increasing to clusters of clusters until we find the outmost centrality with the primate city, itself embracing all aforesaid functions and leading the region.<sup>604</sup>

In consequence of the ongoing functional segregation within urbanized areas, in 2001 Klaus KUNZMANN proposed a scheme presenting the 'Functional Knots of Postsuburbia' relating different specialized functions, such as office parks, shopping cities, and gated communities on a city's periphery to its core, while he attributes a parallelism of polycentric as well as mono-functional nuclei, refining HARRIS & ULLMAN's distributive model.<sup>605</sup>

Both schemes, notwithstanding their original scope, illustrate the necessity of interaction of activities to produce an urban environment, even when they focus the region rather than the single urban framework; however, without proper scientific validation but out of mere logical reasoning, we might transfer these considerations also to the urban context itself, when we substitute the single entries that derive from a regional perception by urban activities: then, a city likewise can be understood as an aerial and functional *compositum* that in varying hierarchies (quarter, districts, etc.) embraces single aerial and functional subunits (plots), which, as proposed by KUNZMANN, generally feature a parallelism of multi- and mono-functional activities that is preconditionary to any urban diversity.

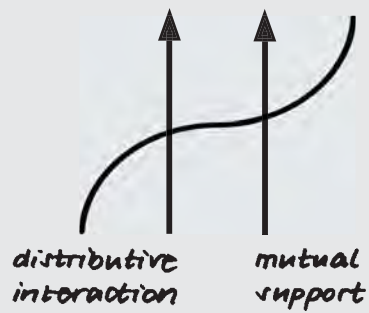
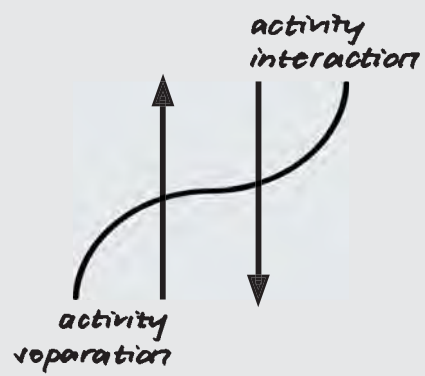
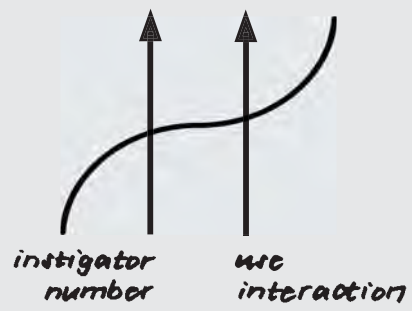
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<sup>603</sup> compare discussion on page 166 & 177

<sup>604</sup> compare also the description with (Dickinson 1964: 81 ff.)

<sup>605</sup> compare also the description with (Fassmann 2004: 115 ff.)





Apparently, the employment with urban diversity disregarding the socio-economical and cultural implications represents an enormous limitation of the subject. Still, for the general ratiocination, we ought to refrain from a detailed discussion for instance of the classification and interaction of societal strata, which, of course, also have an immense impact on an urban framework;<sup>606</sup> as well, we could not particularly include considerations on real estate market issues, which are yet hardly at all referring to plausible urbanistic approaches or efficiency understandings but often allowing for under- or over-utilization according to the contemporarily expected monetary value and potential profit.<sup>607</sup> Nevertheless, we find these circumstances as well covered with our triad of instigation, characterization, and interaction, though at a more subordinated level; particularly for the latter combined with several situative factors,<sup>608</sup> when although in general we shall assume simple according relations within the framework rather than speculative reasoning.

Within the course of this catalogue we have already confronted an increasing complexity of parametral description, more and more also suggesting eminently larger coverages, also of what we denominated the motivational realm – while this, of course, is implied by our basic assumption, that the proposed conditioning system of interrelating factors likewise affects motivations and results.<sup>609</sup> Though for now, we should have a look at some potential basic relationships of the individual distributive factors, which one finds immediately with the urban framework and thus following our initial urbanistic approach:

- the more instigators and thus more and diverse plots we find within an urban framework, the more likely we will encounter also a large interaction of uses, notwithstanding their potential supporting or disturbing attitude;
- the more separate the various activities groups are situated within the urban framework, the more likely they tend to either neglect each other or even show issues of disturbance, especially when different groups of instigators are involved;
- the higher the distributive interaction within an urban framework is, the more likely this interaction results in mutual support of the different activities, notwithstanding their instigation and characterization.

Summarizing the presented criteria we consequently assess that *diversity'* derives from a variety of distributive instigators, characters, and interaction, which is expressed in specific plot sizes, shapes, and interrelations, eventually filling the *stitches* of the urban fabric with activities. Translating this perception into a parametral statement, we recognize *diversity'* as the most *variegated* concept: we find it with the different kind of users as well as the manifold utilizations, surfaces, boundaries, and transitions. *diversity'* ultimately must be seen as expletive to any distribution within any urban development.

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<sup>606</sup> compare for instance the significance of the apartment house building for the development of the 19th century metropolis (Ley 2005b)

<sup>607</sup> compare the according discussion on page 65, as well as for instance (Yeates 1965)

<sup>608</sup> compare the induction of the Idealized Course of Urban formation, especially the discussion on page 119

<sup>609</sup> compare discussion on page 82 & 104

The third parameters determine the quality of a certain creation of the distribution within a situation, which represents the evolving urban development and is *substantial* to a city. They succeed the situative and distributive parameters, as they affect the physical expression of a city: the form that it is.

Already theoretically reasoning, in consideration of the variety of possible situations for urban entities and the even more manifold distribution potentials, we shall for the eventual creation of urban form assume a vast number of probable implementations, reaching from elaborated attendance to the locale, over the conscious preparation of the framework, to the design of streets, squares, and buildings – and, in fact, our urban reality today thoroughly meets this assumption. According to this immense variety of factual urban forms and the evolving intriguing field of research, creative aspects in urbanism have long since been subject to architectonic and aesthetical analysis; usually the according contributions enfold urban development either predominantly *chronological*,<sup>610</sup> that is along the changing urbanistic approaches,<sup>611</sup> *morphological*, that is regarding the varying urbanistic forms,<sup>612</sup> or *typological*, that is in reference to a previously distinct urbanistic classification,<sup>613</sup> while these groupings also show considerable overlaps due to the eventual scope.<sup>614</sup> Notwithstanding the methodology applied, all authors agree on the perception of the city as an *artifact*, which immanently comprises the notion of creativity. Still, pursuing our generalized approach, we ought to reconsider the plentiful categorizations with regard to the proposed urban constituents as well as the perspective from urban form as a product and abstract from all design particularities.<sup>615</sup> We consequently ought to start to review the development stage after situation and distribution for their substance and main attributes – ultimately for that what should be of chief interest to the urbanist.

With the following parameters we thence shall epitomize the culmination of the urban formation process, in which we only find the artistic ambition of a human society towards the modification and domination of its environment; as Edmund N. BACON (1910-2005) said: "The form of his [the man's, the author] city always has been and always will be a pitiless indicator of the state of his civilization" (Bacon 1967: 13), while the creative parameters on reverse can be seen as those design factors expressing urban culture. Here now we encounter the third relation with the definitory approach to architecture by VITRUVIUS. His "venustas" describes the pleasing appearance and good proportion of an architecture (Vitr. 1, 3, 2).<sup>616</sup> Again, the creative parameter and their criteria go beyond a mere architectonical amenity or beauty; they should comprise all creative approaches towards the urban constituents, and ultimately afford a city in its form.

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<sup>610</sup> compare for instance (Egli 1959; Egli 1962; Egli 1967; Benevolo 1975; Delfante 1997)

<sup>611</sup> The German language offers with *Stilgeschichte* an interesting term to describe the methodology of some of these contributions, which seek to aggregate certain stylistic tokens within a certain period of time.

<sup>612</sup> compare for instance (Bacon 1967; Vance Jr 1990; Kostof 1991; Kostof 1992)

<sup>613</sup> compare for instance (Gruber 1952; Mumford 1961; Braunfels 1976)

<sup>614</sup> A methodologically interesting account gives Geoffrey BROADBENT with his "Emerging Concepts in Urban Space Design", who in a rather spontaneous manner confronts different topics, times, and theories with each other; see (Broadbent 1990); another topical review gives (Hall 1998)

<sup>615</sup> Therefore, we also opted to address the abundance of potential examples by well-nigh not attaching full page illustrations of further single examples, but reverting to the previous ones.

<sup>616</sup> "venustas" translates as agreeableness or amenity.



### 3.3.1 shape' (Gestaltung')

A city results in voluminality.

After the framework for the sedentary development is determined, the subsequent activity is to accordingly produce the factual *building*,<sup>617</sup> respectively the creation of *volumina*; we already assessed that this conforms to the creative *shape* (Gestalt), which is the underlying last main constituent of urban form.<sup>618</sup> Obviously, nevertheless both show immediate human intervention as regards the development of a locale towards an urban entity, a main difference between the previous and the current constituent is that the first refers to laminary and the latter to three-dimensional aspects. Examining the constituent according to the now familiar approach from the general to the special, we find the shape well epitomized by the silhouette, contour, or skyline that reflects the overall building, notwithstanding its spontaneous or planned modus,<sup>619</sup> as an indispensable evolutionary step for any sedentation. Looking for proper denominations of the criterion describing this principal translation of the distributive framework into the creative shape, we have to carefully distinguish between the constituent *shape* (Gestalt) and the parameter *shape'* (Gestaltung'),<sup>620</sup> which expresses the creative process.<sup>621</sup> Obviously *shape* as *Gestalt* intrinsically relates to the *morphe* (μορφη) of the building and thus gives the cue to any morphological examination of cities. However, especially the proposed general approach from the outside towards the built body of the urban development is a somewhat unattended field of urbanistic research that still should gain broader urbanistic appraisal.<sup>622</sup>

We shall refer to the subsequent depictions of *shape'* as creative voluminal criteria, as they principally relate to the production of a physical body of the sedentary development (Siedlungskörper), which reflects at a given locale the conversion of the laid-out framework into actual formal volumes: it is the adherence to certain situative features, such as the factual or attributional properties of the locale;<sup>623</sup> the consideration of specific distributive assignments accrued, such as the allocation and prevalence of particular activities;<sup>624</sup> or, firstly appearing in this catalogue, the pursuit of a desired design goal, that is creative objectives, which call for a distinct formulation of the building especially in its vertical dimension.<sup>625</sup> It is eventually *shape'* that allows for a thorough art-scientific occupation with settlements due to the evolving voluminal result of the sedentary activity.

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<sup>617</sup> in German that would be *Baulichkeit*

<sup>618</sup> see discussion on page 119

<sup>619</sup> compare discussion on page 80

<sup>620</sup> Evidently the inverted comma here gains an even greater significance.

<sup>621</sup> compare discussion on page 123

<sup>622</sup> From the vast amount of morphological analyses this aspect is rarely attended to as major feature. Only three publications significantly deal with this matter: "Die Stadtkrone" ('Urban Crown') by Bruno TAUT (Taut 1919), when still TAUT seeks to introduce a widespread traditional formal feature of cities as new design principle and thus does hardly represent a piece of scientific research; "Architektur und Stadtkörper" ('Architecture and Urban Body') by Michael BOHM (Bohm 1998), who deals with general voluminal aspects in one chapter of his argument, in which he proposes some guidelines for contemporary architecture and urbanism in relation to his own built projects; and ultimately Toni MILLER's "Gedanken zur dritten Dimension im Städtebau" ('Thoughts regarding the Third Dimension in Urbanism') (Miller 2003), the only actual scientific account on the relation between cities, topography, and vertical development.

<sup>623</sup> compare especially the discussions on page 131 ff. and 147 ff.

<sup>624</sup> compare especially the discussions on page 196 ff. and 211 ff.

<sup>625</sup> while the horizontal dimension is in its potential exploitation already determined with the establishment of the framework



Sermonetta



Lennep



Berne



Birmingham AL



Soest



Völklingen



Mont-Saint-Michel



Lisbon



Jumairah

#### 3.3.1.1 Situationality

A possible voluminal reference of a settlement to the topographical features of a locale persists since the early urban development and can as well be traced back to proto-urban and primitive sedentary activity,<sup>626</sup> while this shaping according to topography and terrain in equal measure also addresses safety and health, resources and yield, as well as aperture and connection considerations. In general we can distinguish three kinds of situational shapes: those which accentuate the locale, those which subordinate themselves under the locale, and those which superimpose themselves over the locale, notwithstanding the actual topography, that could be valleys, hills, or plateaus, which are produced by differences in elevation or limitation through watercourses; uniform plains, however, usually show no features that qualify for a *Situationality* of the according settlement shape. With some cities reviewed earlier we easily find such particular situational significances for the development of the sedentary body: Sermoneta, with its situation on top of a free-standing hill, surmounted by the Castello with its Maschio;<sup>627</sup> Lennep, with its situation in the valley that is the source basin of several creeks, conforming to the natural slopes with only the central church as singular vertical emphasis;<sup>628</sup> and Berne, with its situation on the plateau of a sinuosity that surrounds the locale on three sides, covering the whole surface at similar building heights and transforming the former natural contours into urbanistic ones.<sup>629</sup> Eventually, *Situationality* describes the preponderance of situative aspects for the overall urban shape, which can be rather easily categorized.

#### 3.3.1.2 Distributionality

We find a potential voluminal reference of a settlement to the function and density features of its framework, similar to the *Situationality*, already with proto-urban developments,<sup>630</sup> when, however, its main significance for the urban development ensued with the industrialization and the rise of functionalism;<sup>631</sup> the according shaping, that conforms with *Distributionality*, intrinsically relates to the systemicity and functionality of, as well as to the instigation, characterization, and interaction within the framework, which necessarily find their particular vertical transformation and allow for the identification of predominant utilizations already from outside the settlement.<sup>632</sup> With some cities reviewed earlier we easily find such particular distributional significances for the development of the sedentary body, even when simplified regularities can be hardly observed: Soest, with its strong relation to the agricultural utilization of the hinterland and the consequent peripheral processing uses and the trading and administrating center until today exemplifies a distinct center-

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<sup>626</sup> compare also the discussion on page 117 ff.

<sup>627</sup> compare discussion on page 153; Sermoneta is thus a typical example for hill-towns with their particular safety and health aspects, likewise dominating the hinterland from the elevated local

<sup>628</sup> compare discussion on page 197; Lennep is thus a typical example for valley-towns with their specific resources and yield aspects, likewise concentrating the hinterland at the depressed locale

<sup>629</sup> compare discussion on page 149; Berne is thus a typical example for plateau-towns with their eminent aperture and connection aspects, likewise integrating into the hinterland from the nevertheless by significant topographical features distinct locale that support also basic safety considerations

<sup>630</sup> compare discussion on page 119 ff.

<sup>631</sup> compare discussion on page 25 ff. & 39 ff.

<sup>632</sup> We should again refer to PUGIN's comparison, which has been cited earlier; see for instance the illustration on page 28.



periphery gradient;<sup>633</sup> Birmingham AL, with its highly segregated utilizations that periodically evoke the shifting of the CBD, vertically overtrumping the earlier ones, and the supporting or otherwise relating utilizations on the ubiquitous grid, features a hollowed and thus indistinct center-periphery gradient, which no more reflects a congruence of the geographical and functional city center;<sup>634</sup> and Völklingen, with its immense industrial structures immediately attached to the residential and commercial areas of the town, which in their volumes smother the otherwise traditional townscape, inverts the relation to a periphery-center gradient.<sup>635</sup> Altogether, *Distributionality* allows for conclusions regarding the preponderance of distributive aspects for the overall urban shape, which, yet, vary largely also in respect to their varying interpretation in different parts of the Western world,<sup>636</sup> and can only be ascertained when taking the particular framework into account.

### 3.3.1.3 Creationality

Eventually the voluminal reference of a settlement can ensue according to a desired design goal that goes beyond immediate situational or distributional considerations, but inheres a specific idea, on how the shape of the settlement shall be produced and what overall appearance should be achieved. Evidently, however, situative as well as distributive aspects can support or even underlie this design approach, as we can observe with TAUT's notion of an *Urban Crown*,<sup>637</sup> or LECORBUSIER's plea for a *City of Towers*.<sup>638</sup> the first notably referred to many extant hill towns and cities that developed a gradual vertical accentuation to its center,<sup>639</sup> and suggested for new cities, when necessary, substantial earthworks to produce an elevated central plateau for the "Stadtkrone" as socio-cultural cumulation and culmination (Taut 1919: 62 ff.); the latter, with several statements in various publications,<sup>640</sup> stressed the idea of a true formal congruence of the urban *building* to the urban *functionalism*, acknowledging the development of segregated commercial (CBD), residential, and industrial zones, which ought to follow distinct vertical assignments as well as the "clarté euclidienne" of the right angle (LeCorbusier 1937: 66).<sup>641</sup> Both approaches, however, pursue the center-periphery gradient – not as an evolutionary result of the development of a certain locale or the layout of a certain framework, but as an outspoken design directive for the formulation of the according urban body and the envisioned townscape or

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<sup>633</sup> compare discussion on page 141; Soest is thus a typical example for the traditional center-periphery relation that expresses itself in the urban silhouette

<sup>634</sup> compare discussion on page 203; Birmingham is thus a typical example for urban grids that leave for the voluminal development only the altitude, usually depending on the economic potency of the instigators

<sup>635</sup> compare discussion on page 219; Völklingen is thus a typical example for the voluminal dominance of the significant economic stakeholders of a region, which by the time of the industrialization were able to leave behind potentially concurring socio-cultural institutions (the authorities with its palaces, the church with its bell towers and monasteries, and the community with its town halls) also within the city limits; compare also discussion on page 57

<sup>636</sup> see also (Lichtenberger 1986: 196 ff.)

<sup>637</sup> see (Taut 1919)

<sup>638</sup> see for instance (LeCorbusier 1937); the term "City of Towers" goes back to (Hall 1988: 203 ff.); compare also discussion on page 47

<sup>639</sup> see (Taut 1919: 17 ff.)

<sup>640</sup> see for instance (LeCorbusier 1924: 157 ff.), (LeCorbusier 1930: esp. 141 ff.), (LeCorbusier 1935: esp. 156 ff.), and (LeCorbusier 1937: esp. 247 ff.)

<sup>641</sup> 'Euclidean clearness', (pg. 48)

silhouette; consequently the creative ambition stands in the foreground of the sedentary development and would, in the case of new urban plan, overrule or at least largely determine the previously indicated development stages.

As mentioned in the initial description of the present parameter, this *Creationality* has not yet been individually subject to this catalogue and thus represents a novel formal quality to the so far specified factors.<sup>642</sup>

With some cities reviewed earlier we easily find such particular creational significances for the development of the sedentary body: Mont-Saint-Michel, with its explicit *Stadtkrone* that towers the Atlantic Coast from an offshore rock;<sup>643</sup> Lisbon, with its rational reconstruction of the *Baixa*, strictly abiding to the determined building height that in its uniformity sticks out from the surrounding incremental development with its varying building heights;<sup>644</sup> and The Palm Jumeirah, with its construction and development of a previously non-existing urban locale off-shore, fundamentally changing the coast contour horizontally as well as vertically.<sup>645</sup>

Ultimately, *Creationality* refers to those aspects of the overall urban shape that can be traced back to a distinct design perception.

Following the presentation of parameters so far in this catalogue, we could now look for basic relationships with the different criteria of *shape'*; however, in respect to the strong motivational background of creative approaches towards settlements, such relationships would hardly stand a reasonable verification, even dealing with approximated statistic data – especially the *Creationality* criterion with its proposed scope that reaches far into the previously set up parametral considerations might well lead to a conscious negligence of rational interdependencies when they run contrary to the superimposed design directives. Yet, even though the presented criteria at first appear to concentrate on presumably detached aspects, having examined several *faits-urbains* we have to consider them as likewise comprehensive and interdependent as the criteria of the situative and distributive parameters before, notwithstanding our withdrawal to assign basic relationships. Consequently, we shall here merely retract to a practical summary of the presented criteria that allows for a parametral statement, in which we recognize *shape'* as the most *substantial* concept: it reflects the overall substance of the forms resulting from the translation of the distributive framework at a situation into a three-dimensional sedentary *building*. *shape'* accordingly must be seen as cumulative to any creation of an urban development.

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<sup>642</sup> see discussion on page 225;

at this point, we shall clarify that the term *Creationality* should not at all implicate any relation to religious debates, but on the contrary stress the human creative approach towards settlement bodies!

<sup>643</sup> compare discussion on page 173; Mont-Saint-Michel is thus a typical example for the gradual altitudinal accentuation towards the urban center, which in this particular case, however, is supported by the topography

<sup>644</sup> compare discussion on page 189; the Baixa in Lisboa is thus a typical example for the homogenous development of an also homogenous framework according to an outspoken design goal

<sup>645</sup> compare discussion on page 135; The Palm Jumeirah is thus an example for the conception of an urban entity from scratch, with so far only literary predecessors – we ought to exclude previous town- and city developments, which evolved in the course of land reclamation activities, as there the land reclamation itself stood in the foreground for a regional aggrandizement rather than the construction of a detached urban entity

### 3.3.2 order' (Ordnung')

A city results in regularity.

The equally significant creative step while producing the sedentary shape, e.g. the settlement body that we best examine from outside, is the internal relation of individual volumes to each other as well as the relation of the single volume to the framework-plot. This creative *proportion* (Proportion), in its immediate sense, evidently is subject to design ambitions, which we can understand as incremental through the involvement of several independent designers,<sup>646</sup> as well as provisional through the collective set-up of a plan or guidelines;<sup>647</sup> both processes, yet, succumb to a certain regularity that does not necessarily imply a geometrical regularity, or an order that does not automatically imply tidiness, clarity, or simplicity, as we, for instance, could observe with Mary DOUGLAS' considerations on "Symbolic Orders in the Use of Domestic Space" (Douglas 1972). But before engaging in a discussion on symbols (and consequently their cultural determination, what should be alien to our present approach), we shall assert that the regularity or order in question rather provides for the general manner in which certain sedentary volumes are produced and thus results from the philosophical realm of *aesthetic theory*: here August SCHMARSOW already in 1894 stated that the fundamental principle, which underlies the human perception and design of space, is "das Grundgesetz des Menschengesetzes, kraft dessen er auch in der Aussenwelt Ordnung sieht und Ordnung will" (Schmarsow 1894: 472).<sup>648</sup> Again, with our consideration we do not seek to evaluate particular cultural differences, which ensue in formally different results: We merely acknowledge the intrinsic relation of an order of thought with the according physical order of sedentary entities. The parameter *order'* (Ordnung'), consequently describes the according transformation due to inherent regularities.

We shall refer to the subsequent depictions of *order'* as creative organizational criteria, as they thoroughly determine the arrangement of building volumes within the overall shape, which reflects the regular conversion of the laid-out framework into factual volumes: it is the distinct relation of volumes to specific structural elements, especially bringing forward the generic pattern; the voluminal stressing of the distribution framework, especially relating to its different densities; or the reflection of the present utilizations, especially focusing their interactions. It is ultimately *order'* that allows for a thorough planning-theoretical occupation with settlements due to the evolving regular (regelhaftes) result of the sedentary activity.

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<sup>646</sup> In this context we should like to understand the term *designers* in the German sense as a *Gestaltende*, who do not necessarily need a design education; compare also (Rudofsky 1964).

<sup>647</sup> Here we should refer to our considerations on the *planned* and *non-planned*; compare discussions on page 80 and on page 88.

<sup>648</sup> '[...] the basic law of human mind whereby we see and seek to promote order in the external world', (pg. 288).

When in the following SCHMARSOW turns back to the straight line and organizational clarity, apostrophizing the significance of mathematics (and thereby geometry), we have to consider the historicity of the text – for centuries Western philosophy was arguably bound to also stress the superiority of Western thought and culture, tracing back geometrical design as its fundamental approach from neo-classicism via renaissance art to classical antiquity and thus building up a resilient pedigree. Today's notable criticism on such background-synthesization, which we find with several 19th century considerations, in our perception however, does not impair SCHMARSOW's particular basic thread that the categories (and thereby its order) of human thought necessarily enfold human activities, especially when the production of similarly categorical artifacts, such as settlements, towns, and cities, are involved.



### 3.3.2.1 Structurality

The aforesaid misunderstanding of order as geometrical clarity and tidiness arguably has its largest impact onto the idea of the structuredness of a settlement, which since the beginning of town plan analysis is often judged according to the employment of uniformity, proportionality, and rectangularity;<sup>649</sup> it results from a too sincere tradition of classical Greek and Roman thought, in which urban order was equated with the imagined axiomatic order of the universe as well as with universal beauty – testified in the meaning of the Greek term *kosmos* (κόσμος) that likewise stood for order, pudicity, and ornament; similar evidence gives the already discussed Roman gromatic practice: Both ensued in plenty grid-form urban structures, while both cultures evidently took also several architectonic and urbanistic liberties with their aesthetical philosophies.<sup>650</sup> Moreover, taking into account the medieval urban development with its absence of strict rectangularity, particularly in Western and Southern Europe, and assessing a nevertheless existing distinct order in medieval thought and societal interaction, we do not come across the presumption that the *Structurality* of sedentary shapes always expresses the underlying order, might it feature a geometric *clarity* or a geometric *confusion* of the inner settlement organization of volumes.<sup>651</sup>

With two cities reviewed earlier we easily find this dichotomy of *clarity* and *confusion* well illustrated: Zadar, with its Roman *cardo-decumanus* grid, that did not only follow the gromatic set-up but consequently also allowed for an easy orientation of non-local soldiers and other Roman citizens within the urban framework;<sup>652</sup> and Palombara Sabina, with its spiral lay-out, that had been influenced by the Saracens, against whom although the town was developed as a fortified place, and which well-nigh sought to exacerbate access and inner orientation for any alien.<sup>653</sup> Eventually, *Structurality* describes all those kinds of creative aspects of the urban shape that result from ordering principles, which are predominantly expressed in the structure of the framework.

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<sup>649</sup> We find this kind of analysis already with the first contributions of urbanism as an academic discipline (compare discussion on page 31), soon developing a sub-discipline in urban morphology; see for instance (Leighly 1928; Dickinson 1937; Smailes 1955; Conzen 1962; Openshaw 1974; Conzen et al. 1981; Malfroy et al. 1986; Merlin et al. 1988; Vance Jr 1990). However, already with SITTE we also find contrary argumentations to this notion of order; see discussion on page 57 ff.

<sup>650</sup> compare for instance (Hoepfner et al. 1986) for Greek urbanism, and (Müller 1961: 21), as well as the discussions on page 111 ff. & 161 ff. for the Roman gromatic practice; for the aberrations we might recall the lack of a *cardo* and *decumanus* in Rome itself; moreover, the development of Greek *Streifenstädte* as well as the *Hippodamic system* rather resulted from a planning practicability and implementation of political thought, while an aesthetical ordering effort was undertaken predominantly with the approximation of ideal temple architecture.

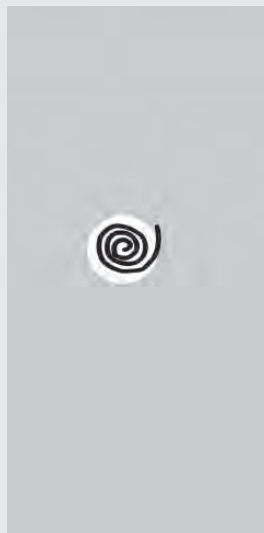
<sup>651</sup> In continuation of our language reasoning, confusion is still different from Greek chaos (χάος), which would be the absence from any order. Focusing on Western urbanism, however, we unfortunately can here only annotate the Islamic influences especially on the Mediterranean town plans, where strangers on purpose shall be confused by the lack of easy comprehensible main thoroughfares and the predominant establishment of «private» cul-de-sac structures with their protective appearance; these formal results nevertheless base on the particular Islamic religious and cultural order that seeks to "avoid an inappropriate mix of activities" (Bianca 2000: 39). Evidently, this spatial logic is, despite its chaotic appearance to the Westerner, far away from *chaos* in the Greek sense; moreover, with respect to our understanding of chaos theory, we should argue that we hardly find human processes, which completely lack regularity and consequently have to, altogether, scrutinize the existence of an urban *chaos*; compare also the challenging thread with (Stöbe 1999).

<sup>652</sup> compare discussion on page 177, as well as the considerations regarding the gromatic practice (see above); Zadar is thus a typical example for the implementation of regularities that lead to an apparently clear inner urban organization

<sup>653</sup> compare discussion on page 175; Palombara Sabina is thus a typical example for the implementation of regularities that lead to an apparently confusing inner urban organization



*Zadar*



*Palombara Sabina*



*Naarden*



*New Orleans*



*Venice*



*Sestriere*

Schemes: order'  
**plate 77**

### 3.3.2.2 Densitionality

The order of a settlement body, however, ranges not only over its *Structurality*, but, according to the significance of distributive considerations for the conversion of the framework into volumes, also over its *Densionality* and *Diversionality*. With both, however, we find less difficulty to attribute regularities than with the sedentary structurality, presumably in course of our nowadays almost internalized perception of the individuality and intensity of urban utilizations, which still result from the notion of *functionalism*.<sup>654</sup> As for the *Densionality*, the widespread center-periphery relationships have been already several times subject of our considerations;<sup>655</sup> while these relationships often evolve mechanically, we also find regulating approaches that seek to produce this *concentration* purposely, may it be according to specific local or functional enhancement or for a particular creative intent. On the other side, there is also evidence for aiming at *dispersion* for analogue reasons.<sup>656</sup>

With two cities reviewed earlier we easily find this dichotomy of *concentration* and *dispersion* regarding the ordering of the urban volume well presented: Naarden, with its evident center-periphery gradient, reaching from the unbuilt glaxis over the fortification, which were solely reserved to defensive uses, and the adjacent residential areas to the town center with church, town hall, and the market street with its merchants' houses;<sup>657</sup> and New Orleans LA, with its rampant proliferation of single family homes, which are owed to the particular American appraisal of the family and individual «pursuit of happiness» that might also explain the randomness of the development of CBDs.<sup>658</sup> Altogether, *Densionality* describes those aspects of the urban shape that derive from the conscious determination of utilization intensities.

### 3.3.2.3 Diversionality

Referring to our discussions on the assignment and interaction of different utilizations within the framework,<sup>659</sup> the potential ordering of the voluminal shape of a settlement according to its *Diversionality* is evident. Notwithstanding a supporting-, a disturbing-, and a neglecting interaction of uses,<sup>660</sup> which is determined by the two-dimensional lay-out, for the three-dimensional *Diversionality* we can assess a *cooperation* (Miteinander), that enfolds combinations or mixtures of activities determining the sedentary shapes, or a mere *coexistence* (Nebeneinander), that results from the separation or segregation of the according activities. The regulating approaches consequently either lead to a complex, usually dense proportion and short distances in between the different buildings, or to an isolated,

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<sup>654</sup> compare discussion on page 39 ff.

<sup>655</sup> compare discussions on page 197, 207 & 227

<sup>656</sup> As only one example we might recall the suburbanization policy in the U.S.A. in course of the nuclear threat after World War II; compare discussion on page 51.

<sup>657</sup> compare discussion on page 169; Naarden is thus a typical example for the implementation of regularities that lead to a distinct concentration, which is very common for the Occidental urban development in Europe, in the case of Naarden best preserved by the immense fortification primacy that resulted likewise in the non-development of the immediate hinterland for maintaining a glaxis and the limitation of more intense development in the vicinity of the bastions and ravelins to prevent from destruction by alien bombardment

<sup>658</sup> compare discussion on page 151; New Orleans LA is thus a typical example for cities that result from ordering principles based on specific cultural perceptions and political conviction, in the particular American circumstances leading to vast planar rather than compact developments; compare also the discussion on *Broadacre City* on page 43

<sup>659</sup> compare discussions on page 211 ff.

<sup>660</sup> compare discussion on page 219



usually transparent proportion and rather long distances between the different buildings. In this context, we might also recognize the significance of the spaces in-between the actual building of a sedentary shape, which we rather understand as a feature of *Diversity* than *Densionality*, as larger open areas within the framework usually result only from an according specific use assignment to these areas and not from a distinct densitional and regulatory approach.<sup>661</sup>

With two more cities reviewed earlier we find this dichotomy of *cooperation* and *coexistence*, well epitomized: Venice, with its scarce building ground and extraordinary accessing framework that does hardly allow for functional segregation and thus calls for an intrinsic cooperation of the local activities, which are not only accommodated immediately neighboring each other, but predominantly also within one building that is shared for commerce, storage, and housing;<sup>662</sup> and Sestriere, with its scattered shape that does not only derive from its original agricultural background, but that is reinforced by the specific 1930s urbanistic approach of individual functionalist building complexes, the «towers», accommodating alpine tourists in architectures with a high grade of recognition – while both predominant functions show neither congruent urbanistic nor functional patterns.<sup>663</sup> Ultimately, *Diversionality* describes those aspects of the urban shape that derive from the conscious determination of utilization instigators, characters, and interactions.

As mentioned with the criteria of *shape'* earlier, we should also with the present criteria of *order'* assume their withdrawal from reasonable verification and thus give merely a practical summary resulting in a parametral statement, in which we recognize *order'* as the most *designative* concept: it refers to the kind of regularity that determines the creation of individual volumes within the settlement body, that is the translatory organization of the distributive framework at a situation into a proportionate three-dimensional sedentary body, as well as according regulative approaches towards these constituents themselves. Also here we should consider that, even though the criteria appear to reflect detached aspects, they usually occur concurrently, while, as the previous discussions sought to give evidence for, we are able to assess occurring preponderances. *order'* eventually must be seen as effective to any creation of an urban development.

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<sup>661</sup> compare also the example of Brasília, where the vast open space in between the different buildings is used for extensive infrastructural means as well as to produce a distinct distance-effect; see discussion on page 215 & on page 236

<sup>662</sup> compare discussion on page 133; Venice is thus a typical example for cities that show a distinct mixture with its *Diversionality*, which derives from an regulating principle that seeks to adjust the urban diversity to an access efficiency, minimizing expensive large open spaces – in this particular case, of course, also due to the specificity of the ground condition

<sup>663</sup> compare discussion on page 155

### 3.3.3 composition' (Komposition')

A city results in spatiality.

The potentially ultimate creative step while producing the sedentary shape, which also goes beyond the regulation or ordering of the internal relation of individual volumes and which usually best identifies urban bodies from other ones, is the distinct consideration of the area in between the built volumes. When, of course, *shape'* and *order'* already have obvious impacts onto this creative *space* (Raum), they initially address different scopes: the first the overall settlement body and the second the individual volumes, which cumulate to the overall settlement body; with both, *space* is a mere secondary consequence that evolves out of the production of volumes. Crucial for a spatial design, however, is a conscious arrangement of the different volumes, that itself might impose special demands onto the creative regularities and voluminality of the settlement. In this context we might return to DELFANTE, who introduced the metaphors of a *piece of music* or a *stage plan*, which indicate an underlying *urban composition*:<sup>664</sup> consequently one designer or a cooperating group of designers pursue a specific formative approach towards the production of the internal sedentary space.<sup>665</sup> This understanding also gives us the cue for the denomination of the last parameter in this catalogue: the envisioned spatial arrangement conforms to the parameter of *composition'* (Komposition'), perceiving the design of space as assembling different architectural volumes in comprehensible manners. These, of course, have been many times subject to urbanistic research in various different approaches;<sup>666</sup> the focus with the present parameter, yet, shall be laid with the mere discernment of such a spatial consideration and its relation to copious aspects of abstract urban form.

We shall refer to the subsequent depictions of *composition'* as creative spatial criteria, as they eventually affect the design of the area in-between the individual building volumes, which reflects the conscious creation of an integrating space that combines the individual buildings and the overall volume not only into a true artifact but in a potential artwork: it is the voluminal accentuation of a laid-out framework pattern; the creation of a specific spatial enclosure or continuation of spaces; or the accentuation or even dissection of individual architectonic objects within the according shape. *composition'* finally represents the literal scope for urbanistic occupations with any sedentary activity.

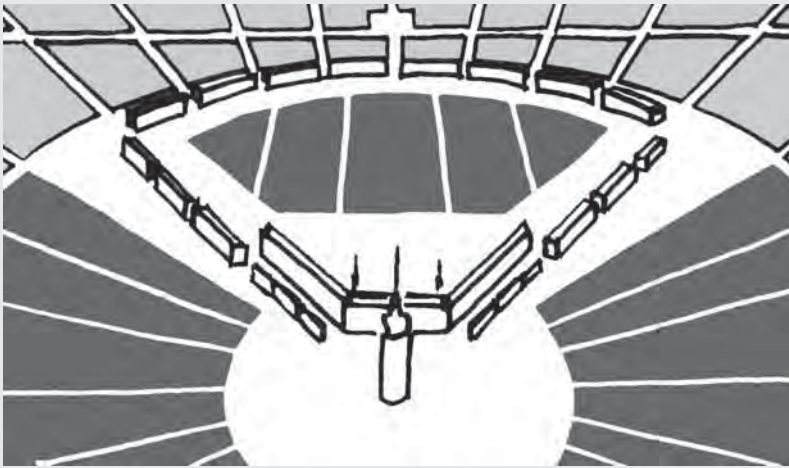
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<sup>664</sup> see discussion on page 20 f.; already SITTE came to a similar conclusion in his examination of ancient public squares:

"Was ist nach dieser Beschreibung ein Forum anderes als eine Art Theater?" (Sitte 1889: 8);  
'According to this description, what is a forum but a type of theater?' (pg. 144)

<sup>665</sup> Contrary to the previously stated understanding of a not necessarily specifically educated *designer*, we now should consider at least a minimum of professional background, which is inevitable for an actual implementation of such an approach; compare discussion on page 230.

<sup>666</sup> Again, the according contributions, for the industrial and post-industrial age, range from SITTE, with his examination of medieval streets and squares, to our days – especially the exponents of postmodern urbanism seek to introduce (or in their view re-introduce) a "Canon of Elements" (Krier 20035 ff.) or a "New Civic Art" (Duany et al. 2003). Notwithstanding their scientific as well as didactic value, however, we have to assess with most of them a somewhat anachronistic attitude that apparently alienated (and still alienates) many of their contemporary colleagues; presumably this is owed to the vast amount of traditional designs and examples from bygone centuries that these authors tend to consult to strengthen their argument; a vivid example for this might give Wolfgang RAUDA's account on a "Lebendige städtebauliche Raumbildung" from 1957 (Rauda 1957), which perished away as a mere historical survey in a time that favored the thorough renewal of the cities and until today is rather unknown and unused in the urbanistic education; compare discussion on page 45 ff.



*Karlsruhe*

*view from the palace to the south*



*Brasília*

*view from the bus terminal to the East*



*Rome*

*Forum Romanum view to the Northwest  
(voluminal reconstruction after Becchetti)*



### 3.3.3.1 Fabricality

A compository approach towards the framework pattern, which as discussed earlier can be also called the *urban fabric*,<sup>667</sup> is arguably a very ambitious undertaking, for it calls for a distinct creational activity over large parts of the urban shape and thus affects various and different individual interests. Evidently, in such cases the instigators of an urban composition that reflects the *Fabricality* ought to accumulate enormous financial and political means to implement the according design pretension, may it be through mere autocratic force or collective subordination,<sup>668</sup> may it address predominantly the mere bulk of the individual volumes or even a standardization of the architectonic design of single facades.<sup>669</sup> Altogether we might attribute to *Fabricality* a voluminal dominance of the three-dimensionally emphasized *fabric* over a potential significance of individual internal spaces or the single architectural objects, while this emphasis might be produced to highlight few extraordinary buildings, which are then usually also architectonically distinctly elaborated.

With the original shape of Karlsruhe we find this approach well illustrated:<sup>670</sup> While the radial-concentric pattern focuses on the central palace complex with the vertical accent of the palace-tower as focal point together with the attendant palace garden and its gradually distinct architectural framing, the residual buildings of the actual town conform not only to similar building heights (two stories with side-gabled roofs) but also to uniform volumes (perimeter blocks with equal depth). Moreover, the significance of this fabricality also extended over the subsequent extension plans, which eventually were executed by WEINBRENNER from 1801 on;<sup>671</sup> there, despite the creation of a civic counterpart to the princely district with town hall and main church, WEINBRENNER even sought to stress the uniformity of those streetscapes, which were likely to gain an individual spatial significance because of the changing overall layout (Lange Straße, Schloßstraße), by means of superimposed homogeneous arcades.<sup>672</sup> Eventually, this strict fabricality got lost with the demise of the princely rule, resulting until today in a reasonable architectonic heterogeneity that is, however, still determined by the rigidity of Karlsruhe's urban fabric.

Obviously, *Fabricality* is intrinsically related to the earlier described third group of potential patterns,<sup>673</sup> when still a specific design idea for the *urban fabric* does not automatically imply similar specific design ideas for the voluminal implementation: When, for instance, a grid pattern might result in more or less accordingly homogeneous urban shape (for instance Aigues-Mortes or Richelieu), it might as well result in an immense heterogeneity (for instance New York City or, as reviewed earlier, Birmingham AL). Thus eventually, *Fabricality* describes those aspects of the urban shape that derive from a continuation of a distinct creative approach from the planar structure into the spatial realm.

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<sup>667</sup> see for instance discussion on page 185

<sup>668</sup> To name the two main political poles that we encounter in Western history: autarchy and democracy; obviously with both (and all intermediate constitutions), *Aesthetics*, *Pattern*, and *Instigation* play an additional significant role; compare discussion on page 156, 188 & 213.

<sup>669</sup> The latter, yet, tends to alter as soon as the standardizing authority ceases; the approach to preserve larger parts of the urban architectural body is, with its origination in the 1970s, a somewhat young notion; compare discussion on page 49 f.

<sup>670</sup> compare discussion on page 171

<sup>671</sup> the planning, however, was commissioned already in 1797

<sup>672</sup> compare for instance (Kieß 1991: 87 ff., especially the illustrations on page 89 & 91)

<sup>673</sup> compare discussion on page 188 f.

### 3.3.3.2 Figurality

A compository approach towards the single architectural volumes within the shape of a city is, compared with the approach towards the fabric, obviously easier to achieve; it can ensue more punctually and thus involves less financial and political effort as well as it can be instigated also with differing design ideas. The according buildings eventually represent individual figures within the settlement body. This *Figurality*, however, can bear the danger of compository incoherence when too many diverging design approaches are involved and accordingly the architectonic objects loose their relations among each other and potentially lack interstitial identities.<sup>674</sup> On the other hand, it can as well be found as a basic design concept for the whole shape, what then again might entail greater implementation effort, when different particular design approaches have to be reconciled or collaborative factoring and execution is involved. Altogether, we shall attribute to *Figurality* a voluminal dominance of the three-dimensionally emphasized *object* over a potential significance of the urban building as a whole, while this emphasis might be balanced by employing similar architectonic styles.

With the shape of Brasília we find the latter well exemplified:<sup>675</sup> While from an aerial perspective COSTA's distinct urban pattern of the *plano piloto* could insinuate a similarly distinct spatial implementation, the city from the internal presents a discrete architectural development of individual buildings; this particular design approach, which stands in a functionalist tradition,<sup>676</sup> calls for distant effects of the architectural object that entail vast spacings for the envisioned modernist monumentality. Especially the public buildings of the capital thus create an enormous self-reference that often circumvents a joint spatial agency. This appearance, obviously, is amplified by the traffic segregation that with its own constructive development (elevated highways, bridges, interchanges, street widths, etc.) restrains potential spatial enclosures and only allows for a, well-nigh originally appreciated, concentration to the individual free-plastic architectonic figure on an urban(-istic) stage.<sup>677</sup>

Consequently, we perceive with *Figurality* a special form of neglecting distributive interaction that extends from the framework into the shape of a city,<sup>678</sup> when the according design idea, however, not necessarily has to comprise a functional segregation, but, as we have seen already with the *Diversionalität* criterion of *order*,<sup>679</sup> allows for a mere coexistence of individual volumes.<sup>680</sup> *Figurality* eventually refers to those aspects of the urban shape that portend at an assemblage of single objects on a defined urban surface, while the definition can be spatial but also remain merely planar or even non-physical.

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<sup>674</sup> This has been subject to VENTURI's examination of Las Vegas, which we presented earlier, while VENTURI from there reasons the importance of an adapted *architecture parlante* that should seek to compensate the spatial incoherence through an emphasis of emblematic significance; compare discussion on page 69 f.

<sup>675</sup> compare discussion on page 215

<sup>676</sup> Even as this assignment is widely agreed upon, we also find plenty criticisms of the chief-designer NIEMEYER by his fellow colleagues, who accused him of 'formal bauble' (Schlozsberger 1955: 231), 'mannerism' (Joedicke 1969: 68), 'modern kitsch' (Klotz 1977: 42) and 'anti-social extravagance' (Max Bill 1954, c.f. Fils 1988: 79).

<sup>677</sup> for NIEMEYER's understanding of architecture and design see (Fils 1988: 78)

<sup>678</sup> compare discussion on page 217 f.

<sup>679</sup> compare discussion on page 233

<sup>680</sup> compare the discussion on *non-physical limitations* on page 185

### 3.3.3.3 Spatiality

When the criteria with the creative parameters so far reflected aspects that were already earlier subject to this catalogue, such as the urban fabric or the individually developed plot, the last criterion of *composition*' refers immediately to the particular design consideration of the space; this space of necessity exists between the different architectural volumes, and eventually both together with the silhouette constitute the shape of a city. *Spatiality*, consequently, emphasizes the impression the various architectural volumes have onto specific internal situations within the shape and from this perspective also allows for according design directives for the production or conversion of these individual volumes; likewise it addresses the urban fabric, either potentially accentuating the given fabricality, or transforming it when the pursued approach calls for it.<sup>681</sup> Generally, we shall be able to distinguish with these considerations a focus on a specific *standpoint*, from where the surrounding volumes produce a certain enclosure – with the earlier employed stage-metaphor this would be traditional coulisses – and a focus on a specific *movement* within the shape that evidently involves a larger design scope for a certain scenery.

With the shape of the, today however ruinous, Forum Romanum in Rome we find both approaches well combined:<sup>682</sup> For one the Forum presented the focal point for the socio-cultural self-conception not only of the city of Rome but for the whole empire, what resulted likewise in an architectonical formularization of individual fundamental functions (e.g. Lapis Niger, Comitium, Rostra, Curia, and diverse main temples and other major public buildings), and in a spiritual super-elevation of the locale that integrated the single «corner stones» into one spatial entity.<sup>683</sup> For the other the Forum presented a major part of the Via Sacra, that is the sacred route, which the homecoming troops took to celebrate their victories, what resulted in a spatial continuum that, by the gradual establishment of different triumphal arches, was likewise highlighted and subdivided into different sceneries (e.g. the overview over the Forum from the Arch of TITUS, the entry to the Forum through the Arch of AUGUSTUS, the ascent to the Capitolium beyond the Arch of SEPTIMIUS SEVERUS).<sup>684</sup>

Evidently, we recognize with *Spatiality* a criterion for the composition of a city that somewhat conforms to the *Aesthetics* criterion of *attractiveness*', when with its creative impact, of course, reverses the perception-action-relation of this situative factor. *Spatiality* ultimately points at those aspects of the urban shape that result from the human production of a cityscape and thus allow for a reflection of man's artistic transformation of the natural environment.

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<sup>681</sup> Again, *Spatiality* does not necessarily oppose a certain fabricality or figurality, when, however, a strict spatial implementation precludes a strict figural or a strict fabrical approach.

<sup>682</sup> We shall refer to the Forum Roman especially as it has been subject to the previous discussion of the *Aesthetics* criterion; compare discussion on page 161 f. Rome, obviously, also offers several other significant examples for *Spatiality*, such as the medieval transformation of the DOMITIAN circus into the prominent city square of Piazza Navona, the Renaissance design for the Piazza Campidoglio, the Baroque development of Saint-Peter's-Square, or the somewhat untypical late 19th century breakthrough of Corso Vittorio Emanuele II, which rather stressed the spatial appearance of the adjacent architectural monument than exposing their individuality through simple axuality.

<sup>683</sup> compare especially the discussion on the translocation of the Roman center from the Palatine Hill to the Forum, which also induced a transfiguration of the non-physical subdivision of the quartered city on page 161

<sup>684</sup> According to imperial Roman authors this route started at the Campus Martius (Field of Mars), entering the city at the *Porta Triumphalis* and then conducting over the *Forum Boarium*, through the *Circus Maximus* to the *Forum Romanum* and ending on the *Capitolium*; compare for instance (Künzl 1988; Carandini 2004; Sumi 2005); for the spatial impression see also (Bacon 1967: 86)



As we have seen with these criteria, the *composition'* parameter enables for plenty truly artistic examinations, which however cannot be adequately rendered in this catalogue, as well as they, in their close relation to specific underlying motivations, should not be subject to this thesis. Still, we perceive the architectural and urbanistic significance this parameter enfolds and consequently acknowledge that it is this *composition'* that initially causes our intellectual access to *the 'city'* as an artwork – an approach many architects and urbanists employed also for their definitory statements, which we roughly summarized earlier.<sup>685</sup> Translating our considerations of this last creative factor into a parametral statement, we recognize *composition'* as the most *excelling* concept: it describes those activities that make the difference between a sedentary entity, which might as well develop mechanically from an unconscious selection of a locale over a mere accidental set-up of a framework to an inevitable evolution of a shape,<sup>686</sup> and an urban body that in the logic of our delineation implies the composition of its space as a conscious process of designing a common *Lebenswelt* (sphere of living) in physical form. *composition'* ultimately must be seen as culminative to any creation of an urban development.

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<sup>685</sup> see discussion on page 20

<sup>686</sup> The latter could even include the regulatory creative steps, which are represented by the *order'* parameter, according to our discussion of the regularity of the human intellect on page 230.

Usually catalogues like the present one bear the danger of merely indicating instances or features without further investigating their impact or stressing the resulting logical relations. In organizing the shown parameters into groups and successions by means of the different criteria, it was already intended to prevent from this danger. Moreover, beyond the singling out and subsequent organizing process, we can recognize that several of the presented parameters together form determinable secondary factors, which since long are part of any discussion on urban form; these secondary factors, however, transcend primary significance for urban form itself and rather refer to producer's or user's perspective and thereby soon extend over the motivational realm that, of course, is an important field for the investigations of urban phenomena, but had to be excluded to pursue our approach.<sup>687</sup> Nevertheless, we shall give three examples of these secondary factors, which we understand as a coalescence of the presented criteria, to suggest possible further ratiocinations – following this present initial discussion on how to abstractly perceive the city from an urbanistic point of view:

*Security and Well-being (Geborgenheit und Wohlbefinden)*

The first example refers to factors, which are predominantly common in the examination for dwelling qualities and thus usually result in taking the user's or consumer's perspective onto urban form. Here one seeks to grasp after all the emotional attitudes towards the city's shape: do the dwellers feel secure and well? At first, the consequent factors of *Security* and *Well-being* show a supposed congruence with the *attractiveness*' parameter, there especially with the *Safety* criterion;<sup>688</sup> yet conceptually advancing these factors, we detect also intrinsic relations to *permanence*' for the security of subsistence, and *order*' for the security of predictability, while these parameters soon feature a larger scope beyond their original induction from different urban constituents: the securing permanence, which derives from our situative considerations, however, should in this context also be understood as referring to the urban framework and shape. Moreover, both factors also largely address qualities, which derive from functional or ephemeral aspects outside urban form, such as the availability of public services (social and health care, fire protection, police etc) as well as public administration, just jurisdiction, and the freedom to exercise one's belief. Altogether, these considerations consequently also explain the difference, which we ought to make in this thesis, between *Security* and *Safety*, as close as both terms are at first sight: the first emanates from the producer's and user's perspective, the latter from the product's perspective.

*Legitimation and Prestige (Legitimation und Prestige)*

The second example refers to factors, which are predominantly common in the examination for producing qualities and thus usually result in scrutinizing the producer's perspective onto urban form. Here one seeks to trace after all the affective values attributed to the city's shape: is the urban building legitimate and prestigious? Also here the consequent factors of *Legitimation* and *Prestige* present an immediate resemblance of the *attractiveness*' parameter, while now especially to the *Aesthetics* criterion;<sup>689</sup> still, the legitimation and prestige of a city likewise roots in an economic prosperity, which is reflected with *diversity*', and the distinct

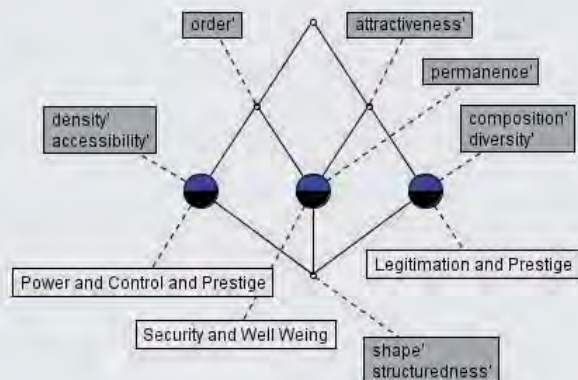
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<sup>687</sup> see discussion on page 81 ff. as well as on page 120 f.

<sup>688</sup> compare discussion on page 147 ff., especially 149 ff.

<sup>689</sup> compare discussion on page 156 ff.

	permanence'	attractiveness'	accessibility'	structuredness'	density'	diversity'	shape'	order'	composition'
Security and Well-being	X	X						X	
Legitimation and Prestige		X				X			X
Power and Control			X		X			X	



Scheme:  
Coalesced Secondary Factors  
**plate 79**



impressive urban shape, which is well conditioned by *composition'*, may it result in a certain fabricality, figurality, or spatiality. Yet, with the secondary coalesced factors of legitimation and prestige, we can again insinuate that the discussed self-assurance, which is an intrinsic notion of the local aesthetics, also extends its scope over the urban framework as well as over the urban shape, and thus broadens our idea of *attractiveness'*. Eventually, both factors obviously again address ephemeral aspects beyond the parameters of urban form – to an extent that it would be idle to attempt any enumeration; it still seems appropriate to mention at least the significance of written material in this context, which throughout history determined the appraisal and interpretation of a city's standing in addition too as well as even despite its factual shape.

#### *Power and Control (Macht und Kontrolle)*

The third example refers to factors, which are predominantly common in the examination for surveilling and steering qualities and thus usually result in calculating the relationship between the producers and users of urban form. Here one seeks to exhibit after all the authoritarian precautions within the city's shape: does the urban authority express its power and control over the urban living? The according factors of *Power* and *Control* feature an intrinsic connection to the *accessibility'* criterion, after all to the *Aperture* criterion that conditions the entry and exit options to and from the urban locale;<sup>690</sup> however, as well *density'*, with its impact onto the establishment of borders and the accumulation of activities within the urban fabric, and *order'*, with its potential effects on the control of the internal urban spaces, play a significant role. Here again, we can discern that the quality of aperture, which is initially addressing local aspects, can also reflect aspects of the framework and shape and thus extends its scope from one to the other urban constituents. Furthermore, both secondary factors naturally also imply other ephemeral criteria that do not belong to our immediate occupation with urban form, as they profoundly derive from the different attitudes and motivations the producer's and user's of urban form develop towards a certain city.

The associative character of these secondary factors can be, as we learned with *formal concept analysis*, well mapped in a *concept lattice* that shows the different relations of the factors with the original parameters. Here, the secondary factors reside on the same level, due to their respectively threefold relation with seven of the earlier described parameters, in which only *order'* and *attractiveness'* twice connect; merely *structuredness'* and *shape'* are not immediately involved. However, one could perceive the lattice also as a mapping of *subconcepts* within a procedural system that inheres a top-down logic; this would possibly allow for an assessment of progression, in which we can argue that the according secondary factors with their intrinsic relation to some parameters above their allocation will specifically determine the activities that should be assigned to the parameters below: *Security* and *Well-being*, for example, then would be affected by *order'* and *attractiveness'* as multiple conditioning parameters, and *permanence'* as exclusively conditioning parameter, while with this particular focus on specific secondary factors the according coalescence only together with *shape'* and *structuredness'* affects the conditioning impact of the remaining parameters. Such reasoning, however, has to be proven with more examples, a task, which unfortunately has to be postponed to a further discussion and elaboration of the present first approximation towards a THEORY ON THE PARAMETERS OF URBAN FORM.

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<sup>690</sup> compare discussion on page 166 ff.

Still, within our *thought-model* at least the reduction of the presented secondary factors to the suggested original parameters appears to be sound, as well as we can anticipate an according validity of similar reductions of other possible secondary factors within the given framework. Cardinal to such secondary factors, thus, is the notion of their *coalescence* of several of the cited primary parameters regarding their conditioning of urban form, while they also comprise non-formal exigencies, which then chiefly determine the motivations for and influences onto the results of a particular urban development.<sup>691</sup> With this ratiocination, yet, succeed our considerations on the CITY AS A PHENOMENON and the CITY AS A SYSTEM;<sup>692</sup> moreover, with the aforementioned example of a *secondary factors lattice*, we observe the potential influences among the parameters of urban form also on an abstract level, while they so far have been induced merely according to the urban constituents and subsequently illustrated by their dominant impact onto various factual urban forms.<sup>693</sup> Consequently, we receive the notion of a much larger systemic interrelation that has to ensue when the parameters are combined in a certain context, especially when we are in search for an abstract CONDITIONING SYSTEM OF INTERRELATED FACTORS that shall encourage for another understanding of the city and its development.<sup>694</sup> Thus in the following last part of the present employment we should like to introduce such a system, which integrates our understanding of parameters into an *Urban Matrix*, consequentially representing the next and tentatively last step of our suggested approximation towards the *abstractum urban form*.

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<sup>691</sup> compare discussion on page 81 ff.

<sup>692</sup> compare discussion on page 83 ff. & on page 89 ff.

<sup>693</sup> compare discussion on page 119 ff.

<sup>694</sup> compare for instance the discussion on page 105 ff.

## Part 4 Outlook onto the Urban Matrix.

### A Consequential Methodology

The idea of an *Urban Matrix* is not new in urbanistic research, while, however, we encounter it in very different contexts. Most prominent is the account on the "Matrix of Man" by Sibyl MOHOLY-NAGY from 1968, in which she gave an illustrated history of the urban environment by grouping most distinctive settlement patterns and investigating for the fundamental types of urban form in regard to their mythicoreligious, cosmological, social, and economic development (Moholy-Nagy 1968).<sup>695</sup> Attempting to summarize her argumentation in respect to the title, we perceive the term *matrix* as equivalent to *urban form*, and thus as a metaphor for the formal fundament of human activity and thought, arguably as precondition for any civilization.<sup>696</sup> Consequently, with MOHOLY-NAGY *matrix* serves as a linguistical emblem without specific technical effect for the examination of urban form. The geographer Andrei ROGERS on the other hand in 1971 submitted "Matrix Methods in Urban and Regional Analysis", in which he at large introduced into the mathematical use of matrix algebra for addressing exemplary and factual planning issues (Rogers 1971). With ROGERS, the eponymous matrices are truly a tool to tackle concrete problems in spatial research, such as demographic analysis, geographical distribution, and economical ratios, while the *passe-partout* of the matrix offers a simple and handy technique.<sup>697</sup> Yet, in this context, *matrix* has no constitutive effect for the understanding of *urban form*. As a third, founded within the Sixth Framework Programme on Research and Technological Development by the European Commission (2002-06), we find the still effectual URBAN MATRIX project, which should provide "a knowledge transfer platform designed to support European local authorities in addressing Sustainable Urban Development (SUD) in all its complexity and many dimensions" (EUKN 2006). Eventually, here we find the term *matrix* employed in an operational context, perceiving the potential network of participating civic institutions as a superordinated self-steering instrument, which anyhow only collaterally affects *urban form*.<sup>698</sup>

With regard to the presented systemic understanding of the genesis of urban form and the suggested impact of a contingency and conditioning formula, yet, we shall understand the *Urban Matrix* as the consolidation of the previously described parameters and criteria into the envisioned conditioning system of urban formation;<sup>699</sup> this system, as discussed earlier, has to follow a heuristic reasoning that nevertheless should allow to explain the continuity and coherence of urban form, which ultimately also effects the enduring concept of the *city*.<sup>700</sup> Thereby it, somehow, as well reconciles MOHOLY-NAGY's notion of a "Matrix of Man" that insinuates an underlying yet undetermined civilizing rule of urban form, with ROGERS' proposition to address urban issues by means of matrix algebra, what we might perceive as an utmost abstracting approach to the city.

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<sup>695</sup> compare also (Condit 1969)

<sup>696</sup> Yet, MOHOLY-NAGY did not explicate the significance of the term *matrix* for her thread; questionably there is none, as the German translation of her book, which she provided herself, skips *matrix* altogether and gives the somewhat ostentatious title: 'Die Stadt als Schicksal' (The City as Destiny).

<sup>697</sup> compare also (Nijkamp 1974; Kazda 1974)

<sup>698</sup> The platform thus complies with several other supranational as well as interregional cooperations, which are initiated to yield and perform sustainability criteria in public administration, may they address social, economic, and cultural, or, as in this case, urban development issues.

<sup>699</sup> This, yet, coincides with the logical understanding of a *matrix* as a quantifier-free formula.

<sup>700</sup> compare discussion on page 92



The ensuing methodology comprises a short synopsis of the parameters (Synopsis), followed by a first examination of their interrelation (Wechselbeziehungen), and a rough suggestion of two potential implementations of the *Urban Matrix* as a tool in urbanistic research and practice (Anwendungen).<sup>701</sup> Before doing so, however, we have to prescribe to this methodology – also in a deliberate heuristic manner – the basic supposition of efficiency, which affects not only the relation among the criteria of a parameter, as stated earlier,<sup>702</sup> but also the interrelation of parameters and the system itself. This principle of efficiency, yet, "applies only to means and not to ends or ultimate values, thus [...] the basic aims of life cannot be selected or evaluated by rational procedures: they must be dealt with by arbitrary preference or intuition, or by cultural and biological determinism" (Diesing 1962: 1).<sup>703</sup> This is to again confirm the fundamental thought, that, even though the suggested *Urban Matrix* is a consistent (and efficient) while dissipative system, it only abstractly affects the space-time determined *motivations* and their according *results*, which themselves must be neither consistent nor efficient.<sup>704</sup>

Ultimately, the following considerations cannot be a full ratiocination; they have to be understood as an outlook on more elaborate analyses, while it still shall prove the initial cogency of the present approach.

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<sup>701</sup> For the German reader we shall clarify that the English language does not explicitly distinguish between *Methodologie* and *Methodik*; the latter is meant in the present context.

<sup>702</sup> see discussion on page 145

<sup>703</sup> compare also (Ferguson 1975: 15)

<sup>704</sup> see discussion on page 83 ff.

Beyond the sometimes bulky denominations of parameters and criteria, which also afforded several neologisms and transcontextualizations, the COMMONSENSICAL CATALOGUE yielded distinct conceptual *scopes*, which intrinsically refer to what has been called constituents: the *where*, the *how*, and the *what* of urban form.<sup>705</sup>

In addition, the respective first parameters of every constituent immediately affect the constituent itself,<sup>706</sup> while the following parameters refer to additional scopes either focusing the wider context,<sup>707</sup> or allow for a more particular distinction of the constituent.<sup>708</sup> Moreover, we could recognize with the different concepts particular attributes that from the according *scope* potentially extend over the whole *urban formation*:

*locale* – the situative-objective factors have been rendered as *conclusive*,<sup>709</sup> for their fundamental enveloping significance regarding not only the locale, but also regarding the ensuing distributive and creative operations and their formal results: A city has to be *permanent*, at least for a foreseeable period of time, to allow for its establishment, maintenance and continuance.

*orientation* – the situative-suggestive factors have been rendered as *invasive*,<sup>710</sup> for the intrinsic experiential and intellectual human conception of the locale, but also of the framework and shape of the eventual urban form: A city has to be *attractive* to its inhabitants, despite the presumable change of individual attractors, to allow for its establishment, maintenance, and continuance.

*access* – the situative-anthropogenic factors have been rendered as *extensive*,<sup>711</sup> for the wide-ranging human transformation of the locale itself, and evidently for its impact onto the framework and the development of the shape: A city has to be *accessible* for its inhabitants as well as its visitors, notwithstanding the according means, to allow for its establishment, maintenance, and continuance.

*framework* – the distributive-constitutive factors have been rendered as *descriptive*,<sup>712</sup> for their fundamental delineating significance of the framework, which refers back to the situative and prepares the creative operations: A city has to be *structured* for the different activities of its inhabitants and visitors to establish the basis for its further development and building.

*intensity* – the distributive-variable factors have been rendered as *variable*,<sup>713</sup> not only in respect to the potentially alternating intensities within the framework, but also in its relation to the locale and the creation of its shape, both distinguishing it from the hinterland: A city has to be *dense* in its accumulation of activities to establish a distinction for its further development and building.

<sup>705</sup> compare discussion on page 119 ff.

<sup>706</sup> most prominent with the synonym of the constituent *shape* and the parameter *shape*’; compare discussion on page 225

<sup>707</sup> as in the case of *access* that integrates the relation of urban locale and its hinterland

<sup>708</sup> as in the case of *intensity* and *utilizations* as well as *proportion* and *space*, which respectively induced distinctive criteria that gradually distinguish the urban constituents from the residual environment or not-yet-urban entities; compare also discussion on page 21, 83 & 88

<sup>709</sup> compare discussion on page 131 & 146

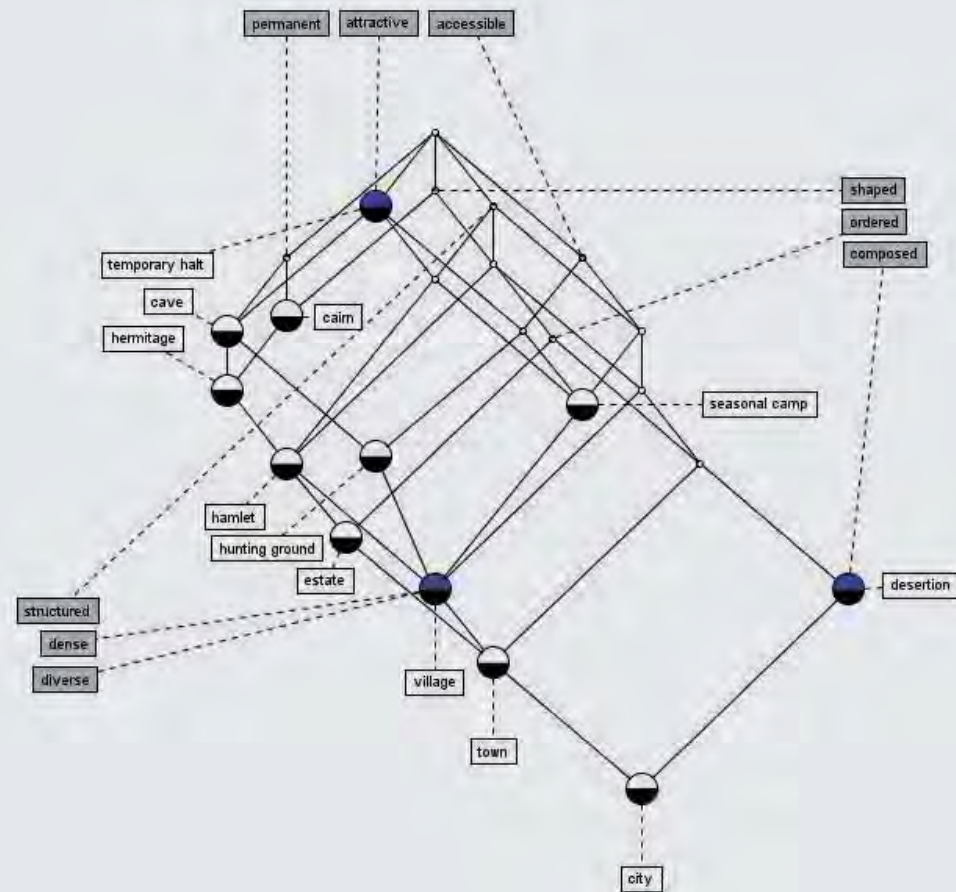
<sup>710</sup> compare discussion on page 147 & 165

<sup>711</sup> compare discussion on page 166 & 181

<sup>712</sup> compare discussion on page 183 & 195

<sup>713</sup> compare discussion on page 196 & 210

	permanent	attractive	accessible	structured	dense	diverse	shaped	ordered	composed
temporary halt		X							
hunting ground	X	X	X						
seasonal camp		X	X	X					
cairn	X						X		
cave	X	X							
hermitage	X	X					X		
hamlet	X	X		X			X		
estate	X	X		X			X	X	
village	X	X	X	X	X	X	X		
town	X	X	X	X	X	X	X	X	
city	X	X	X	X	X	X	X	X	X
desertion			X	X			X	X	X



Scheme: Sedentary Forms 2  
plate 80



*utilizations* – the distributive-individual factors have been rendered as *variegated*,<sup>714</sup> likewise stressing the notion of an allocation of different kinds of activities within the framework, but also in its comparison with the surrounding locale and the features of the later shape: A city has to be *diverse* in its accumulation of activities to establish another distinction for its further development and building.

*shape* – the creative-voluminal factors have been rendered as *substantial*,<sup>715</sup> for their fundamental voluminal significance that translates the features of a framework at a specific locale into a sedentary body: A city has to be *shaped* in an overall building to accommodate and concentrate the various human activities, which thus become also formally existent and subsequently traceable.

*proportion* – the creative-proportional factors have been rendered as *designative*,<sup>716</sup> in respect to the regulating approach with which human beings perceive their environment and activities, in our context especially the translation of a distributive framework in a situative relation: A city has to be *ordered* to allow for the concentrated formalization of activities within the overall sedentary body.

*space* – the creative-spatial factors have been rendered as *excelling*,<sup>717</sup> for their eventual creative impact onto the conversion of a framework at a locale that ultimately integrates all human activities into one entity: A city has to be *composed* to manifest the concentrated formalization as well as the significance of its activities versus the environment and other sedentary entities.

#### *Synoptical Lattice*

Altogether this synopsis of the catalogue's delineation likewise allows for the consideration of a general urban formation process, from the *situative correlation*, over the *distributive allotment*, to the *creative transformation* of human activities into an urban environment, as well as it depicts the conditional criteria to perceive a sedentary entity as a city; *this is that we shall characterize only such entities as cities, in which all parametral requisitions are effectually addressed*. In this context, one can anew relate different sedentary entities to the suggested parameters of urban form in a cross-table and consequent lattice, what might serve as the basis for an additional, yet urbanistic, definitory approach towards the city that, however, deserves a detailed elaboration, which shall not be undertaken in the present thesis.<sup>718</sup> Still, the *synoptical lattice*, in which one can clearly pursue the increasing impact of parametral attributes, gives an initial ratiocination for such a task: Extending the parametral scope of the individual factors over the whole sedentary entity and employing according adjectival expressions as effectually distinct attributes, we recognize an expanded sequence starting with the *temporary halt*, which is merely attractive because of a somewhat ephemeral appraisal of the locale and ending with the *city*, which includes all attributes to a considerable extent. Additionally we find on the left side two closer groupings, one (*cairn, cave, hermitage*) comprising entities that are principally characterized by their distinct locality, which is either naturally or anthropogenically produced, and another (*hunting ground, hamlet, estate, village*) combining entities that are predominantly characterized by yield considerations on an agricultural basis.

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<sup>714</sup> compare discussion on page 211 & 223

<sup>715</sup> compare discussion on page 225 & 229

<sup>716</sup> compare discussion on page 230 & 234

<sup>717</sup> compare discussion on page 235 & 240

<sup>718</sup> compare discussion on page 15 ff.

Interestingly the chain decomposing lattice set-up strikingly isolates the *seasonal camp* and the *desertion* from the others – the first thus can be understood as a distant bridge between the *temporary halt* and the *village*, ranking in between the particularly situatively determined and the yield orientated entities; the latter yet resides on the same level as the *village*, what allows to identify its urbanistic advancement while the outside position epitomizes its void of sedentation and utilization. Already with these brief schematic considerations that are though far from a valid explication, we still perceive the significance of comparative techniques for the application of the parameters and their systemic interrelation within the *Urban Matrix*, a circumstance that shall be more specifically addressed in the later following proposal of COMPREHENSIVE TOOLS. However, before looking into the particular interrelation of factors and the potential tools, we should have a short look onto possible quantitative implications for the cogency of the present qualitative reasoning.

#### *Quantitative Implications*

Even though the present thesis included considerable effort to exclude *quantity* from its thread, it would be perfunctory not to address those conceptual impacts that induce for instance *size*, *mass*, or *bulk* in respect to urban form. In fact, much of the parametral conception of urban form results from its distinction from the residual environment through a more or less massive poly-formal and poly-functional concentration at a certain place within an otherwise dull surrounding, that is ultimately the confrontation of considerably large quantities with small ones. However, we ought not to confuse this abstract qualitative aspect of quantity with the previously discussed troublesome consideration of factual quantities for the investigation of qualitative parameters:

As concluded earlier, quality is inherent to quantity, as we could otherwise not perceive quality.<sup>719</sup> In the present context, this results in a consideration of such qualitative concepts that support the factual development of large quantities. Consequently, we might understand *size*, *mass*, or *bulk* as further coalesced secondary factors immediately referring to the abstract parameters of *density*' and *shape*'; these parameters largely determine the according quality of *size*, *mass*, or *bulk*, while the factors themselves additionally comprise significant relations to the factual quantities of the results of a particular urban development that might be even influenced by an according motivational incentive for large size or massive bulk.

Similarly possible procedural factors, such as *growth*, *shrinking*, and *stagnation* at first refer to the mere quantitative aspects of the alternating size of cities, while they could also be understood having a qualitative impact onto urban form. We can observe this well with Paul WALTENSPUHL's examination of the growth-rates in radial-concentric cities, in which a geometric regularity is revealed that determines the quantitative development of such cities.<sup>720</sup> This regularity, however, soon transcends the geometrical realm towards an aesthetical perspective, which can be found with several other, non-urban scopes,<sup>721</sup> resembling natural aesthetical laws, such as the *golden ratio* (section aurea), which altogether might produce "tiefes intellektuelles Wohlbehagen" (Waltenspuhl 1997: 34).<sup>722</sup>

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<sup>719</sup> compare discussion on page 84, 89 & 97

<sup>720</sup> see for instance (Waltenspuhl 1997: 54)

<sup>721</sup> see (Waltenspuhl 1997: 20 ff.)

<sup>722</sup> 'deep intellectual well-being', (author's transl.); compare also (Waltenspuhl 1990: 132 f.)

We, yet, cannot go into more detail of these reflections on this specific relation between quantity and quality, when still terms such as *regularity* and *well-being* give us the cue to, for now, also categorize *growth*, *shrinking*, and *stagnation* as coalesced secondary factors, basing on the suggested catalogue of parameters of urban form and their criteria.

Crucial for the present thread, however, is to examine the further interrelation among the parameters and their enfolding *Urban Matrix* on a conceptual level. This implies once more the prerequisite of an abstract understanding of urban form and the qualitative focus onto the conditioning factors, which eventually constitute a system that does intrinsically affect the production of any factual urban form and which can be intellectually approximated, but whose actual impact on the motivations for a specific urban form as well as the physical results of a specific urban form is unpredictable. Moreover, we cannot assume measurable absolute quantities with the different qualities, but merely assess their existence and where applicable relate different qualitative quantities with each other. Yet, ultimately, this abstract interrelation of the suggested parameter can explicate the transformation of energy into urban form and function.<sup>723</sup>

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<sup>723</sup> see discussion on page 102 ff.



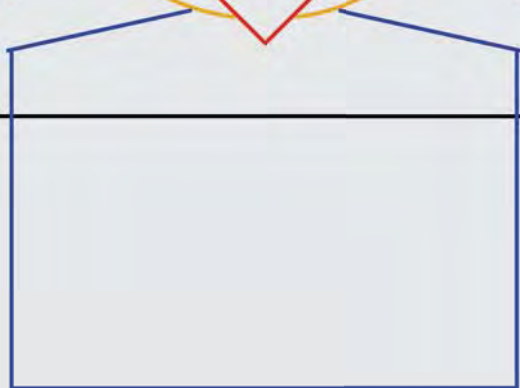


URBAN FORM

affected  
MOTIVATIONS  
& RESULTS



conditioning  
URBAN MATRIX



neutral & erratic  
ENERGY

Scheme:  
The Urban Matrix in a Sketch  
**plate 81**

Despite their induction from the three suggested urban constituents, already during the presentation of the catalogue it became clear that a parameter not only affects the respectively underlying constituent itself, but from there extends over all constituents and hence over the whole *urban form*.<sup>724</sup> This consideration also allowed for the preceding SYNOPTICAL LATTICE, in which attributes deriving from the parameters were schematically related to different sedentary entities. Consequently we have to understand the constituents as *not-exclusive*, that is for instance *orientation* soon *includes* not only the natural appeal of a certain locale, but all situative particularities and benefits (resources, yield, access etc.), and eventually also the distributive set-up and the creative shape of a city. Likewise, the catalogue revealed several interdependencies not only with the criteria and their according parameter, but also with other parameter and criteria.<sup>725</sup>

Continuing our ratiocination about a CONDITIONING SYSTEM OF INTERRELATED FACTORS,<sup>726</sup> we can thus understand the suggested parameters and their criteria as the interrelating components of such a system conditioning urban form, and the accordingly composed *Urban Matrix* as a *Non-trivial Machine* that on an abstract level qualitatively affects the different factual quantities of urban form.<sup>727</sup> Thence, we have to attribute to the *Urban Matrix* all those features of a dissipative and self-organizing structure that determine the unpredictability of its actual performance, as we did earlier with the city itself; in reference to the sociologist Gilbert PROBST delineation this can be described as follows (Probst 1987):

*Complexity* – the parameters and criteria within the *Urban Matrix* must be understood as cross-linked among each other, while their reciprocal qualitative relations will as well be subject to an ongoing quantitative change; consequently, the actual conditioning process as well as the factual result is hardly to explain or predict.

*Self-Reference* – the *Urban Matrix* must be understood as self-referential and features an operational closeness, which results in the circumstance that any comportment of the system is systemically original and influences its further comportment; consequently the conditioning process itself operates independently from external impact (e.g. motivations), while it does remain an open system regarding the exchange of energy.

*Redundance* – within the *Urban Matrix* we ought not to differentiate between organizing, shaping, or directing components; consequently the components develop no hierarchy among each other.

*Autonomy* – the *Urban Matrix* must be understood as autonomous, as the relation and interaction within the system define a unity, which is only determined by the system itself, while the autonomy only refers to the qualitative conditioning process, because as an open system it does maintain an energetic interchange with the factual environment.

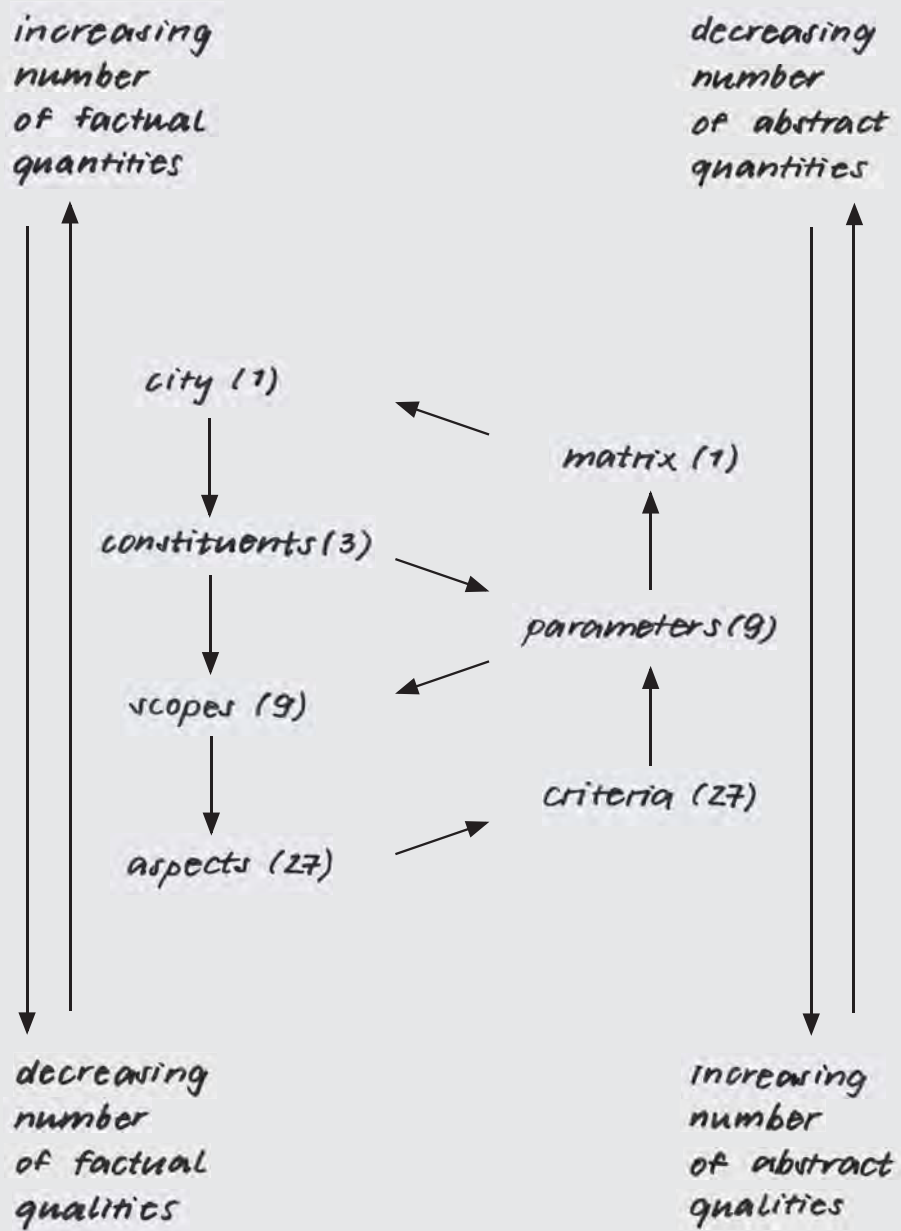
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<sup>724</sup> compare the discussions on page 146, 165, 181, 195, 210, 223, 229, 234 & 240

<sup>725</sup> see for instance the relation between *Aperture*, *Lineage*, and *Systemicity* for the determination of the urban limits, or the relation between *Situationality*, *Safety*, *Health*, *Resources*, *Yield*, *Aperture*, and *Connection* for the topographical shaping of a city

<sup>726</sup> compare discussion on page 105 ff.

<sup>727</sup> compare discussion on page 94



Scheme: The Urban Matrix  
and its Conceptual Relations



In logical continuation of the previous definition of parameters and criteria,<sup>728</sup> we thus follow that: Within our considerations regarding the qualitative determination of urban form, the *Urban Matrix* is a complex system that serves as a conditioning and contingency formula to prevent the various dissipative urban systems from formal arbitrariness by effectually addressing all parametral requisitions.

Rather by chance, when sketching the interrelation of parameters within the *Urban Matrix*, the nine suggested parameters resemble the form of a square matrix, when, obviously such an illustration should not insinuate any calculability. Rather on the contrary the illustrated complexity of interrelational connections does underline the dissipative character and hence the unpredictability of the matrix, which serves as a conditioner of the neutral and erratic energy that then transforms into a quantified qualitative determination of motivations and results as well as concrete functions and forms.<sup>729</sup>

However, before looking into some suggestive modes of interrelation among the parameters, which will exemplify a systemic consistency and coherence of the *Urban Matrix* despite the previous assessment of its dissipative structure, we can eventually discern the conceptual relation among the previously introduced terms: On one side we find the *city*, with its *constituents*, *scopes*, and according *aspects*, that in its implicit *factual quantities* and the enfolding demands and motivations onto as well as the concurring shaping approach towards urban form, has been long since subject to urbanistic reasoning. As argued earlier, already this factuality allowed for a systemic understanding (including general dissipative features), while this understanding focused either the physical layout immediately preparing, or the various motivational processes eventually leading to urban form.<sup>730</sup> On the other side, we have the *Urban Matrix*, with its *parameters* and *criteria*, that in its envisioned *abstract qualities* and the immanent systemic interrelation, which conditions the transformation of energy into function and form and thus ensures the notion of a formal urban continuum, represents the chief novelty of the present thesis.

All seven concepts – from city to aspect, and from criterion to matrix – yet, are intrinsically related to one another; for one by the proposed respective impact the single concepts have onto each other, for the other by the succumbing sequence of the individual concepts, while the proceeding pursued at first sought to single out factual constituents and ultimately single aspects before accordingly designating criteria and parameters to eventually attain the comprehensive *Urban Matrix*. Notably, we find hitherto such a conceptual relation complemented by an increase of factual quantities (e.g. urban examples) along with the decrease of abstract quantities (e.g. the *Urban Matrix*) as well as an decrease of factual qualities along with the increase of abstract qualities, which eventually match each other – a circumstance, which possibly produces another starting point for further elaborations beyond this initial approach, anew investigating or rounding off particular suggested parameters, criteria, or coalesced secondary factors.

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<sup>728</sup> see discussion on page 123

<sup>729</sup> see the scheme on page 252 in comparison with the schemes on page 82 & 104

<sup>730</sup> see discussion on page 89 ff.

A concise definition for an urban system, which seeks to comprise both perspective that nevertheless remain in the factual realm, gave Franz OSWALD in his account on the "Netzstadt" ("Net-City"); there he argued that an urban system is a large-scale system that is composed by geogenic and anthropogenic sub-systems generating an area-wide three-dimensional network of diverse social and physical nexuses; see (Oswald et al. 2003: 46).

triangle



bidirectional

hexagon



nonagon



bidirectional &  
monodirectional



sitnative

stipulation

stipulation

distributive

creative

#### 4.2.1 Stipulation

Besides these general interrelations on the conceptual level, we yet do find two distinct systemic relational characteristics of the presented parameters within the *Urban Matrix* that exemplify its intrinsic steering behavior for urban form beyond the unpredictability of the particular formal result: the *stipulation* certain parameters develop onto each other, by adjusting the potential effect of the latter through predetermining the respective range, and the *compensation* certain parameters produce in regard to other parametral deficiencies, by completing possible hitherto insufficient effects through an immediate enforcement of deficits or an effective redirection to other benefits.

The reasoning on parametral *stipulation* becomes plausible, when we return to our considerations regarding the succession of urban constituents, which, in respect to urban form as a product, prescribed the existence of a locale for the availability of a framework, and the existence of a framework for the availability of a shape.<sup>731</sup> Analogue to this conditional relation, we can discern an intrinsic *extensive impact* from the parameters, which we derived from a specific constituent, onto the ones of the relating constituents, notwithstanding the previously assessed extension of the parametral scopes over the whole urban form.<sup>732</sup> Consequently, the effects of the situative parameters are likely to show a significant impact onto the distributive and creative parameters' effects, as do the distributive on the creative ones. This ratiocination accordingly allows for the perception, that within energetic alterations, *creative operations* feature a higher potential variability compared to *distributive* and eventually *situative operations* – similar to the evident observation, that architectural objects or the urbanistic space are likely to change faster than the street-network, which formally determines the general distributive setup, or than the commitment to a specific locale, as the alteration of the latter would cause a wide-ranging re-formation.<sup>733</sup>

##### *Stipulation Triangle*

Dissecting the different extensive impact relations, which ensue from the delineation of parameters, we at first encounter the parametral stipulation the according factors have within one constitutional group – that is, so to say, consolidating the parametral effect onto the according constituent. These have been already in particular subject to some discussion in the previous catalogue,<sup>734</sup> why we should now merely explicate the general properties of this interrelation that can be illustrated by a triangle, in which all parameters have the same potential impact onto each other. Taking the creative parameters as an example, there is little doubt about the significant stipulation the composing and ordering effects have onto the overall shaping, reflecting the extending scopes of space and proportion over the urban shape; vice-versa the shaping effects, that is for instance the general notion of an urban building in different volumes, intrinsically affect any ordering or composing approach. Within this *stipulation triangle*, ultimately, the corresponding parameters have to be considered as equal systemic components.

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<sup>731</sup> compare discussion on page 120

<sup>732</sup> compare discussion on page 247 f.

<sup>733</sup> Naturally the particular utilization of the architectonic object as well as the intellectual (or motivational) approach to it is even faster to change, while this notion, obviously, is by definition irrelevant for our formal ratiocination; compare discussion on page 81 ff.

<sup>734</sup> compare the discussions on page 145 f., 165, 181, 195, 209 & 223; the relationships within the creative parameters have not been expatiated upon, when, however, their interdependencies are pretty much comprehensible from the professional perspective of urban designers and architects



### *Stipulation Hexagon*

However, examining the extensive impact relations between the factors of two constitutional groups, we encounter in addition to the triangular consolidation, which we could call bidirectional for their convertible impact among each other, a monodirectional stipulation from the situative parameters onto the distributive ones, respectively from the situative or distributive onto the creative parameters. This follows the previously described constitutional sequence, which insinuates preconditionary significances with earlier constitutional groups towards the later ones: The parameter of *attractiveness*' for instance considerably impacts onto the lay-out of a framework, which obviously should also be attractive to its users, as well as accordingly onto the design of a shape; while on the contrary the creative effect of *order*' has no extensive impact onto the situative or distributive parameters, which have to be addressed before the creative parameters can affect. Schematically these considerations can be illustrated in a hexagon that positions the according parametral triangles in a top-down relation. Within such a *stipulation hexagon*, consequently, there is an impact inclination from the top factors downwards, showing a stipulatory unenforceability from the successive to the preconditionary parameters in their according effects.

### *Stipulation Nonagon*

Ultimately, all parametral interrelations of stipulatory effect can be illustrated by a *stipulation nonagon*, which sets forth the particularities of the hexagon, now comprising all three constitutional groups and hence illustrating the respective triangular bidirectional impacts as well as the monodirectional stipulations towards all successive parameters. In the nonagon we can, for example, recognize the stipulation the parameter of *permanence*' provides not only for the locale itself, but for the establishment and maintenance of a framework and consequently for the production of a shape, when this production additionally is stipulated, for instance, through the effect of the *density*' parameter that manifests itself in the aforesaid establishment and maintenance of this framework.

Altogether, we can follow from these *stipulation mappings* already one feature of the immanent systemic set-up of the *Urban Matrix* that demonstrates the intrinsic interrelation of parameters. Nevertheless, this particular consideration of extensive impact directions does not impair the underlying general significance of each individual parameter for the whole systemic effect onto the transformation of energy into form, which will *fail to produce urban form, when one parameter is not effectually involved*.<sup>735</sup> Significant for all these extensive impact relations is thus that we have with them to refer to the parametral effects, rather than scrutinizing the parametral integrities themselves; moreover, in continuation of our quality-quantity ratiocination and the notion of the energetic transformation into form, they already represent the first steps of quantifying the parametral qualities.<sup>736</sup>

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<sup>735</sup> compare discussion on page 249

<sup>736</sup> compare discussion on page 102 ff. as well as plate 81 on page 252

#### 4.2.2 Compensation

When we have to ascertain an unenforceability regarding an extensive impact from successive to preconditionary parameters, still, we do conceive possible *intensive impact* from the successive to the preconditionary parameters by means of *compensation*. This systemic compensation, however, differs largely from the make-up of shortcomings by means of a *simple*, though usually expensive recouping of defects or deficiencies immediately with the respective aspect.<sup>737</sup> as we have seen in the catalogue, this might be through specific building works and ingenuity in situ (ground reinforcement, land reclamation, fortification techniques, effective land use, architectural distinction, etc.)<sup>738</sup> as well as through economic and intellectual resourcefulness integrating other locales (external support, regional trade, political aptitude, etc.).<sup>739</sup> These simple compensations are sponsored by specific motivational circumstances that afford the urbanization of a specific locale, the preparation of a particular framework and/or creation of a distinct shape – while often neglecting immediate efficiency considerations with the according urban formation.

Within the suggested systemic qualitative interrelation, yet, *compensation* means an effective compliance of certain parametral requisitions through an additional effect by other parameters. This compensation, however, appears to be most crucial in respect to the premise that all qualitative parameters of urban form have to be involved during the energetic transformation to actually allow for an *urban* form.<sup>740</sup> Consequently, we should propose minimal response to any parametral requisition, while concurrently considering the possibility of overperforming parametral effects influencing underperforming ones. Looking into probable intensive impact relations, we remarkably recognize *compensation mappings*, which are similar to the stipulation mappings – when yet the direction of the impact is exactly reversed.

##### *Compensation Triangle*

First compensations will, when necessary, occur with the equal components of one constitutional group, as either situative, distributive, or creative interrelation. As for the creative parameters, even when there was no assessment on basic relationships as with the other parameters, we can easily understand that a delicate spatial composition can compensate less ordered proportions with the individual buildings or the overall shape, while, of course, proportion as well as shape still represent significant scopes of urban form (as for instance illustrated with the case of Freiburg i.B.). Still, similar compensation promises are evident between other parameters (for example higher individual densities with less diversity in the case of Brasília with its segregated framework) as well as with the response to the criteria of one parameter (such as more effectual consideration of safety than health aspects in the case of Venice with its detached yet watery locale that for centuries was rather subject to epidemics than sieges).

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<sup>737</sup> «Simple» in this context refers to the unsystemic (not unsystematic) compensatory operations, as discussed in the following. These, obviously, might also affect the circumstances, which have been described as secondary coalesced factors (compare the concurring compensation of obsolete defense measures with the succession secure place – fortifications – antiaircraft – satellite shields on page 241 f.).

<sup>738</sup> see for instance Venice (on page 133 f.), Jumeirah (Dubai) (on page 135), Naarden (on page 169 f.), Mandello del Lario (on page 179), or the Forum Romanum (on page 161 f.)

<sup>739</sup> see for instance Mont-Saint-Michel (on page 173), Duisburg (on page 143), or Nikopolis (on page 157 ff.) as well as Brasília (on page 215 ff.)

<sup>740</sup> compare discussion on page 249

triangle



bidirectional

hexagon



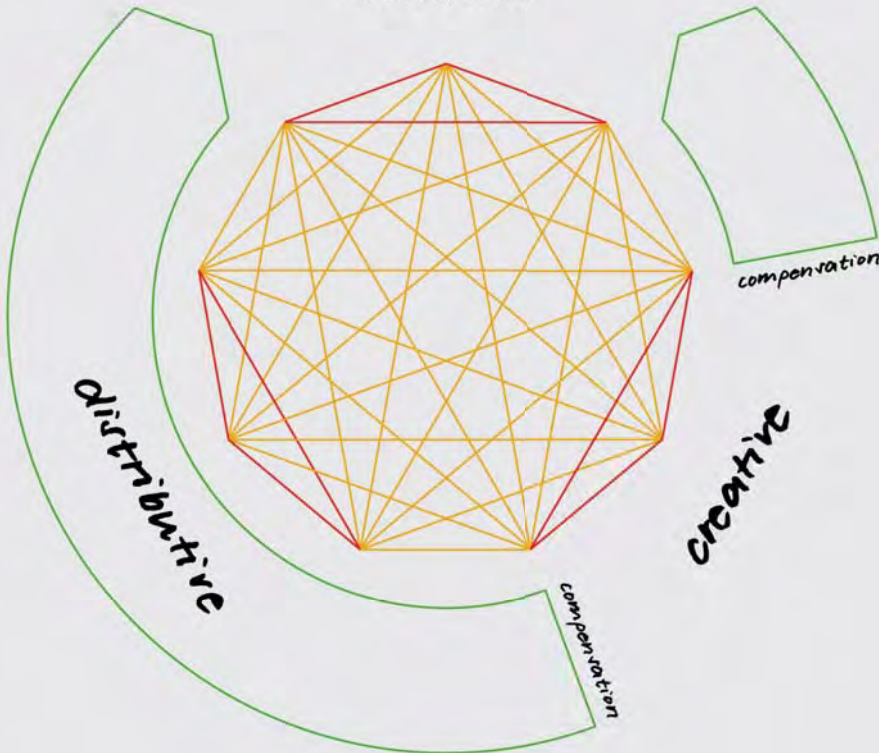
nonagon



bidirectional &  
monodirectional



situative





### *Compensation Hexagon*

The reverse impact with regard to the stipulatory interrelation, however, can only be observed when more constitutional groups are involved. Analogue to the stipulation hexagon, there is also a compensation hexagon, in which similarly the parameters of one group interrelate bidirectionally, while among the groups intensive impact only happens monodirectional, and now, in respect to the described sequencing, from the later to the preconditionary ones. Obviously, this reasoning bases on the notion that a given parametral effect can only appear towards an already extant matter that previously enfolded other parametral effects; accordingly, the parameters rendered as distributive first apply with the establishment of a framework, that itself is dependent on the existence of a locale, which already aroused situative parametral effects. Possible deficiencies with the latter thus can be compensated, now affecting the extended scope of two constituents. The same, obviously, applies to the creative parameters and their potential compensation characteristics for the distributive as well as the situative factors.

As an example, we might refer to the *Safety* criterion that emanates from the *attractiveness*' considerations towards a locale,<sup>741</sup> and the instance of Naarden: There, initially the urban locale was shifted away from the malicious impact of the open sea to the South, while immediate reinforcement of the safety features were undertaken through the establishment of a city wall and a thus controlled access to and from the urban grounds in medieval times. With the development of military technology this city wall was substituted by an elaborated early modern fortification belt. Unlike medieval tactics, yet, the new fortifications did not afford consummate safety from external cannonades, why the building heights close to the urban limits were restricted not to overtop the height of the fortification. Consequently, the originally local parametral requisition of *attractiveness*' with its criterion *Safety* (while made up by specific building works) could not be sufficiently addressed and had to be compensated by a particular overperformance of distributive operations that emanate from the distributive parametral requisition of *density*' with its criterion *Systemicity*.<sup>742</sup>

### *Compensation Nonagon*

These compensation correlations, obviously, produce also a nonagon, when mapped in a scheme and eventually give evidence to the reversed impact inclination, showing the enforceability from the successive to the preconditionary factors. Ultimately, we have to attribute to the creative factors the largest possible intensive impact within the *Urban Matrix*, and, as a matter of fact, there is much reason to perceive the initially stated *simple* recouping of deficiencies as exactly such creative effects – while, unfortunately, an according examination and validation of this reasoning has to be postponed to a later, more detailed reasoning in continuation of this thesis.

As argued before, all extensive and intensive impacts within the *Urban Matrix* are due to two premises: the, at least minimal, *effectivity of all parameters*, and the *supposition of efficiency* within the parametral interrelation.<sup>743</sup> Effectivity, consequently, leads likewise to an imperative of the different parametral requisitions as to a consolidation of the different parameters in one system through the intrin-

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<sup>741</sup> compare discussion on page 149 ff.

<sup>742</sup> compare discussion on page 197 f.

<sup>743</sup> compare discussion on page 249 for effectivity and 145 for efficiency

sic extensive impact. Efficiency, on the other hand, underlines the parametral interrelation of this system and thus the significance of inherent intensive impact parameters potentially have. Eventually, both work towards a *double dynamic equilibrium* – with the *Urban Matrix* as well as with the different urban systems – by over again reconciling abstract prerogatives with factual responses for a *potential systemic congruence*; they therefore complement the dissipative factuality through their continuing abstract qualities, which nevertheless within the conditioning system themselves feature dissipative interactions as soon as they meet varying factual circumstances.

Hence, we understand the transformation of energy through the *Urban Matrix* not only as a joint effect of all parameters but as the joint effect of the systemic interrelation of the parameters.<sup>744</sup> This systemic prevalence might also explain why parameters of urban form have not yet been subject to closer examination, as they in their actual effects stand behind the complexity of the conditioning system, which on its part stands behind the variety of factual urban systems.<sup>745</sup> Following LUHMANN's *autopoiesis* understanding,<sup>746</sup> we thus come also to the conclusion that if not a single factor, parameter or criterion, determines urban form, but their systemic interrelation, of which the here suggested stipulation and compensation arguably represent only two, yet significant, modalities, there cannot be any bijective relation between the systemic factors and the factual realm. Moreover, the *Urban Matrix* is not simply parametral interrelations, but *eventful related parametral relations that allow for elementary events*,<sup>747</sup> and thereby communicate between the previously introduced *causes* and the mutually influencing *motivations* and *results*.<sup>748</sup>

Ultimately, the proposed *Urban Matrix*, in reference to SIMON, is like any other complex system "made up of a large number of parts that interact in a non-simple way. In such systems, the whole is more than the sum of the parts, not in an ultimate metaphysical sense, but in the important pragmatic sense that, given the properties of the parts and the laws of their interaction, it is not a trivial matter to infer the properties of the whole. In the face of complexity and in principle, a reductionist may be at the same time a pragmatic wholist" (Simon 1962: 468). This present approach accordingly seeks to reduce the complexity of the urban formation by means of a pragmatic deconstruction into parameters and criteria, while acknowledging the mere approximation of their potential interrelations and concurrently being aware of this endeavor as a mere approximation to *the 'city'* itself.

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<sup>744</sup> compare discussion about the *Non-trivial Machine* on page 94 and the proposition of its conditioning effect within the triadic relation between energy, form, and function on page 104

<sup>745</sup> In the broader context of philosophical deconstruction and a semiological understanding we could perceive here a "différance", as Jacques Derrida pointed out (Derrida 1968: 53), which according to Peter ZIMA results in a "Zerfall der eigenen Identität und der Sinnpräsenz" ('Decay of the individual identity and significance'); see (Zima 1994: 52).

<sup>746</sup> compare discussion Seite 100

<sup>747</sup> Compare the entry for "Konditionierung" in Detlef KRAUSE's Luhmann-Lexikon: "Autopoietische Systeme sind nicht einfach Relationen zwischen Elementen, sondern elementare Ereignisse ermöglichende ereignishaft relationierte Relationen zwischen Elementen" (Krause 1996: 158). 'Autopoietic systems are not only relations between elements, but eventful related relations between elements, allowing for elementary events, (author's transl.).

<sup>748</sup> compare discussion on page 82 ff.

Given the phenomenological and systemic implications, which have been discussed so far,<sup>749</sup> as well as the just anew-stated approximating attitude of the present thesis, it is seemingly ambitious to already suggest the *Urban Matrix* as a comprehensive tool. Still, the consideration of the effectual allowance of all parameters and their potential interrelation at least insinuate basic principles for two potential appliances; these should be, as inchoate as they are at this stage, proposed as a concluding ratiocination of the submitted approach, when, however, they must be further elaborated and evaluated: The first method comprises the *Urban Matrix as an Analytical Tool*, that is a *retrospective* examination of how the different parameters interrelated to condition a specific urban form; the second encompasses the *Urban Matrix as a Design Advice*, that is a *prospective* assessment of how formal changes to the factual environment possibly entail changing parametral requisitions through an alteration of the present dynamic equilibrium.

With both methods, yet, we should bear in mind especially the dissipative prerogative of the *Urban Matrix* as a conditioning system of interrelating factors. This does allow for an examination in retrospect, but not for restitutions of gone-by processes by means of inversive processes, nor reliable prediction through the re-application of a certain set of activities that yielded a certain, again envisioned result; the same accounts for the reduction of the whole systemic process to the requisition of a single factor, that would be investigating for monocausal significances.<sup>750</sup> Furthermore, as we learned already with the two suggested impact relations in connection with the consideration of a *Non-trivial Machine* qualitatively transforming energy into quantities,<sup>751</sup> we encounter with the *Urban Matrix as a Comprehensive Tool* the importance of considering a *quantification* of these qualities in specific space-time frames. Though, we should within our ratiocination continue to refrain from an advertence of *motivations*,<sup>752</sup> wherefore this quantification cannot ensue in, so to say, *absolute* measurements, comprising evaluations of these specific space-time frames – evidently, it is even a very delicate matter to employ valid standards for such an assessment, as we can observe with the historic and social disciplines. Thence, the indispensable quantification for the analysis of parametral effects onto one specific or several urban forms has to comprise a *relational* appraisal that perceives the specific space-time frame as merely *categorical* for conducting the examination,<sup>753</sup> and the quantification itself as a particular *qualitative relation* among the factors in question.

Altogether, this reasoning is not meant to discourage from applying the *Urban Matrix* as a tool. On the contrary, it should stress the notion of intriguing comprehensiveness when engaging in urbanistic research as well as urbanistic proposals, while simple answers and plain solutions often prove useless or even harmful as the earlier REFLECTION ON WESTERN URBANISM showed.<sup>754</sup> Ultimately, exactly the here presented comprehensive *qualitative relation* distinguishes the city from other sedentary entities and confirms its attribute as a captivating artifact.

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<sup>749</sup> compare discussions on page 81 ff.

<sup>750</sup> compare discussion on page 90

<sup>751</sup> compare discussion on page 104 f.

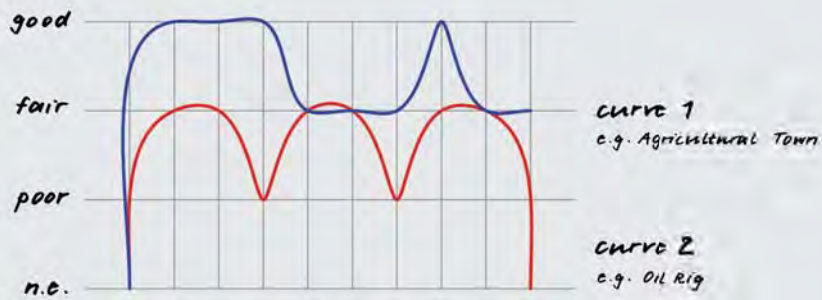
<sup>752</sup> compare discussion on page 83 ff.

<sup>753</sup> using the KANTesian understanding of time and space; compare discussion on page 84 f.

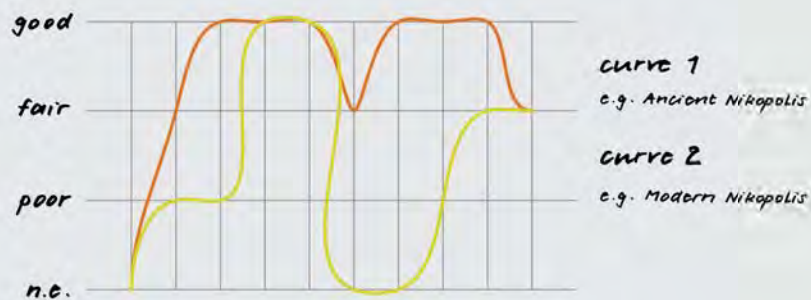
<sup>754</sup> compare discussions on page 55 & 77 f.



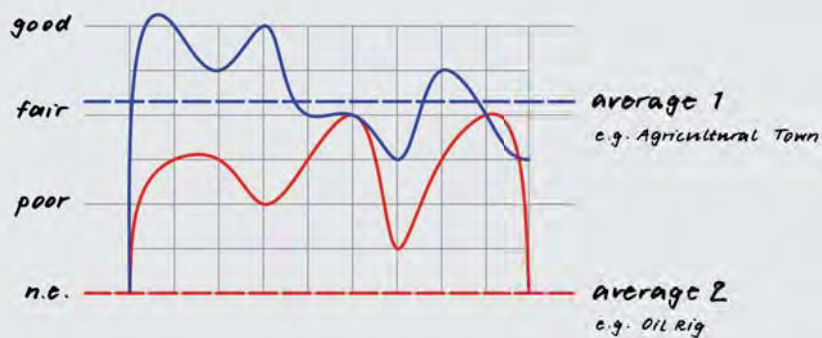
## entity based



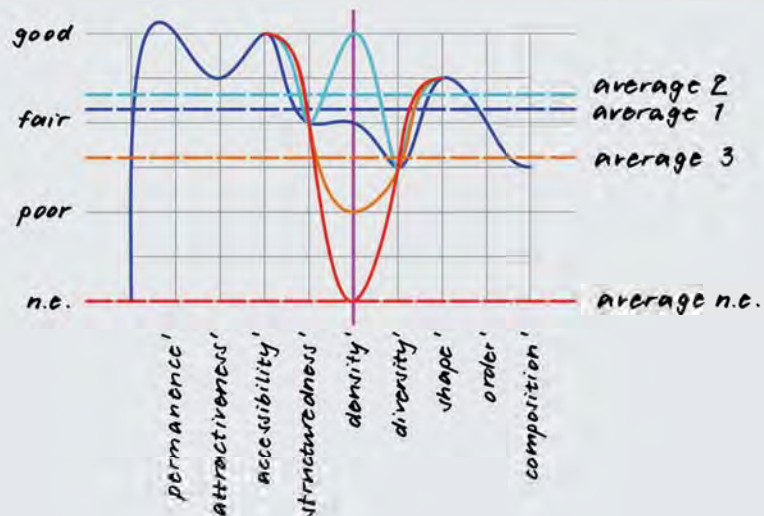
## time based



## many values



## alternative values



syntagmatic mappings

paradigmatic mapping

Scheme:  
Relational Mappings  
of the Urban Matrix  
**plate 85**

#### *Method I: The Urban Matrix as an Analytical Tool*

Returning to the previously mentioned virulent discussion on *urbanism*,<sup>755</sup> we thus might suggest the *Urban Matrix* also as a tool for investigating the urban status of a given sedentary form. Yet, in opposition to Vere Gordon CHILDE, as well as other authors cited,<sup>756</sup> the strength of the *Urban Matrix* is accounted for by its relative and interdependent structure: It does not appoint a specific threshold quantity in form or function to define something being *urban*; still, it is neither a mere qualitative "shopping list of items with no functional relationship between them" (Wheatley 1972: 612). In this context, the *Urban Matrix* rather adheres to Max WEBER's relative and qualitative reasoning in the beginning of his treatise on the city, also when he, according to his scope, in the following introduces to a socio-functional typology of cities.<sup>757</sup>

Along these lines, the *Urban Matrix as an analytical tool* can be represented by *relational mappings*, in which the response to parametral requisitions are charted in relation to each other, based on a supposed average effect (labeled as *fair*); accordingly, one can in addition distinguish between a relatively better or worse parametral effect (labeled as *good* and *poor*) or even a drop out of a certain response (labeled as *n.e.*). The connection of the charted effects eventually produce a continuous curve that relatively and qualitatively illustrates the collectivity of parametral effects, when, however, this mapping ought neither be mistaken for a precise mathematical *graph of a function*, nor for another illustration of the actual interrelation of parameters.<sup>758</sup> Yet, we recognize with the resulting curve a horizontal dependency from left to right that derives from the parametral succession,<sup>759</sup> and which is illustrated by the mapping of an according origin. Borrowing another term from semantics,<sup>760</sup> we thus could call this application *syntagmatic*, for the curve's successive, interrelational, and cohesive characteristics.

Furthermore, there can be more mappings within the same layout, either charting the parametral response of different urban forms or of one form at varying time stages. Both *qualitative quantifications*, consequently, allow for comparisons among the parametral effects charted and thus produce a double relativity – first within the respective curves and second between the different curves. Such a procedure then could provide for interpretative potentials, what for the limited scope of the present work, however, shall be mooted to later discussions. At this point, with reference to the previously described non-urbanistic methodologies, we might yet perceive the possibility for more differentiated quantifications, when these, evidently, entail sound assessment criteria. Especially the idea of many-valued contexts, as they have been postulated in formal concept analysis, might give an according cue,<sup>761</sup> while this lattice theory itself could also be employed for comparable analytical procedures.<sup>762</sup>

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<sup>755</sup> compare discussion on page 15 ff.

<sup>756</sup> BELOW 1898/1909, RATZEL 1897/1903, EGLI 1959, LICHTENBERGER 1986, DELFANTE 1997, etc.; see also the discussion with (Osborne 2005)

<sup>757</sup> see (Weber 1921: 1 ff.)

<sup>758</sup> The complex interrelation of parameters, which has been mapped in the impact triangles, hexagons, and nonagons, is evidently more complex than this curve; compare discussions on page 257 ff.

<sup>759</sup> compare discussion on page 120, as well as on page 257 and 259

<sup>760</sup> compare especially the discussions on page 106 f.

<sup>761</sup> see (Ganter et al. 1996: 36 ff.)

<sup>762</sup> compare discussion on page 109

Yet seemingly, lattices will be appropriate for the comparison of different urban forms,<sup>763</sup> rather than comparing different time stages with one urban entity; here, the suggested relational mappings supposedly give easier access to evaluable information. Eventually, a relational mapping in many values might also allow for a consolidated average showing the overall parametral response of a specific urban entity, which then can be interpreted and compared to other consolidated averages – again, either *chronologically* evaluating different development stages of one entity in time, or *diachronically* examining a specific set of entities at a chosen time.<sup>764</sup> Altogether, these considerations are mere initial thoughts for the further elaboration of such a methodology. Crucial appears to be, however, the author's conviction that for this analysis by means of the *Urban Matrix* no parameter is more important than another one,<sup>765</sup> yet, the failing of minimum response to one or more parametral requisitions of necessity betokens the impossibility to perceive the examined sedentation as a city.<sup>766</sup>

#### *Method II: The Urban Matrix as a Design Advice*

The second potential method refers to a prospective application of the *Urban Matrix* as an additional tool for planners and designers and bases on the notion of balancing different possible solutions for a given task and eventually a reliable decision taking. With regard to this conviction, FERGUSON argued that to "find out which alternative is preferred, the planner refers to a criterion or some mix of criteria (a 'criterion function') which are essentially operable measures of determining the achievement of previously formulated objectives. In effect, these criteria provide a checklist for the evaluation of various alternatives. [...] In city planning, one is also dealing with a dynamic system: the city today is not what it was one year ago nor what it will be in another year. Conditions, constraints, and objectives are always in flux. This is a major difficulty for the planner: how to perceive the problems – the urban system" (Ferguson 1975: 17).<sup>767</sup> Thence, the *Urban Matrix* might serve as an operational guideline that comprises beyond the mentioned «checklist of criteria» a means to approach the dynamics of urbanistic processes as well as the dynamics among the criteria (or better: supposed parametral effects).

To do so, the basic set-up of the relational mappings might as well be used. Yet, then, the charted qualitative quantities are not fixed, but correspond to the proposed parametral response of the envisioned alternatives, also leaving for the subsequent variability and relativity of parametral interrelation. Serving as a prospective means, these mappings, however, illustrate rather a supposed interrelational potentiality of proposed qualities for one urban entity than revisable relations between assessed qualitative quantifications. With reference to the syntagmatic curve of the *Urban Matrix as an Analytical Tool*, this procedure could be called *paradigmatic*, as the mappings build on vertically compatible quantifications

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<sup>763</sup> as proposed earlier with the second scheme on sedentary forms on page 248

<sup>764</sup> representing the two major approaches towards the examination of cities within the History of Urbanization, as it is taught by Michael JANSEN

<sup>765</sup> somewhat opposing DELFANTE's plea for the preponderance of a compository approach towards a city; compare discussion on page 20

<sup>766</sup> In this context the *Urban Matrix* stands against the notion of postulating suburbia as the future urban form of living, as for instance Mario GANDELSONAS does in his work on "X-Urbanism" (Gandelsonas 1999: 30 ff.).

<sup>767</sup> In the cited paragraph FERGUSON also reasons about the motivational constraints, restrictions, or exogenous variables the planner and designer has to face; a circumstance, which we deliberate excluded from the present thesis.



to examine the possible impact of certain qualitative alterations to the overall scheme, especially those that unexpectedly foil the envisioned general objectives. Thus, the *Urban Matrix as a Design Advice* should prevent from an attendance to only some criteria or a mere abidance by the concrete and individual planning or design assignment, both of which bear the danger of pitfalls and oversights.<sup>768</sup>

Eminently, such a procedure involves significant imponderabilities, especially a double dissipative effect: one from the actual urban system in question, that FERGUSON proposed in the quotation above, and the second from the *Urban Matrix* itself; both do not allow for any consistent postulation of an expected output. Still, the supposed value of employing this method results from the comprehensive approach towards the planning and design task that compels not only to reconcile linearly the given objective with an envisioned result by means of, traditional architectonic-synthetic thinking and resulting activities; it also calls for a calibration of the envisioned result with its effects onto the extant environment, which, as we have seen earlier, can lead to a thorough change that is not necessarily beneficial.<sup>769</sup> Accordingly, the *Urban Matrix* can also be understood as a *comprehensive tool* that shall broaden the urbanistic task from merely investigating for flat solutions to a, at least, minimal responsibility for the whole of the according factual urban form and a practical appreciation of urban complexity in general – again enforcing continuity and coherence, notwithstanding the actual scope or assignment.<sup>770</sup>

This concluding ratiocination for two potential methods of the *Urban Matrix* is, obviously, only a rough outline for a methodology that ought to be further investigated and validated. Still, the proposed *Urban Matrix* with its interrelation of parameters and criteria shall provide for another basic understanding of what determines urban form and how such an understanding can allow for scrutinizing concurrent planning and design issues. At the same time the notion of the interrelations within the matrix shall produce another awareness for the past, current or future urbanistic development, with which the author seeks to bridge the apparent gap between an academic formalistic urban history and a professional inadvertency as regards the poor interplay among contemporary urbanistic solutions not only with the inherited urban forms, but also with a perception of an urban continuum that, despite its manifold forms and appearances, has been virulent for centuries.

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<sup>768</sup> compare discussions on page 57 ff.

<sup>769</sup> compare discussion on page 125

<sup>770</sup> compare discussion on page 80 and 92



As prefixed by the subtitle of this thesis, the present elaboration is meant to be an initial occupation with the idea of a *conditioning system of interrelated factors determining urban form* with the aim to propose a thought-model that is able to describe a formal continuity of the *city*, despite its ever-changing appearances. For its unproven practicability, especially with the considerations on the URBAN MATRIX AS A COMPREHENSIVE TOOL, this thought-model can only suggest a further development towards a full THEORY ON THE PARAMETERS OF URBAN FORM AND THEIR INTERRELATION. Moreover, it obviously should be understood as one *viable* approach, when there can be a wide range of other approaches aiming for a similar description.<sup>771</sup> In this discursive context, the parameters and criteria that have been suggested according to the IDEALIZED COURSE OF URBAN FORMATION shall not represent an immutable list;<sup>772</sup> although the author sought to demonstrate the individual integrity and joint consistency with the explanation of their potentials to allow for COALESCED SECONDARY FACTORS. Crucial for the present proposition, however, should be the thoughts regarding the phenomenological and systemic understanding of the *city*, which lay ground for the abstraction from factual forms and functions;<sup>773</sup> this eventually shall allow us to conceive a 'general-formal' concept in addition to the manifold 'typological-concretized' concepts for the *city*, and admit the envisioned perception of a *formal urban continuum*.<sup>774</sup>

The starting point for this endeavor, however, is the WESTERN REFLECTION OF WESTERN URBANISM, in which we could observe an ongoing acceleration of urbanistic processes in course of the industrialized means for producing urban form as well as its quickly changing *Leitbilder*. According criticisms range from Camillo SITTE to Rem KOOLHAAS, and, while addressing different symptoms and proposing a variety of solutions for urbanistic practice and perspectives, most of them feature an inkling of discontent not only with urban form but also with the urbanistic discipline. Interestingly, this discontent seemingly emerged and sustains concurrently with the development of the discipline itself. This thesis should not be understood as such a criticism or as a guideline for urban design, entering the ongoing debate on how to design (or not design) cities. Yet it does seek to address above-mentioned acceleration, by proposing an urbanistic examination of what might be behind the different forms that have been labeled as *urban*, thence also affecting the execution of urbanistic projects.

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<sup>771</sup> compare discussion on page 95

<sup>772</sup> Accordingly, the apparent symmetry of parameters and criteria is a working hypothesis.

<sup>773</sup> compare discussions on page 83 ff. & 89 ff.

<sup>774</sup> The differentiation between 'general-formal' and 'typological-concretized' concepts goes back to the historian Alfred HEIT, which for its significance to the present approach shall be given in full quote:

"Ich plädiere damit zugleich für eine definitorische Arbeitsteilung zwischen einer allgemein-formalen und einer typologisch-konkretisierenden Begriffsbestimmung. Der allgemeine, übergeordnete Stadtbegriff hat zur Voraussetzung eine Abstraktionsebene, auf der die Grund-, Sach- und Modal-kategorien konstant und damit durchgehend anwendbar bleiben. Grundkategorien sind Raum und Zeit. [...] Herausragende Modalkategorie ist die Steigerung, die Tendenz zu Maximum und Optimum, die sich in den Sachkategorien wie auch in deren Kombination manifestiert" (Heit 2004: 11 f.).

'I am accordingly pleading for a division of definitory work between general-formal and typological-concretized concepts. The general, superordinated concept of a city presupposes a level of abstraction, on which the categories regarding basics, properties, and modality remain constant and thus continuously applicable. Basic categories are space and time. [...] Excelling modal category is the escalation, the tendency to reach the maximum and optimum, that likewise manifests itself in the categories of property and their combinations', (author's transl.).



The *Urban Matrix* as the inchoate conclusion of the presented thoughts obviously leaves open many questions, some of which the author felt forced to deliberately exclude from the elaboration, not to confuse the envisioned argumentation thread. One could be whether the parameters and criteria, which derived from a Western ratiocination, can be extended or extrapolated also over Non-western urbanism; given the immense differences between shrinking cities and suburbanization in Western countries and massive urbanization in other parts of the world, this is seemingly a significant issue.<sup>775</sup>

Another refers to a potential integration of the approach into post-modern thinking (not post-modern urbanism) and relevant impact from the possible revisions it is subject to; given the combination of different conceptions for the theoretical basis of the approach, this might lead to further insights regarding the adaptability and further elaboration of the suggested approach.<sup>776</sup>

Still, the suggested *Urban Matrix* shall, notwithstanding the rather extensive derivation presented, propose an eventually simple conclusion:

A relatively small number of concepts in their yet complex systemic interrelation might allow for understanding urban form as a continuum, despite its manifold edificial appearances and varying functional typologies.

When this, evidently, should not be taken as another definitory approach,<sup>777</sup> it though shall be an additional contribution to the in its substance apparently irresolvable question 'What is a city?', and underline the potential feasibility and significance of such theoretical-urbanistic occupations with the subject.

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<sup>775</sup> compare discussion on page 93;

for this thesis we thus broadened BRAUNFELS' postulation that 'within urbanism the scientific scope causes the principle of choice' and only referred to Western examples; see (Braunfels 1976: 7)

<sup>776</sup> compare for instance (Harvey 1989: 327 ff.)

<sup>777</sup> compare the outline of urban definitions on page 15 ff.

## **Part 5   References and Appendices**

The present employment comprises manifold support from other researchers and organizations in form of their textual and graphical publications. To avoid possible infringement of the intellectual property of others and to make accessible the availed material, the following pages seek to give a careful reference of incorporated illustrations as well as of the books, articles, and websites cited. Moreover, a preceding account on the citation and accentuation features, a rough glossary on unusual terms, as well as an index of personal names, places, and subjects shall facilitate the orientation within this thesis.

"Original citation"	giving the original wording of a citation; entailing proximate referencing in the main text according to the latest available edition in original language; citations or accentuations within the original citation have been accentuated by single quotes or, if mentioned differently, according to the original text
'Translated citation'	giving a translated wording of a citation; entailing referencing in the according footnote according to the latest available edition in English language or as an author's translation; for citations or accentuations within the original citation see above
«Common citation»	giving a frequently used wording, which cannot be properly referenced or should be accentuated for its particular meaning in the according context
<i>subject</i>	accentuation as a significant name or matter, see also the following index
<i>'abstractum'</i>	accentuation as an abstractum
<i>parameter'</i>	accentuation as a parameter of urban form, see also discussion on page 122 f.
<i>Criterion</i>	accentuation as a criterion to the parameters, see also discussion on page 123
Personal NAMES	accentuating personal names, see also the following index
RECURRING HEADING	referring to a previously introduced heading (also when only partial)

In the text the author uses the *Before Current Era (BCE)/Current Era (CE)* notation, where to clarify annual details.



### Short Glossary

Most unusual terms of this elaboration, especially the neologisms, have been explained within the text or in according footnotes. Yet, seven of them shall be explicated in the following, to settle their specific use in the present thesis:<sup>778</sup>

- artifact* derives from the archaeological discipline and there describes objects made or modified by a human culture; we do find the term also used in biology, medicine, social sciences, and other disciplines.  
In this thesis, *artifact* expresses anthropogenic transformations of the biosphere that can be different in form, but eventually correspond to a perceived common disposition. The understanding of the *city as an artifact* is common in Anglo-American urban research.  
– cf (Summerson 1963; Ferguson 1975; Goldfield 1975; Vance Jr 1990; Kostof 1991)
- autopoiesis* describes the self-production and self-maintenance of a system, as it has been originally conceived in biology and adopted by sociology. Autopoietic systems consist of relations among components, which determine its characteristics rather than the components themselves.  
In this thesis, *autopoiesis* refers especially to the notion that the *Urban Matrix* is such a self-referencing and self-organizing system, which itself remains in the abstract realm, while only the relation of its parameters have an impact onto urban form.  
– cf (Maturana et al. 1980; Luhmann 1984; Zibell 1996)
- commensurability* is used in philosophy and mathematics to describe the feasibility of comparing two entities with each other by using the same theoretical language or scale.  
In this thesis, *commensurability* means the possibility of understanding and comprehending *urban form* as such, despite its formal and functional complexity, rather than merely taking it for granted as an insignificant container for accustomed activities.  
– cf (Lynch 1960; Lynch 1981)
- contingency* is a philosophical and sociological term explaining the randomness of activities that altogether do not pursue a specific purpose. Contingency formulas, yet seek to address this randomness by endowing it with a certain meaning that can suggest guidance for the according activities; the existence of religion, for instance, can entail certain ethical values that condition human behavior.  
In this thesis, the *Urban Matrix* proposes such a contingency formula for the generally manifold urban forms that shall explain their affinity and give a guideline for future formation activities.  
– cf (Luhmann 1984; Krause 1996)

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<sup>778</sup> For the use of these terms in the text, please see to the following subject index.

<i>dissipative</i>	<p>describes in physics those processes within a dynamic system, that within their directional course lose energy, which then randomly takes other directions; such processes are irreversible. This can be illustrated, for instance, by a wave that loses its amplitude when approaching the coastline.</p> <p>In this thesis, the adjective <i>dissipative</i> is used to explain the impossibility to calculate the outcome of the <i>Urban Matrix</i>, due to the notion that much of the energy, which passes through the system, will take unforeseen directions; as well as it shall explain the impossibility to reverse this process.</p> <p>– cf (Prigogine et al. 1993)</p>
<i>systemic</i>	<p>is chosen to distinguish processes and entities, which are subject to the considerations of system theory, while it originally derives from medicine describing affects to major parts of the patient's body.</p> <p>In this thesis, thus, <i>systemic</i> refers to the system itself, while <i>systematic</i> refers to processes that ensue or are undertaken according to a certain system.</p> <p>– cf (Luhmann 1984; Krause 1996)</p>
<i>viability</i>	<p>derives from philosophy (here the radical constructivism) and initially stands for practicable or useful. The viability of an approach towards a research object, however, includes the perception that there are many other practicable and useful approaches.</p> <p>In this context, this whole thesis seeks to represent a viable approach towards the selected topic.</p> <p>– cf (Glaserfeld 1985)</p>





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The full-page satellite photography is altogether produced from GoogleEarthTMPlus, which provides this imagery as a resource from different licensors that are fully specified in this list. The according images, showing a plate numbering (plate 1-85), split up in three scale groups, in which all images have been processed following the very same routine: different charts of the presented locale have been taken at identical eye altitude over the topographic projection onto sea-level and at a size of 1400 by 1152 pixel; these charts have been loaded into AdobePhotoshopTM with a width of 933 pixel and eventually combined to the present display, in several cases emphasized by color overlays. This routine assures the comparability of all imagery from the same scale group, and, even though this thesis focuses on quality rather than quantity, provides a possible measurability as follows:

scale group	flag	eye alt.	scale <sup>779</sup>
1000	orange	1.000 m	bar length = approx. 300 m
3000	blue	3.000 m	bar length = approx. 900 m
5000	green	5.000 m	bar length = approx. 1.500 m

The attached black and white illustrations are taken from various publications, yet enlarged or downsized according to the formal layout of this thesis. The according source is given in squared brackets ([...]), respectively as an abbreviated bibliographical reference with page number referring to the subsequent bibliography.

Altogether this referenced incorporation of imagery from alien sources complies the German Federal Copyright Law, especially §§ 51, 62 & 63 UrhG (Urheberrechtsgesetz), and should not violate any original copyright.

If not mentioned differently, any other photograph, chart or sketch in this thesis is produced by the author.

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<sup>779</sup> The untypical scale result from the software program that displays odd numbers of meters at the chosen even number of meters in eye altitude; as for the qualitative significance and potential nonconformity, the author refrained from recalculating and redesigning conventional scale bars.

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### *Deutsche Zusammenfassung*

Die vorliegende Arbeit mit dem Titel "Die urbane Matrix" versteht sich als eine Annäherung an *Stadt* als dem 'größten Artefakt der Kultur und Geografie, Produkt eines komplexen Spiels verschiedenster Kräfte' (Vance Jr 1990: 4). In der Kürze dieser Betrachtungsweise ist nicht nur der Forschungsgegenstand selbst umrissen, sondern auch bereits die Schwierigkeit erfasst, die in seiner Bearbeitung liegt: Nach welchen Kriterien nennen wir beispielsweise Rothenburg, Ur und Mexico City gleichermaßen *Stadt*, obwohl sie doch zu vollkommen unterschiedlichen Zeiten an ebenso unterschiedlichen Orten entstanden sind (Jansen)? Und was erlaubt es uns, unsere heutigen städtebaulichen Formen als Nachfolger der bronzezeitlichen Stadtanlagen zu begreifen, die nach dem derzeitigen Kenntnisstand den Beginn von *Stadt* darstellen?

Wegen der Vielfalt und seines beständigen Wandels ist dieses 'Artefakt' *Stadt* schwer zu fassen, weshalb in generellen Anschauungen bisher zumeist funktionale Aspekte beachtet wurden, formale Aspekte hingegen der Betrachtung historisch abgeschlossener Vorgänge vorbehalten blieben. Dennoch erkennen wir in allen Beschäftigungen mit *Stadt* auch den Gedanken eines formalen Kontinuums wieder, der sich allein aus funktionalen Aspekten heraus nicht erklären lässt. Ziel dieser Arbeit ist es daher, Grundlagen für dieses formale Kontinuum *Stadt* zu beschreiben. Hierzu werden Faktoren und systemische Zusammenhänge erarbeitet, die städtebauliche Formen über ihre zeitlich-räumliche Gebundenheit hinaus grundsätzlich bestimmen, und somit auch die Form betreffend einen einheitlichen Begriff *Stadt* begründen können.

Den Ansatzpunkt für diesen Beitrag zu einer städtebaulichen Grundlagenforschung bilden zwei Überlegungen, die beide nicht aus dieser Disziplin selbst stammen: Die Erste umfasst eine phänomenologische Betrachtung, die eine Unterscheidung zwischen faktischen Städten und dem theoretischen Begriff *Stadt* vornimmt, welcher eine Idealvorstellung davon beinhaltet, wie eine Stadt sein sollte. Diese Betrachtung, die auf den Kunsthistoriker Giulio ARGAN zurückgeht, bildet die Grundlage für die Untersuchung eines Abstraktums *Urbane Form*, das die formalen Aspekte aus ihrer zeitlich-räumlichen Bindung löst und in der Folge eine Bestimmung von allgemeinen Charakteristika zulässt. Die Zweite stellt eine systemische Betrachtung dar, die Wechselbeziehungen zwischen verschiedenen bestimmbareren Faktoren impliziert, aus denen unbestimmbar Städte entstehen. Diese Betrachtung, die auf den Soziologen Niklas LUHMANN zurückgeht, erlaubt es uns, sowohl die Vielfalt als auch die Unvorhersagbarkeit tatsächlicher städtebaulicher Formen aufgrund der Vielfältigkeit der beteiligten Meinungen und Interessen zu erklären, als auch *Konditionierungs- und Kontingenzformeln* für diese Vorgänge zu untersuchen.

Beide Überlegungen gemeinsam begründen schließlich ein Gedankenmodell, welches sich in der *Urbanen Matrix* als einem dissipativen, d.h. offenen dynamischen System äußert, in dem verschiedene zeit- und ortsunabhängige Parameter wechselbezüglich für das Entstehen und die Entwicklung von zeit- und ortsgebundenen städtebaulichen Formen verantwortlich sind. Das System und seine Bestandteile selbst bleiben demnach abstrakt, bestimmen aber die konkreten *Motivationen* der an der Gestaltung Beteiligten und schließlich das faktische formale *Ergebnis Stadt*. Die vorliegende Arbeit stellt folglich eine theoretisch-normative Beschäftigung dar, die sich mit abstrakten Begriffen anstelle von gebauter Umwelt befasst.

Damit verbunden ist auf der einen Seite eine möglichst präzise Festsetzung von Begriffen, die oft Dekontextualisierungen oder auch Neologismen bedingt; und auf der anderen Seite eine Zuhilfenahme von philosophischen wie auch mathematischen Methoden, da der Städtebau selbst kein entsprechendes Instrumentarium anbietet. Besonders zu erwähnen ist hier die *formale Begriffsanalyse*, die von Bernhard GANTER und Rudolf WILLE entwickelt wurde, sowie Gottlob FREGES Überlegungen zur *Semantik*.

Die Schlüsselhypothese für die vorgeschlagene Herangehensweise ist dabei eine Unterscheidung zwischen *Qualität* und *Quantität*, die in der formalen Begriffsanalyse durch die Gegenüberstellung von *Attributen* und *Objekten* und in der Semantik durch die Vorstellung von *Intension* und *Extension* zum Ausdruck kommt. Hierbei verweisen städtebauliche Quantitäten auf eine zeitlich-räumliche Gebundenheit, wohingegen die Qualitäten eine Ableitung allgemeiner Aspekte zulassen. Diese werden anhand einer idealisierten Stadtgründung untersucht und schließlich zu Parametern städtebaulicher Form zusammengefasst. So ist beispielsweise davon auszugehen, dass in der Regel nur ein sicherer und gesunder Ort für die Stadtgründung attraktiv ist; Sicherheit und Gesundheit werden in der Folge zudem Kriterien für den Bau und die Entwicklung der Stadt selbst, die zusammenfassend auf einen Parameter *Attraktivität* verweisen.

Die Kernaussage der Arbeit bezieht sich hingegen auf die Existenz eines konditionierenden Systems, dessen Faktoren wissenschaftlich bestimmt werden können, wenngleich mangels einer Eineindeutigkeit (Bijektivität) zwischen abstrakten Parametern und faktischen Formen zwar eine retrospektive Erklärung möglich, eine prospektive Vorhersagbarkeit allerdings unmöglich ist; vergleichbar Heinz von FOERSTERS "Nicht-trivialer Maschine" (Foerster 1985: 62 ff.). So erklärt sich die Attraktivität einer Stadt gegebenenfalls durch ihre sichere und gesunde Lage, aber nicht alle attraktiven Städte müssen notwendigerweise an besonders sicheren und gesunden Orten liegen, noch sind solche Orte der Garant für Attraktivität und prosperierende Entwicklung.

Insgesamt gliedert sich die Arbeit in vier Hauptteile:

1. Eine einleitende *Betrachtung der westlichen Städtebauentwicklung* seit der Industrialisierung, die mit dem Entstehen des Städtebaus als wissenschaftlicher Disziplin gleichzeitig den Ausgangspunkt und das Betätigungsfeld für eine städtebauliche Grundlagenforschung bildet – wobei mangels eines fest umrissenen Forschungsfeldes keine klassische Einleitung erfolgt, sondern nach einer zusammenfassenden Ideen- und Rezeptionsgeschichte eine neue Herangehensweise vorgeschlagen und in ihrer Problematik erläutert wird;
2. Die Entwicklung eines Gedankenmodells, das konzeptuell die *Ursachen städtebaulicher Entwicklung* beschreibt und über eine genauere Darlegung seiner phänomenologisch-systemischen Grundlagen eine Herleitung von abstrakten Faktoren erlaubt – wobei diese Vorgehensweise die Basis für die Ableitung von qualitativen Parameter städtischer Form bildet;
3. Einen Katalog, der *qualitative Parameter* und ihre verschiedenen Kriterien definiert – sowie Überlegungen, die die weitere Bildung von Sekundärfaktoren innerhalb dieses parametralen Rahmens ermöglichen; und

4. Einen Ausblick auf die *Urbane Matrix* als ein zusammenfassendes System, das die Entstehung und Entwicklung städtischer Form konditioniert – wobei zunächst die Parameter mit den zuvor eingeführten Begriffen abgeglichen, dann die Wechselbeziehungen der verschiedenen Parameter untereinander besprochen und schließlich erste Überlegungen für mögliche praktische Anwendungen vorgestellt werden.

Wie im Untertitel dieser Arbeit festgehalten, stellt das vorgeschlagene Gedankenmodell trotz seiner angestrebten konzeptuellen Schlüssigkeit keine abgeschlossene Theorie dar; im Gegenteil sollen die phänomenologischen und systemischen Überlegungen weitere Theoriebildungen in einer städtebaulichen Grundlagenforschung anregen — nicht zuletzt, um vor dem Hintergrund zunehmend beschleunigender Städtebauprozesse zu einer gemeinsamen Wahrnehmung vom ureigenen Forschungs- und Arbeitsfeld *Stadt* zu kommen (Seifert 2003: 11). Viele, der in der Arbeit behandelten Themen gehen auf Erfahrungen zurück, die der Autor während seiner Tätigkeit am Lehr- und Forschungsgebiet Stadtbau-geschichte sammeln konnte; und viele Gedankenanstöße stammen aus den Diskussionen mit Michael JANSEN, die immer wieder die im Kern unlösbare Frage behandelten 'Was ist Stadt?'.



