CAD AS A TOOL IN URBAN DESIGN
A Study in Reunited Germany

by
Axel Jurkschat
M.Arch., University of Wuppertal
Wuppertal, Germany
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Signature of the author

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Axel Jurkschat

Certified by

_____

William J. Mitchell
Dean, School of Architecture and Planning
Professor of Architecture and Media Arts and Sciences
Thesis Supervisor

Accepted by   (

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Roy Strickland
Chairman, Departmental Committee on Graduate Students

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Master of Science in Architecture Studies

ABSTRACT

Architecture is a phenomenon of space and time. Since ancient times mankind has found its place in space and time with the help of architecture. Thus architecture refers to more than just practical requirements, science and business. It is concerned with existential meaning.

Every architect experiences the relationship between the ideas, the drawings, the completed buildings and the urban environment, when a building is erected. Since the era of humanism, when the modern theory of architecture was established on Vitruvius, there have been repeated attempts to define and develop this relationship. The system in situ is barely able to manage all the information concerning the design as well as the erection process.

This thesis is an attempt to organize all available information on an urban scale using a CAD system and develop a design strategy to serve the idea of reflection of the past in today's urban environment. With a famous past, a rapidly changing present and, hopefully, a brilliant future the City of Dresden / Germany is used as an example to demonstrate both tasks.

Thesis Supervisor: William J. Mitchell
Title: Dean, School of Architecture and Planning
          Professor of Architecture and Media Arts and
          Sciences

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Uli Zech
Holger Groschopp

For the love, understanding and support
My wife Marita

TABLE OF CONTENTS

INTRODUCTION

This project intends to create a virtual environment, an abstracted mirror of the built environment. An interesting paper based example is the axonometric plan of midtown New York City by Constanine Anderson that stands in the tradition of the 1739 Bretez-Turgot Plan de Paris. The fine texture of the detail in Anderson's plan leads to personal micro-readings, individual stories about the data: shops visited, hotels stayed at, walks taken, office windows at a floor worked on - all in the context of an entire building, street, and neighborhood. This picture is a report of the perceptual world of three dimensional space.

Many information on the workday reality report information of space and time. Painting four-variable narratations of space time onto paper combines the three-dimensional map and a time series. Schedules are among the most widely used information displays, with a sheer volume of printed images comparable to road maps, daily weather charts. In all these cases the same design structure is repeated for all images. An economy of perception is the result; once viewers decode and comprehend the design for all slice of data, they have familiar access to data in all the other slices. As our eye moves from one image to the next, this consistency of design allows viewers to focus on changes rather than changes in graphical composition.

The urban environment itself is a narrative of space and time where we can just see one timeslice, the present. In the virtual world of CAAD systems we can recreate as well almost any other timeslice. A time series like this gives an inside view of urban development. The understanding of the qualities that were generated over time bear the key for new design strategies to fulfill today's urban requirements..
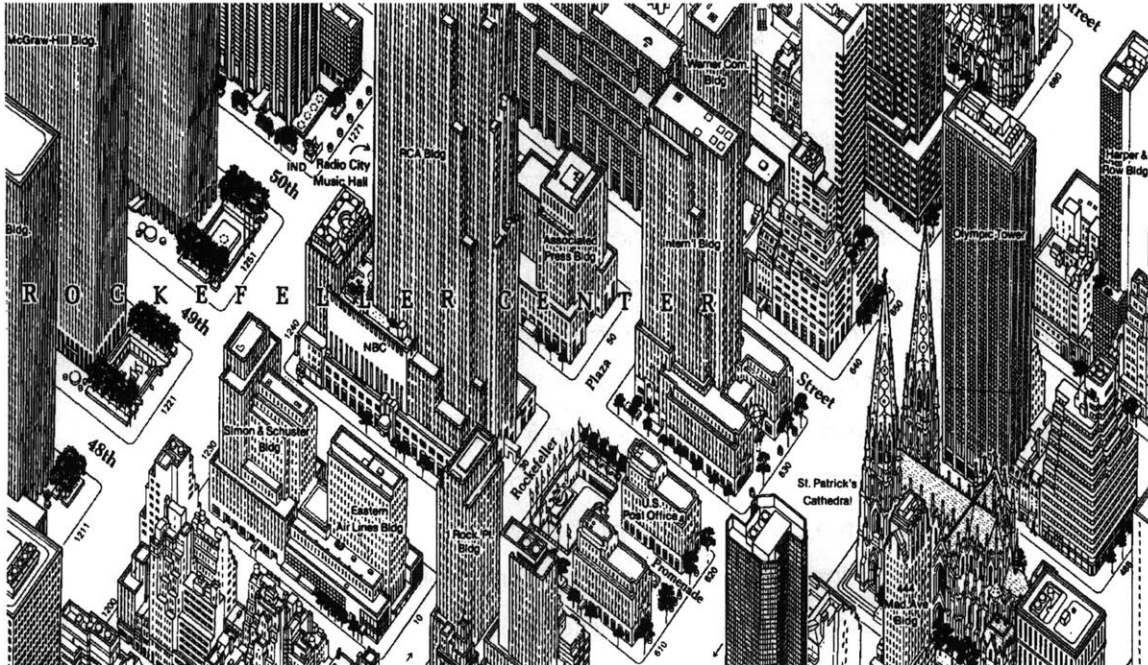
The CAAD System

This project was developed with the intention to manage and display the information that is usually displayed in axonometric plans within a CAD system. An axonometric plan allows one to understand some of the spatial structure of an urban environment. If the given information is dense enough one can imagine or remember how that space functions. The qualities of that space become obvious to the reader.

The abstracted information of maps captured in the flatland of paper or even video screens can hardly lead to personal micro readings that appear when examining the Constantine Andersons isometric map of Midtown Manhattan. This map, standing in the tradition of the 1739 *Plan de Paris* by Michel Etienne Turgot and Louis Bretez, stimulates individual stories about the data: shops visited, hotels stayed at, walks taken - all in the extended context of an entire building, street and neighborhood. Although an important concession has been made in the intention to display an abundant density of information: The map's streets have been widened to reduce

top
The Isometric Plan of
Midtown Manhattan
1989

opposite
Plan de Paris
Michel Etienne Turgot
and Louis Bretez 1739

9

the masking of some buildings by others.

The paperbased isometric maps can show an astonishing
density of information as Anderson's example shows but their
use is limited. Once a map is printed it documents just one
specific view point at one specific moment in time. This can't
be changed or updated. To reuse the printed information
one has to redraw its contents. The computer environment of
a CAD system does have both of these problems. One can
move around freely in the virtual world of the 3D models.
Whenever they need to be reused or updated it is easy to
copy and modify them and when necessary make printouts.

As the printed maps show a large amount of information is
necessary to display an urban environment. The concept
that lies behind this project arranges the information in
different categories and areas and stores it so as to have it
accessible for later use. To organize the queries all entities are
indexed and connected to a database. This external or
internal database contains additional information about the
entity, in example the date a building was erected, de-
stroyed or torn down, its street address and height in case of
the 3D model of a building.

The categories are streets, parcels, administrative boundaries
or the 3D models of the buildings. The entities are grouped
together in order of their location in the coordinate system
and the administrative boundaries. Depending on the size
the entities are all stored in a single file or each one separate.
This is related to performance issues and maintainability.

To access the information a base drawing is opened in
AutoCad for Windows. In the case of Dresden it is a drawing
showing the city boundaries and the river Elbe. The next step

10

is to open additional drawings for access with the AutoCad
Data Extension, so that queries can collect the entities of
interest. A query can collect all the entities in a specific area
that fit in the frame of a Sequential Query Language (SQL)
query. Both forms of query can be combined as well. Such a
query could produce all buildings built in a specific time
period in a specific area that still exist. A second query could
produce all other currently existing buildings. The entities can
be altered while being queried, for example their color could
be changed, to make clear in the over all context which
buildings were built at a specific time.

To visualize the 3D model beyond the wireframe representa-
tion of AutoCad the program Accurender is implemented
into the AutoCad environment to create photorealistic
images and animations. The program accurately places
sunlight in the appropriate position and calculates shadows,
transparency, diffusion, reflection and refraction from surface
properties of user defined materials. It produces high quality
images in true color. This opens the possibility of proofing
design ideas with images to support them without having to
leave the AutoCad or Windows environment.

To support additional information needs the program Foot-
note for AutoCad for Windows is as well implemented into the
AutoCad environment. This program allows one to connect
visual, as well as nonvisual information, to AutoCad entities. If
one has pressed the footnote button from one of the menus
and than clicks on the AutoCad entity the system brings up
the appropriate image or text. To show the perspective of an
image, the symbol of a pushpin is used to symbolize the
viewpoint and perspective. In the case of this project it can
bring up images from the relevant time frame.

As opposed to printed maps that always show just one time slice this system is capable of holding information about the situation of a time period. Depending on the needs the information can be organized and displayed. Beyond this capability the system can be used to modify the contents or even build up alternatives of existing conditions.

THE TECHNOLOGY

This project was developed on a DOS / Windows platform. Some of the programs that are used only run in this environment. The hardware listed below should be considered as a requirement since the amount of data that need to be processed is quite large.

HARDWARE :

- Pentium Processor at 60 Mhz on a PCI - ISA Motherboard
- 32 MB RAM
- Storage Capacity on Harddrives 2.7 GB, on Removable Drive 255 MB (unlimited)
- Tape Backup 250 MB
- Graphics Board with 4 MB VRAM running at a resolution of 1280 x 1024 pixels in 24 bit color depth
- 17" Monitor with a max. resolution of 1280 x 1024 pixels in 24 bit color depth

SOFTWARE :

- MS - DOS 6.2
- Windows for Workgroups v 3.11
- AutoCad for Windows Release 12
- AutoCad Data Extension (ADE) v 1.0
- Footnote for AutoCad for Windows v 1.0
- Accurender Raytracer v 2.0
- Photoshop v 2.5
- Paradox for Windows v 4.5
- MS -Office v 4.0
- Pagemaker v 5.1a
- Acadgraph Bitmap v 6.0
- PC Tools for Windows v 2.0
- Adobe Typemanager v 2.5
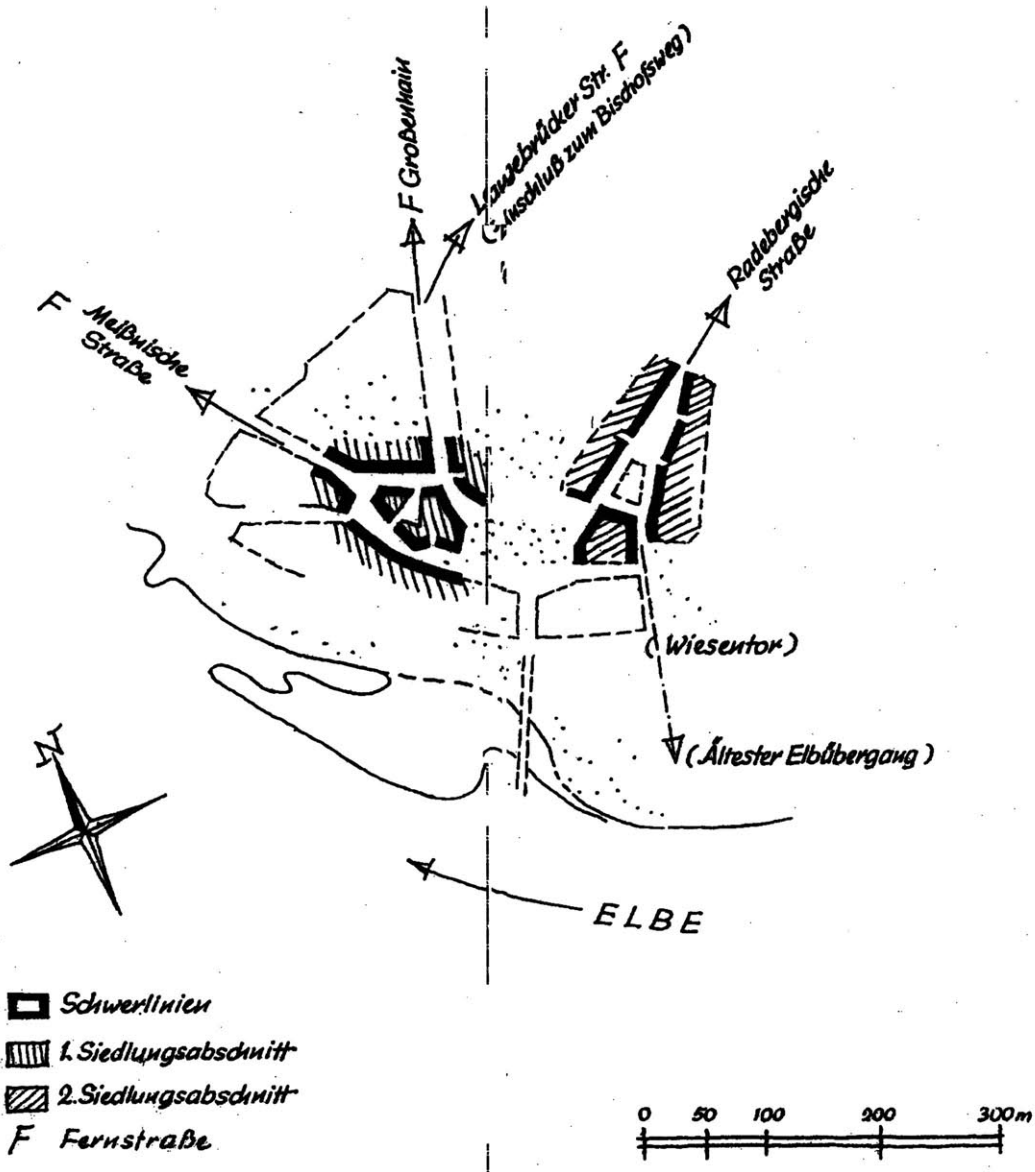
FILES

Directory \dresden\dbgrst

foot_old.dwg footprints of pre-war period on layer footprint
foot_geg.dwg footprints of present on layer footprint
gr_alt_g.dwg parcels und ID Altstadt present;   parcels on layer alt1-prz-gegenw
                                                       parcel ID uaf layer p_id
gr_alt_a.dwg parcels Altstadt pre-war   parcels on layer alt1-prz-alt
                                                       parcel ID on layer p_id
geb_geg.dwg buildings present on layer Gebaude
geb_alt.dwg   buildings pre-war auf layer Gebaude
          EED Structure in geb_geg.dwg + geb_alt.dwg: #NUTZFLAECHE
                                                           #GESCHOSSE
                                                           #BESITZER
                                                           STRASSE
                                                           #HAUSNUMMER
                                                           #BAUJAHR
                                                           #ZERSTOERT
                                                           #ABGEBROCHEN
                                                           #P_ID
fn_old.dwg footnotes pre-war on layer footnote
fn_geg.dwg footnotes present on layer footnote
p_id.dbf external database DBase III+ connection to gr_alt_g.dwg + gr_alt_a.dwg
dblink*.qry   query files to be used with the ADE to connect Autocad entities to
               external database; editable with text editor

Directory \dresden\plan

baume.dwg   trees 2D Altstadt
baume-3d.dwg trees 3D Altstadt
befestig.dwg fortifications Altstadt
bl2500.dwg   grid overlay distance 2500 meter; base of coordinate system
boesch.dwg   slopes 2D Altstadt
dachaufs.dwg rooftops Altstadt
elbe.dwg   river Elbe
faere.dwg   ferryboat
gemarkung.dwg local bounderies
nam-alts.dwg streetnames Altstadt
nam-fri.dwg   streetnames Friedrichstadt
r_500.dwg   grid overlay distance 500 meter
stadtgr.dwg   city bounderies
strassb3.dwg streetcar 3D Altstadt
strassba.dwg streetcar 2D Altstadt
strasse3.dwg streets 3D Altstadt
strassen.dwg streets 2D Altstadt

Directory \thesis\images

images connected to footnotes

F Meißnische Straße

F Großenhain

Langebrücker Str. F
(Anschluß zum Bischofsweg)

Radebergische Straße

(Wiesentor)

(Ältester Elbübergang)

N

ELBE

▢ Schwerlinien
▥ 1. Siedlungsabschnitt
▧ 2. Siedlungsabschnitt
F Fernstraße

0   50   100   200   300m

A BRIEF HISTORY OF THE CITY OF DRESDEN

In the middle ages the development of the city began along the river when in 1208 the settlement at the left side of the river obtained city rights. Although the city was divided by the river, the agenda for the over all design was strongly influenced by the idea of the streaming water as a connecting element. In those days the waterlevels were higher than today. This caused a very fortunate connection between the elements of the two settlements. If the surface of the water

first urban development plan
the settlement on the right river bank with two centers of development

15

was far lower or bordered by high embankments, the optical relationship to the body of the city would loose tremendously. (Example: Paris, banks of the Seine). In Dresden it was of major importance that the main part of the city was located on the concave side of the river banks. The tortuosity of the river created the visual effect that the vertical dominates of the city seem to stand along one row. The scheme of the design of the river bank was carried on with the creations of the baroque, an example is the catholic palace church (Katholische Hofkirche) which lead to the solution that existed until the destruction in 1945. Even today that idea dominates the mental and sculptural appearance of Dresden. The "city along the tortuosity" last but not least owes part of its fame to this so gracefully designed silhouette, that seems to come out of the curved river banks.

The master builders of the middle age must have been used to this sort of sculptural expression. The urban designers of this time created a large variety of masterpieces of dominates in inclination.

The joy of designing urban silhouettes near the ocean or along a river is reflected in many renderings created by illustrators, painters and architects of all times.

The situation in Dresden offered the opportunity to connect the water with the urban body and the silhouette. The necessity to closely connect the two settlements produced the felicious expression of the design of the bridge.

The development from the settlements of the middle ages to the Dresden as we know it today, it took ten steps. An area safe from flooding encouraged the development of the first settlement on the right side of the river. The name Dresden =
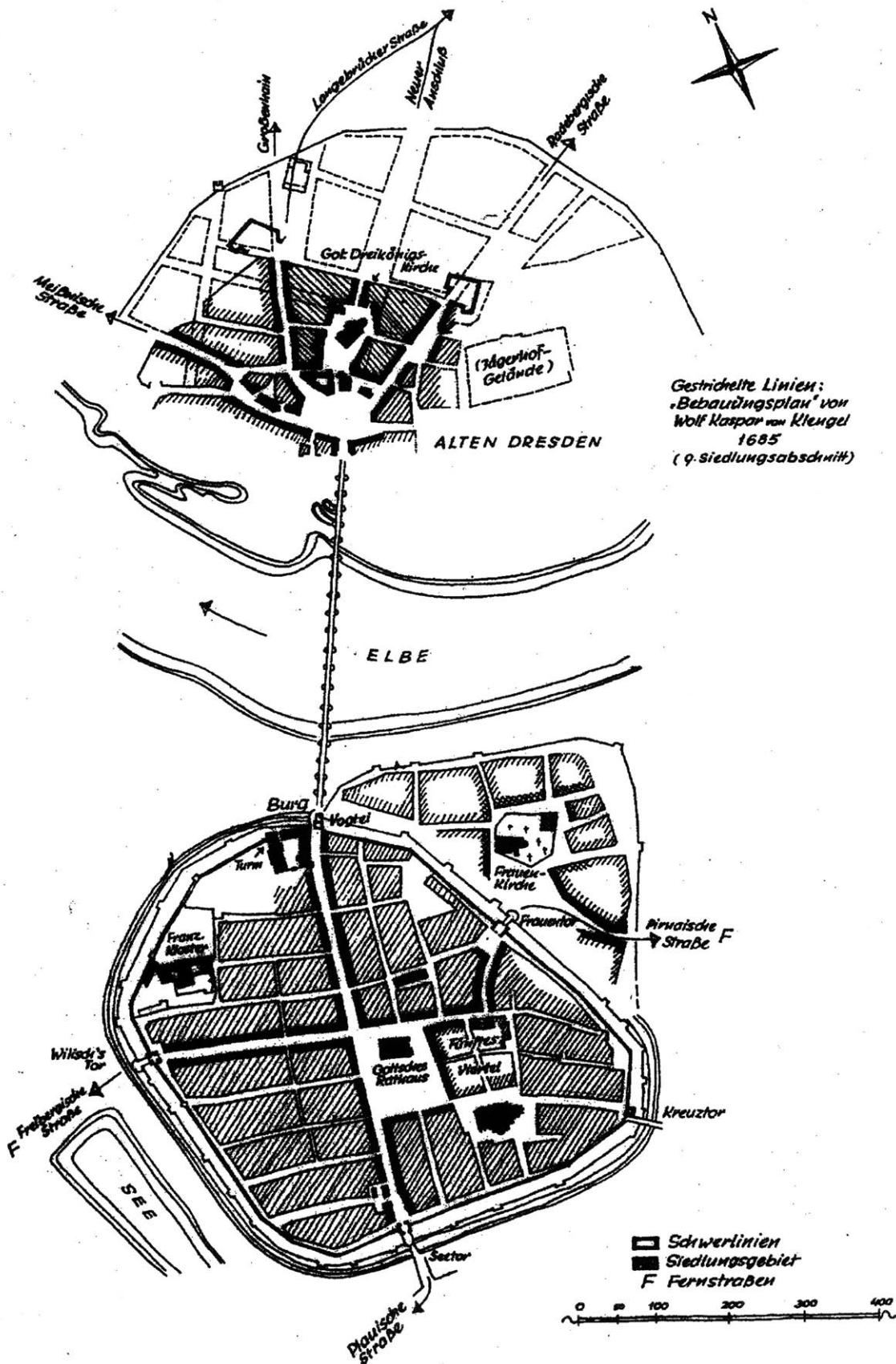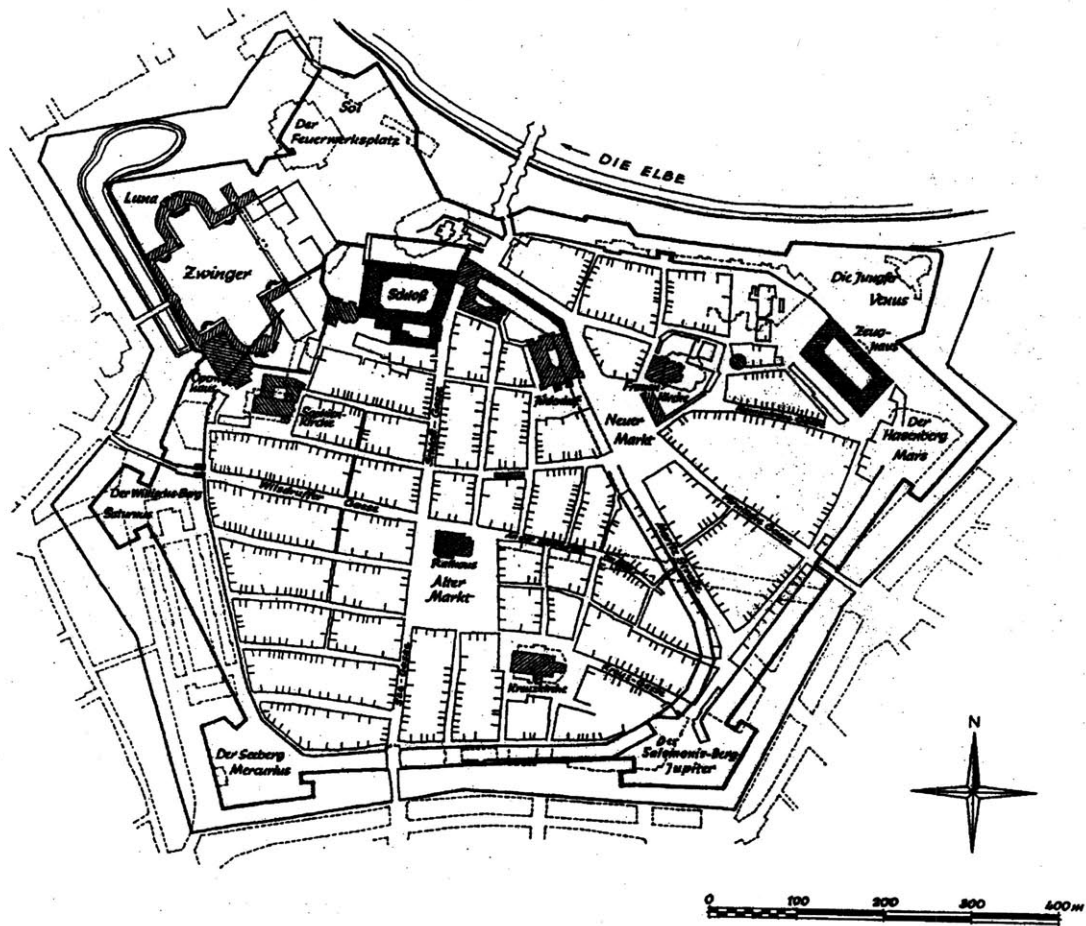
16

Großenhain F
Langebrücken Straße F
Meißnische F Straße
Neue Anlage
ALTEN DRESDEN
Bautzner Straße F
(Wiesentor)

ELBE

«Pons major»
Ältester Übergang

Münz-gasse
Burg
Turm
Vogtei (mit Turm)
Schloss
Markt platz
Taschenberg
Franz. Kloster
Gr. Brüdergasse
F Freibergische Straße
Neuer Markt (heute Altmarkt)
Kauf-haus I
Kreuz Kirche
Große Kreuzgasse
SEE
Älteste Begrenzung
F Plauische Straße (ältere Ausmündung)

Schwerlinien
Ältere Schwerlinie
Siedlungsgebiet
F Fernstraßen

N

0   50   100   200   300   400

17

Drezane = inhabitants of the swamp forest developed from the Slavic language. The building block around Grosse Meissner Gasse and Fleischer Gasse existed until its destruction in 1945 when a different grouping system with its own center other than the surrounding structure developed. That an area on the right side of the river was favored over the left bank seems to be related to the course of the trade routes. Two settlements emerged at branch points of the road. A similar development happened a little bit later, also on the left river bank. This development can be seen as typical in that time period. Mainly at the intersection of trade routes marketplaces formed that later became cities.

The encampment around the chapel of the Frauenkirche is the first of the earliest foundings of a German city on the left river bank. The layout of the block and the geometric form of the market place is quite clear. This new city center is a successor of the type on the other side of the river. The regular expansion must have been difficult, because of problematic terrain. Although the chapel was quite small, it had a large parish. It was replaced, after numerous remodeling, by the Frauenkirche in the year 1727 by Georg Baehr. Noteworthy and especially problematic is the northern exit of Muenzgasse to the river (West of the Frauenkirche chapel). Here where was the narrowest section of the river which must have been the place to cross the river. Ever if we assume that the waterlevels were higher than today it must have caused the least technical problems. In the area of the later erected bridge (Augustusbruecke) the river must have been shallow, it widens up tremendously.

opposite:
fifth urban development plan about 1500
the oldest part of Dresden (uppe side) in its third step for development
in the development on the left river bank the markt place in the size that existed until 1945

In the process of redesigning the village on the left riverbank major changes in the traffic system became necessary. A bridge had to be erected and the trade routes had to be

18

N

Langebrücker Straße

Neuer Anschluß

Rochsburgische Straße

Gohliser Weg

Got. Dreikönigs-Kirche

Meißnische Straße

(Jägerhof-Gelände)

ALTEN DRESDEN

Gestrichelte Linien:
„Bebauungsplan" von
Wolf Kaspar von Klengel
1685
(9. Siedlungsabschnitt)

ELBE

Burg

Vogtei

Turm

Frauen-Kirche

Franz. Kloster

Frauentor

Pirnaische Straße   F

Gottsches Rathaus

Rathaus

Viertel

Wilsdi's Tor

Freibergische Straße   F

Kreuztor

SEE

Sector

Plauische Straße

Schwerlinien
Siedlungsgebiet
F Fernstraßen

0   50   100   200   300   400

19

rerouted to suite the intended new urban organism. By necessicity, these works that might have lasted centuries must have been subsidized by royal power. This action to rearrange the cities in this area, south of the via regia, is one of the important urban and regional plans of the middle ages. This large scale enterprise of founding the cities, developing the necessary traffic infrastructure and securing it with fortresses is the foundation of Saxonia's success. It must have been assumed necessary to build a castle near the bridge across the river Elbe. From the viewpoint of development policy the river showed excellent potential for growth of the City of Dresden.

To develop a city crown the necessary hill is missing. Nevertheless the urban designers of the middle age used every little

Fortified City of Dresden in 1721 superimposed on the map of 1944

opposite:
map of the old part of the city in the condition of 1944

20

ELBE

21
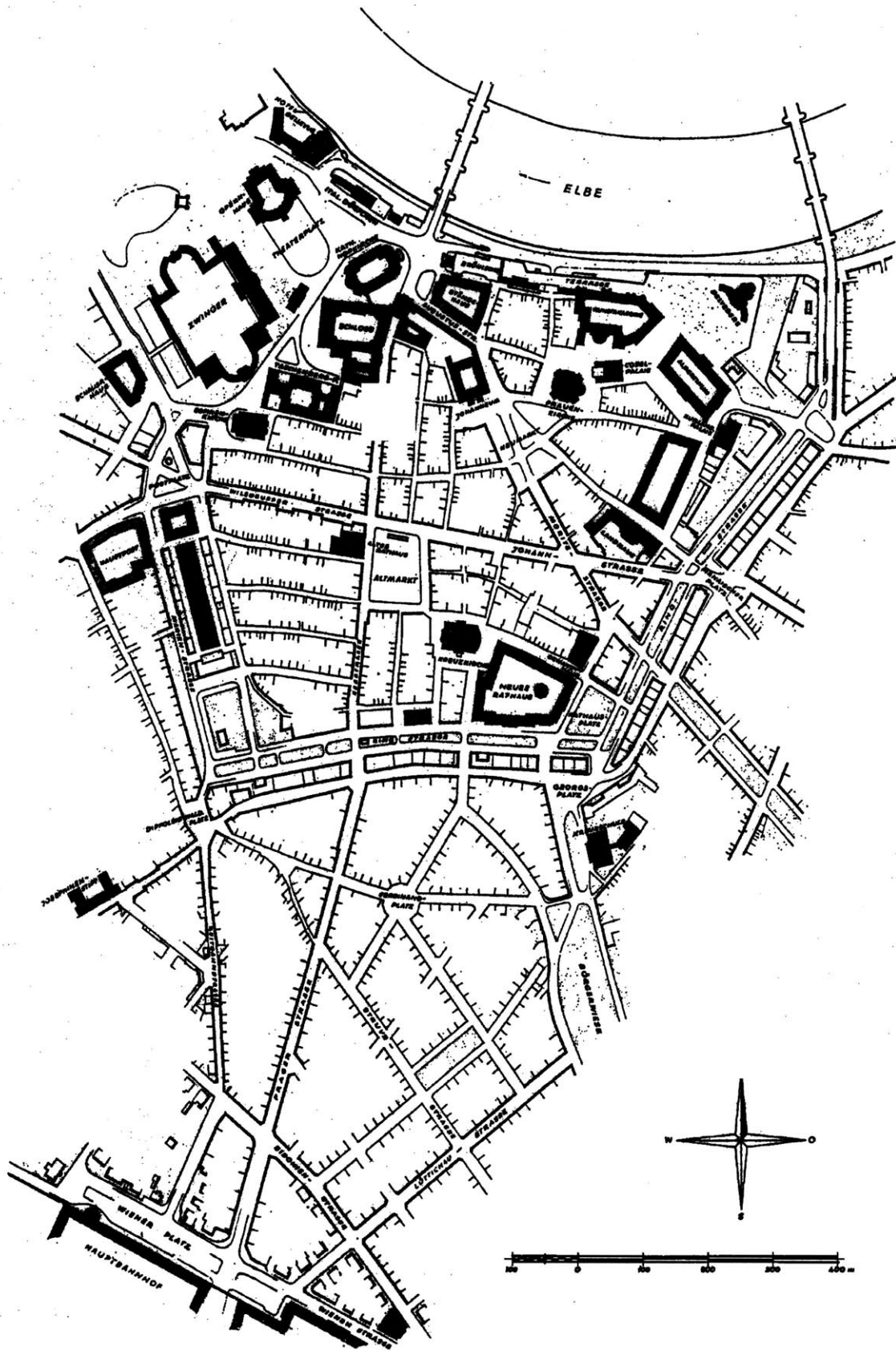
opportunity to pronounce an elevation by positioning impor-
tant architectural accentuations there. Even today the
European urban designers use the same strategy while city
extensions at the turn of the century were done very sche-
matically over hills and valleys.

aeral view
view form south west
onto the city center in
1944

In the beginning Dresden's economic success was very much
based on intensive traffic along the river. The urban develop-
ment was strongly related to the extension of the mining town
of Freiberg. Freiberg, because of its success based on silver
mining, was hooked up to the traffic system from Franconia
to the east. The road, that connected Nuernberg and
Freiberg, crossed the river Elbe in Dresden. Over all, Dresden is
rising to an important position, in the beginning, very much
related to regional development policy and strategy.

While the planned settlement on the left river banks prospered and joined with the old village around the Frauenkirche chapel, a new and third center of settlement developed on the right side of the river. Located between the two old ones and at the end of the bridge it dominated and finally joined all three together. After the city fire of 1685 it got a new shape and until 1945 its "final" layout.

Noteworthy is the fact that urban designers of the Baroque moved the focal points of their design close to the river banks. The urban answer to the "Japanese Palais" on the right river banks was the "Max Palais" on the other side. So the river was an important part in the connection of the two parts of the city. Following this strategy Dresden grew to an urban piece of art of unique unity.

Kreuzkirche

Seestr.

Altmarkt

Altes Rathaus

S

O ─ W

N

Johannstr.

Schloßstr.

─ ─ ─ *Tatsächliche Raumbegrenzung*

───── *Erlebte Raumfassung*

:·::· *Raumverdichtung an entscheidenden Raumteilen*
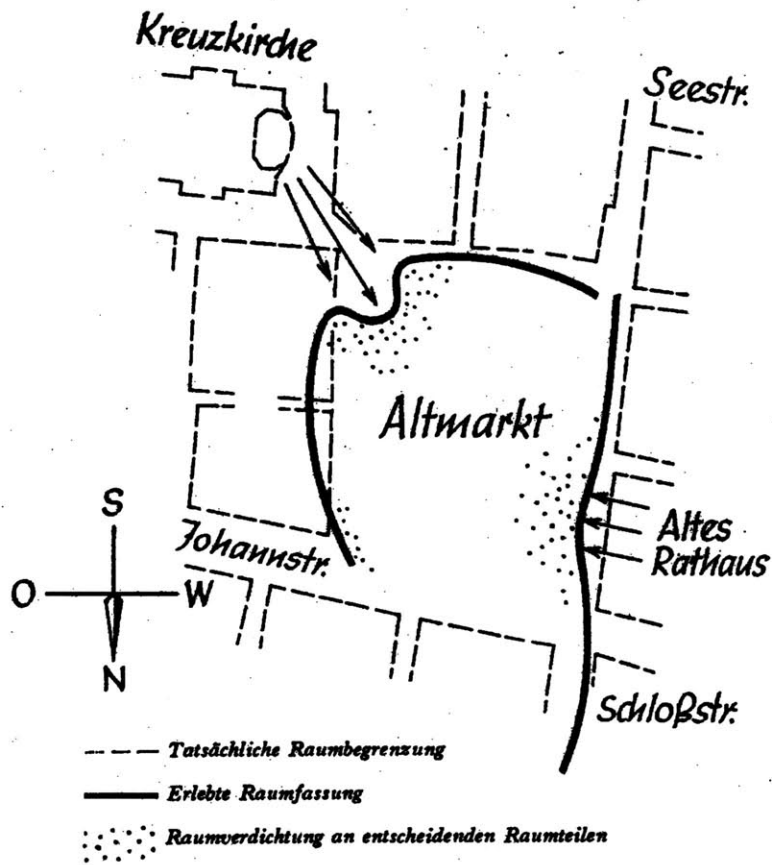
Out of the richness of the urban ideas in Dresden the "Altmarkt" is an interesting example. The three towers of the church of the holy cross (Kreuzkirche), catholic palace church (Katholische Hofkirche) and the dome of women's church (Frauenkirche) give architectural "life" to the quadrangle of the Altmarkt. The famous painting of Canaletto bears witness of the situation in 1752 where the dome and lantern of the Frauenkirche is clearly visible from the Altmarkt. Unfortunately after the consciousness for the over structural idea decreased the height of the buildings walling the Altmarkt were increased so that the view to Frauenkirche was blocked. The Campanile like tower of the catholic palace church (Katholische Hofkirche) dominated the Schloss Strasse as an architectural conclusion and in doing so took part in the experience of the Altmarkt.

map of the Altmarkt in its condition in 1945
the map visulizes the spatial expeience

24

The Altmarkt just seemed to be just a quadrangle, nevertheless, nobody in Dresden would have experienced it in a different way. The eastern wall with the retail store "Defaka" moved transversally and conically towards the church of the holy cross (Kreuzkirche) with the effect that the space in front of the church is somehow included in the Altmarkt. This attitude towards the treatment of the relationship between adjected space is typical for the urban design ideas in the middle ages in Germany and can be found in many other old cities as well.

Some of the atmosphere in Dresden and the very warm and soft lighting in the valley of the river Elbe is captured in the paintings of the artists Kuehl, Beckert and Zeisig. The level of fine detail of the Zwinger and the catholic palace church (Katholische Hofkirche), together with special lighting condi-

View along Prager Strasse
in the front the famous building "Dresdener Feuerversicherung"

tions reflect the real architectural physiognomy of this city along the Elbe. The walls bordering the streets and spaces, determined by the narrow parcels, express the closeness of the neighborhoods and reflect the idea of urbanism of the middle ages in Germany. This form of expression is closely related to the scale that is being used. In most of today's urban architecture that is designed with a different dimension in mind, this sort of utterance does not exist any more. The joy and certainty in the use of such restrictions is echoed in buildings like the Zwinger, Taschenberg Palais or Kurlaender Palais. Very typical is the sophisticated use of plaster and stone to create a

sort of harmony that is usually found in music. The use of
stone was determined by the value a building had in this very
special community of buildings.
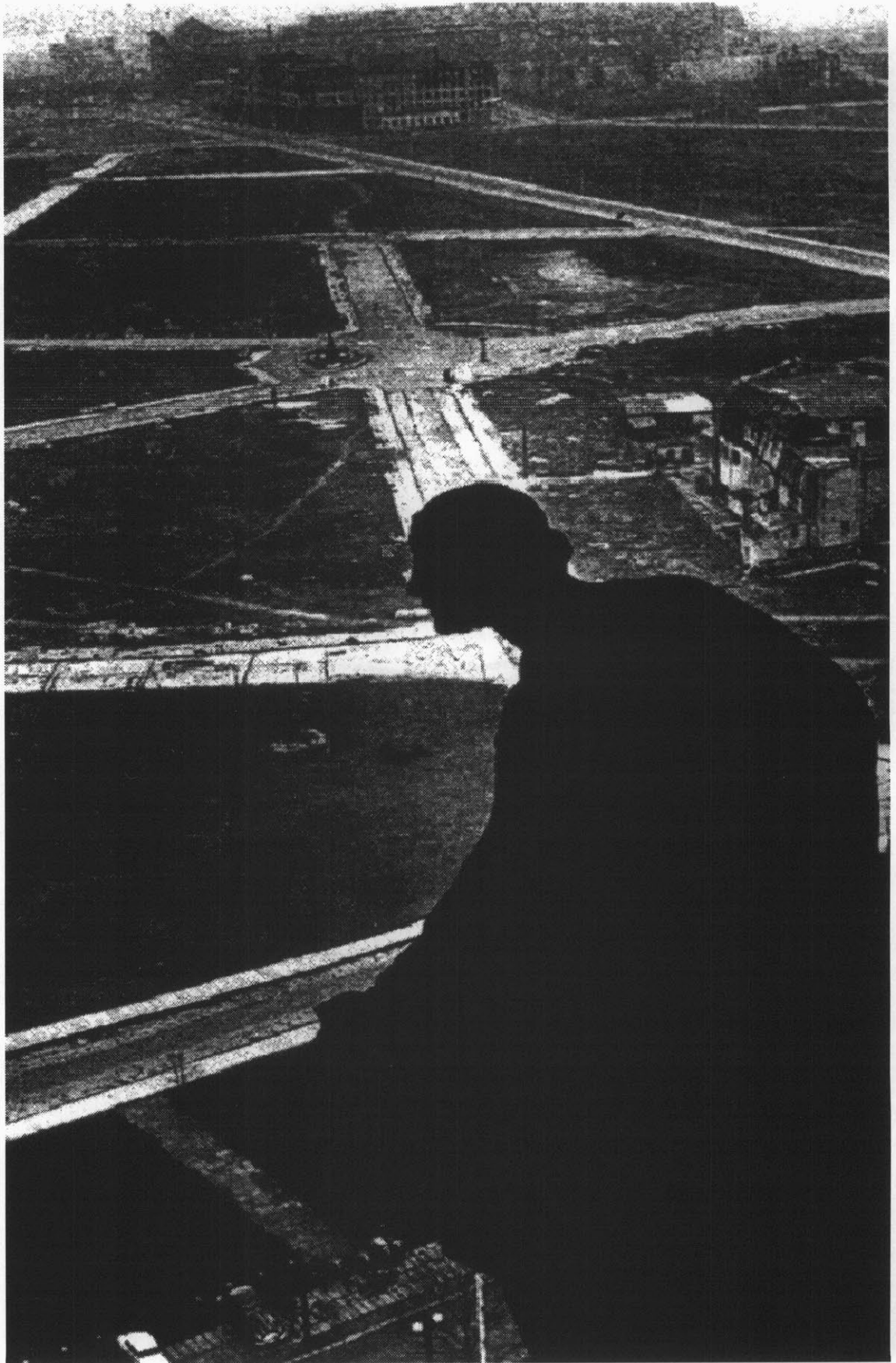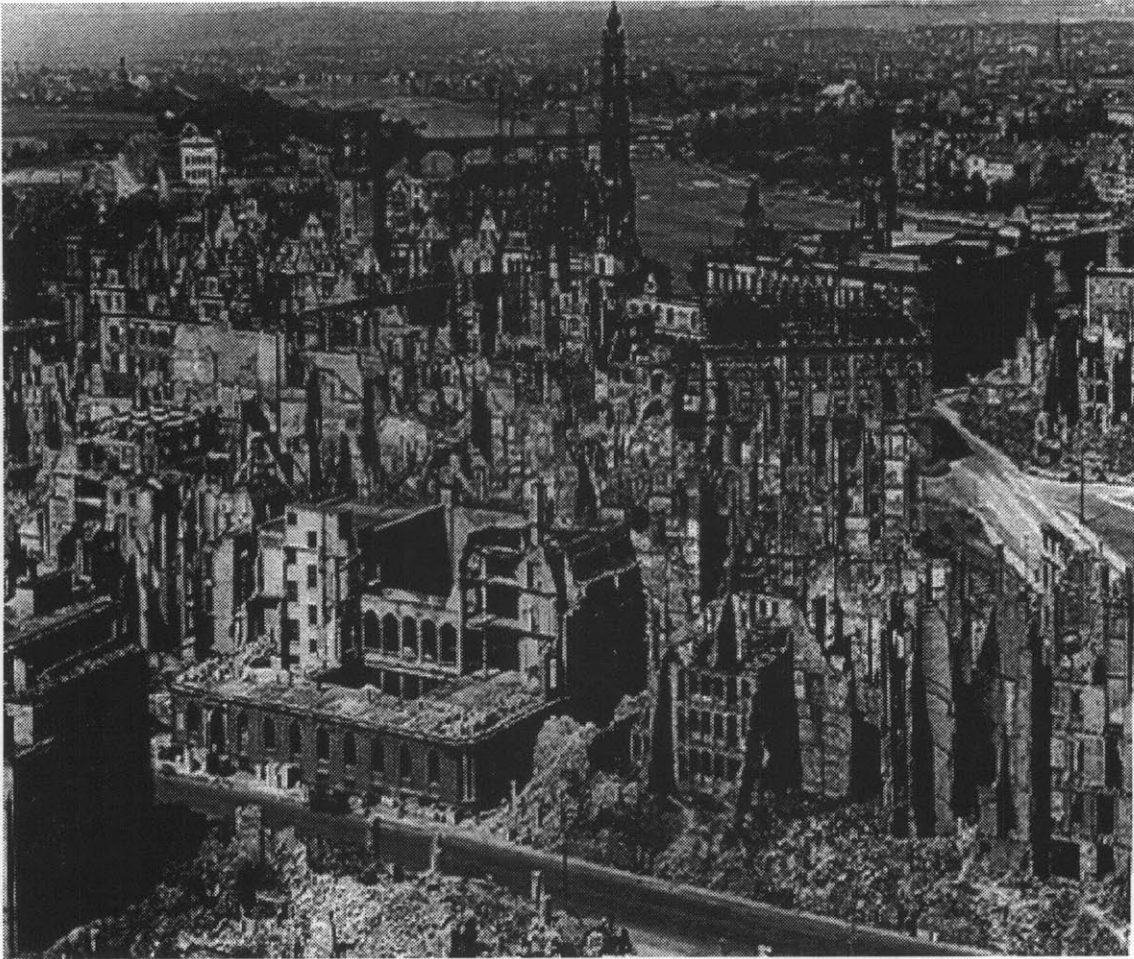
THE SITUATION IN DRESDEN TODAY

The city of Dresden before its destruction in 1945 became some kind of legend. Even today the glory as a place of royal residence, as a city of art and music is still in situ.

The cultural propaganda of the SED-regime of the former German Democratic Republic always used this as a political instrument, for example by exhibiting Dresden's art treasures in western countries. Very few western visitors could view this image in Dresden themselves since it was located behind the iron curtain. For most people Dresden was for 40 years in a different world. Since Germany's reunion in 1989 many people visiting this famous place have discovered that Dresden still exists but that only rudiments of its beauty and cultural traditions survived. The existing socialism left an

top
aeral view
view from south the
tower of town hall to
north west 1947
the roads have already
been cleared

opposite
aeral view to the south
along Prager Strasse
after the ruins have been
torn down in 1955
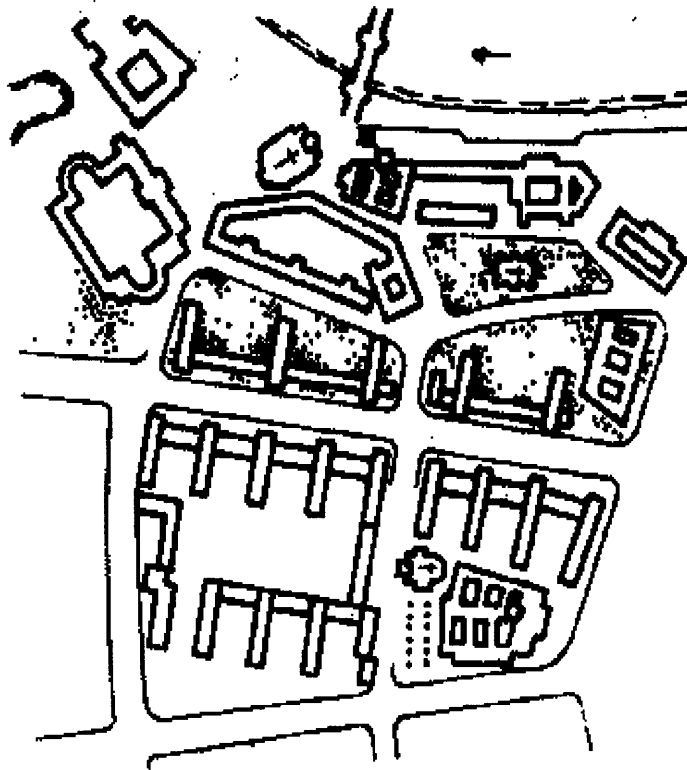
architectural and urban disaster in most parts of the city. The surviving and reconstructed historic monuments seem to be ghosts in the new Dresden, an ugly, banal and unfinished city. The 700 years old urban structure in which they had been embedded can't be recognized anymore.

proposal for rebuilding Dresden by Mart Stam in 1946

The characteristic layout with the quadrangle of the market-place in the middle and the irregular structure of the oldest village near the Frauenkirche had been preserved until the destruction on the night of 13th to 14 Feb. 1945. The baroque had overformed the image of the city center. Not only large structures such as the Zwinger, Hofkirche and Frauenkirche made these changes but also the housing of the aristocracy and the wealthy inhabitants with baroque facades and high mansard roofs dominated the picture of this city.

30
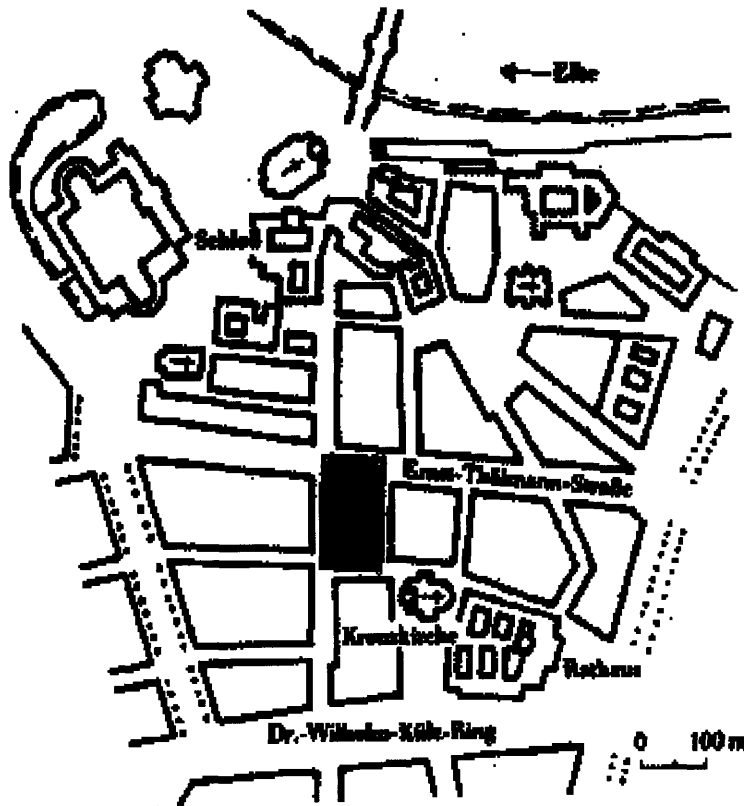
Dresden was also a city of the 19th century. This was not just shown by number, but also by measures of quality of the large representative buildings from the period from Gottfried Semper until Jugendstil. Within this time it became a cultural center, a "Kunststadt". This started in the last years of the 18th century when Dresden became the residence of famous poets, philosophers, musicians and artists. A long list could be written, but a few examples are: H. v.Kleist, Jean Paul, F. v.Hardenberg, E.T.A. Hoffmann, C.M. v.Weber, C.D. Friedrich, the brothers Schlegel, F. Schiller, R. Wagner, later Heckel, Kirchner, Schmitt-Ruttloff, Bleyl, Kokoschka, Dix. These people made Dresden the capital of the romantic movement, a tradition that was dominant up into the 20th century. This was possible because wealthy people from all over Europe came to live a cultivated live in Dresden among these famous artists.

proposal for rebuilding Dresden by Herbert Conert in 1946

In the night from the 13th to 14th Feb. 1945 the strongest
clobbering of the second world war laid all this into ruins.
After a second clobbering in March 1945 the area of destruc-
tion reached 6 square miles in size.

The new Dresden was rebuilt after the founding of the Ger-
man Democratic Republic, according to the plan to replace
the old feudalistic city with a new city of a new, socialistic
society. The results were fragments of a city full of contradic-
tions reflecting the distance between the continuously
changing goals and the poor economic conditions. In the
case of the area along the Prager Str. the planning process
began in 1962. Based on the result of a competition in 1963 it
was decided to execute the proposal of the architects
Sniegon, Roethig, Konrad. According to their plans the

areal view to the south
along Prager Strasse in
the 1970s
in the background the
railway station

32

aeral view to the north along Prager Strasse in the 1970s
in the background the tower of Kreuzkirche

Prager Str. today is 220 - 280 ft. wide instead of the old north south axis that was just 45 ft. wide. The built up area starts with high rise apartment blocks near the railway station and continues on one side with four perpendicular blocks to the axis, disk shaped apartment and hotel blocks that are connected by low rise retail buildings, and on the other side, parallel to the axis, another long disk-shaped high rise apartment block. After 1970 this ensemble was completed by an cylindrical cinema building and a large retail store. The problems of the new Prager Strasse are its functionality, the concepts of single buildings, and its dimension. So far urban life was not able to fill in this kind of space. Precedents of this project can be found in Rotterdam and Stockholm.

Further north the Prager Strasse leads to the Altmarkt. Today's

layout shows three times the dimension of the original. Two sides of the Altmarkt are framed by building 1.5 times higher than the originals. The third side is faced by the Palace of Culture, a low rise exhibition hall similar to the building type L. Mies van der Rohe developed. The building is a solitaire, it has no urban or spacial relationship with the surrounding buildings.

The reconstruction of Dresden, 50 years after its destruction, is not finished. 46 years of socialistic planning have made this place, once famous for its beauty, a chaos of unconnected fragments.
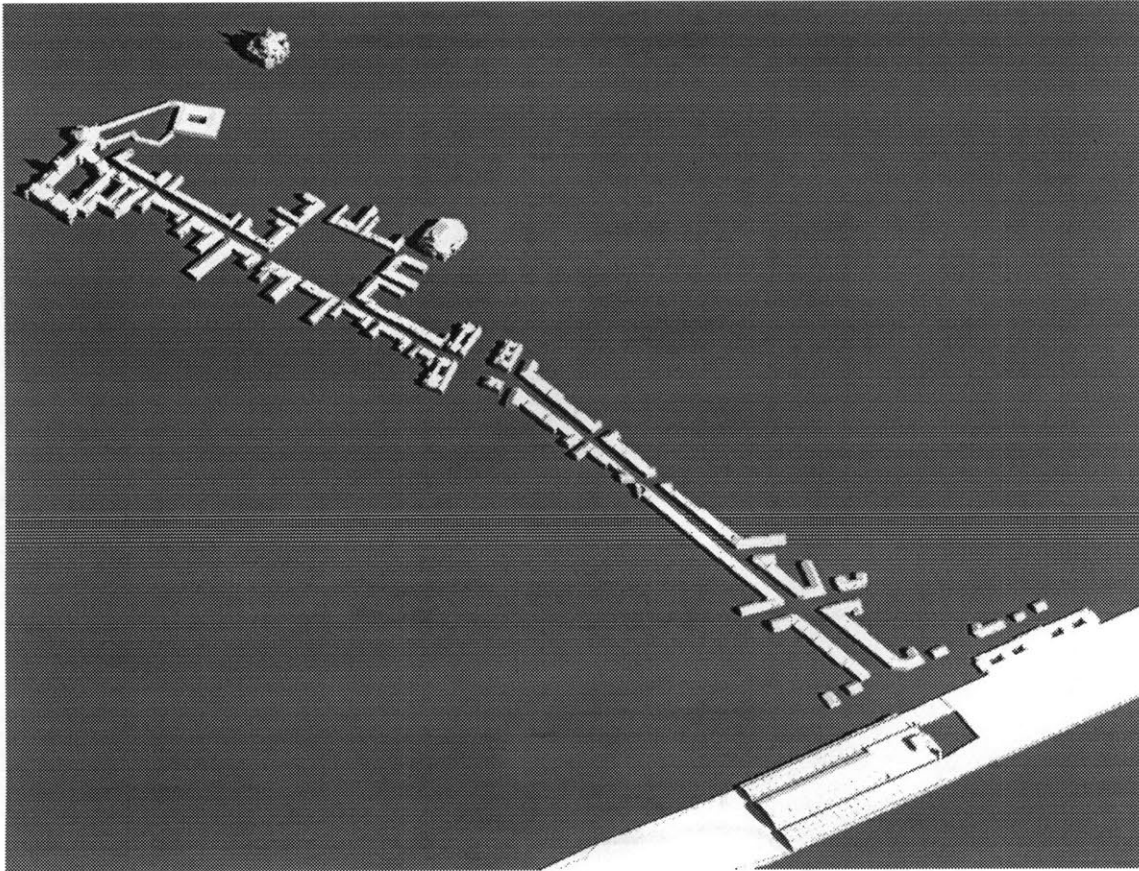
PROPOSAL FOR THE PRAGER STRASSE

This design proposal will respect the terms given by the build-
ing commission in Dresden to keep the "Ring" (the former
area of the fortifications) free from buildings. Up to the second
world war the buildings in this area represented the walls and
gates of the fortifications that were torn down after the
Napoleonic wars had swept Europe. To carry on the idea of
an abstracted representation of a structure that gave the old
city its shape, it will be necessary to create a "negative", to
reflect its form. The "negative" will consist of the walls of the
buildings nabouring this area. To make the form readable it is
necessary to carry out the borderline quite completely.

Today the form of Prager Strasse can hardly be experienced
as a street. The buildings in this area are floating along an
invisible axis between the railway station and the main mar-

urban model
the axis Prager Strasse,
See Strasse and Schloss
Strasse in 1944
In the lower right corner
the railway station
in the upper left corner
the palace
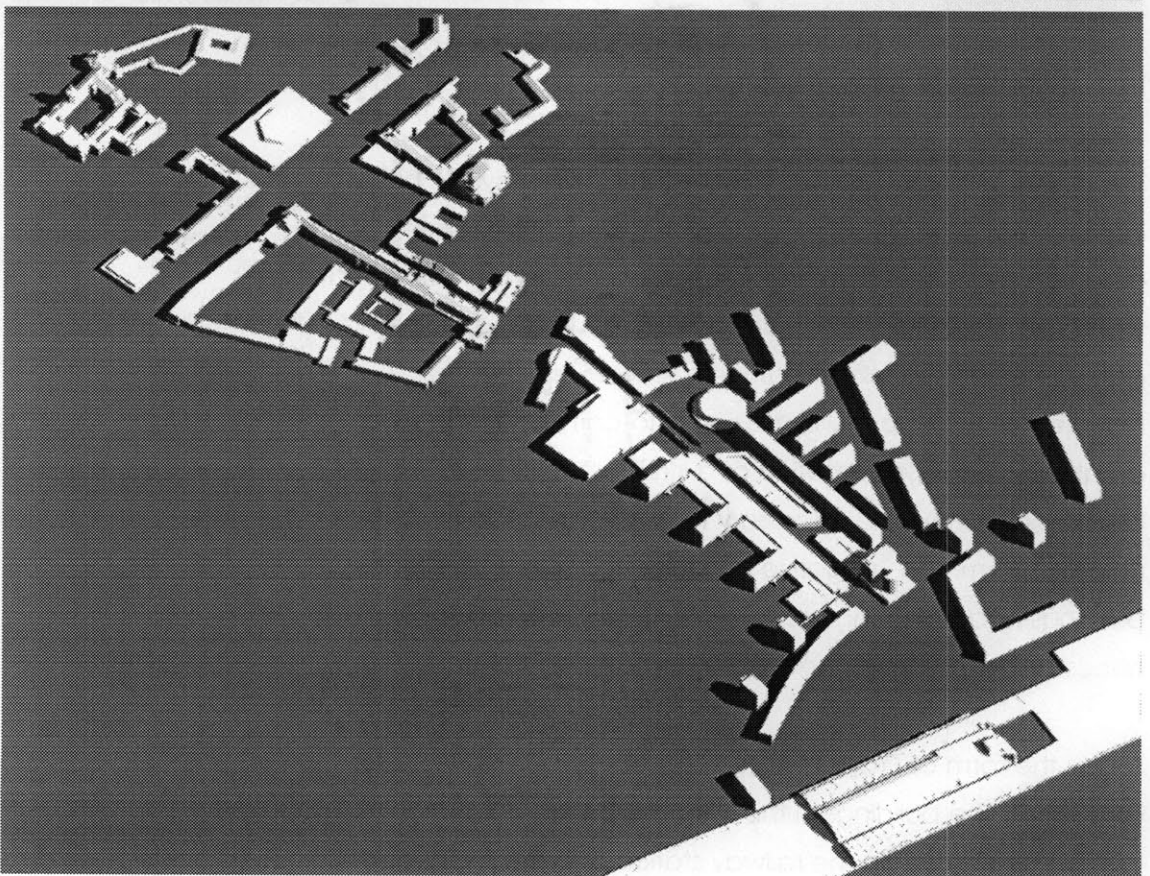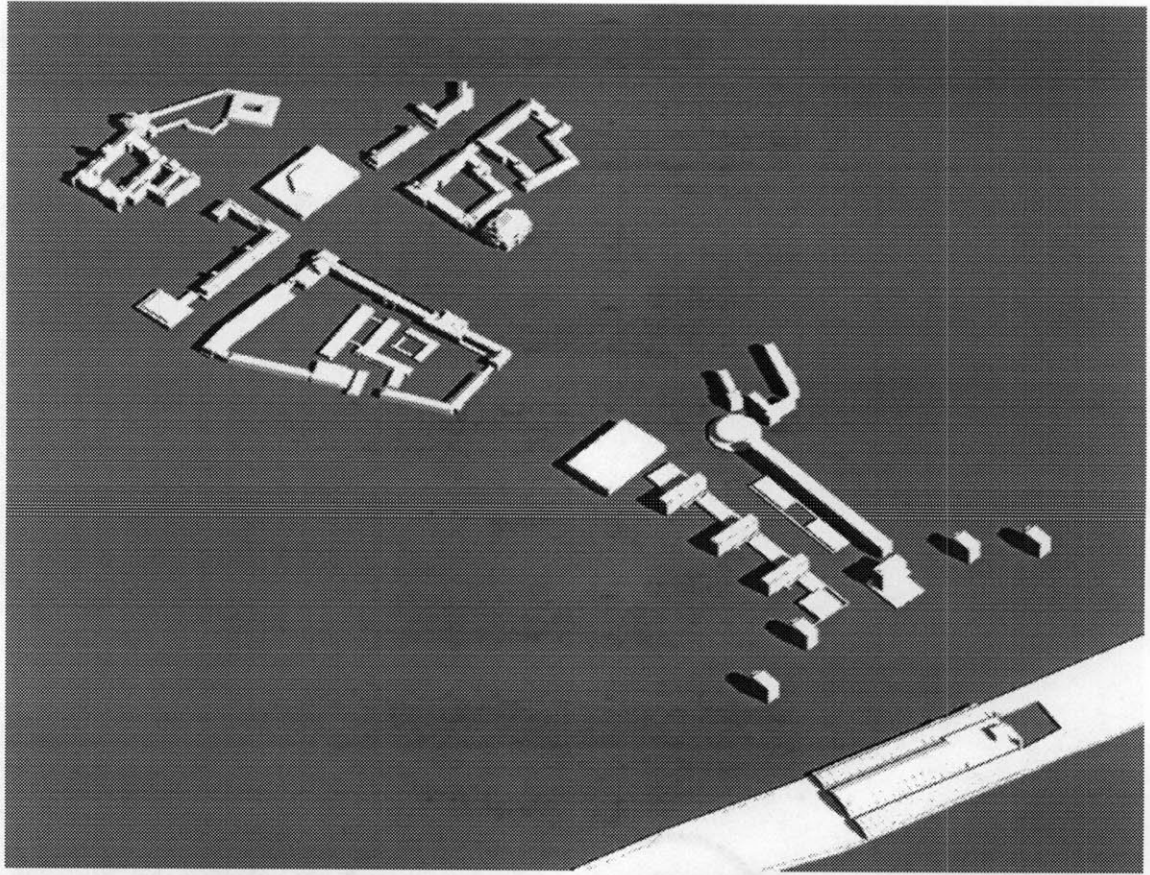
ket. There is no beginning or end that could define their location. The area near the railway station and near the main market consist of urban desert. The rebuilding of Dresden after the destruction in 1945 was never completed due to constantly changing goals in the planning processes and the lack of economic resources. Today the goal should be to give back an urban feeling to a place that for a long time was known as "Florence of the North". As Johann Wolfgang Goethe (1749 -1832) wrote more than a century ago, the future will just be secure if it is built on the past. It will be necessary to bring back some of the history that seemed to be gone when the ruins of the old Dresden were torn down in 1953. To bring back the memories of the past it is necessary to bring back elements that can tell some of what happened at this place. In the case of the Prager Strasse it is proposed to reinvent the old street layout and rebuilt in parts the old facades, that defined its beginning and its end.

The meaning of "element of the past" is understood as an abstracted representation of what once had been there. Just to rebuild copies would ignore the fact that everything had intentionally been torn down. It is the intention to rather create a representation of history or time than a representation of space. The space that is created by doing so is a more phenomenon of time than a phenomenon of space. This definition implies the coexistence of various styles from various times at the same time at the same place. It will be necessary to organize them in different layers to make them readable and understandable.

The Prager Strasse today is 280 feet wide, while the old one was just 45 feet wide. The old layout can be superimposed into the existing situation without the necessity of tearing down main parts of the existing structure. The beginning and
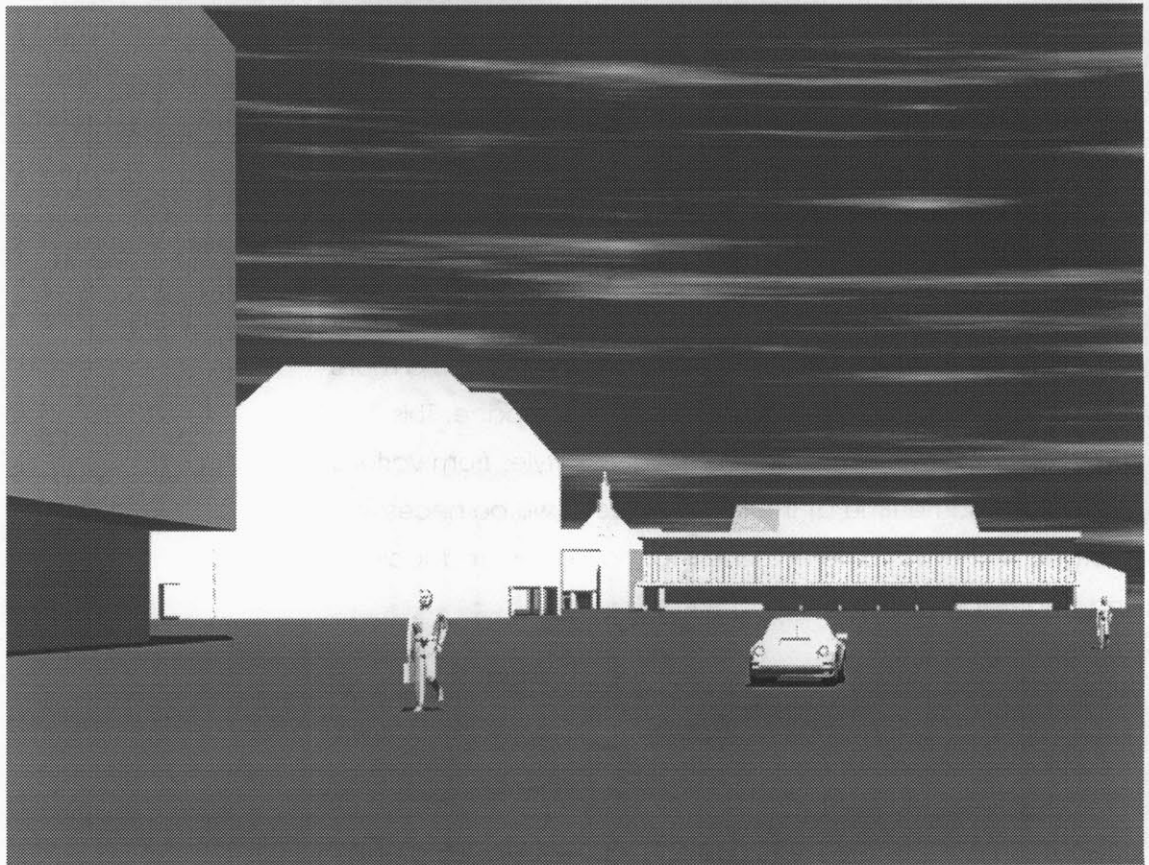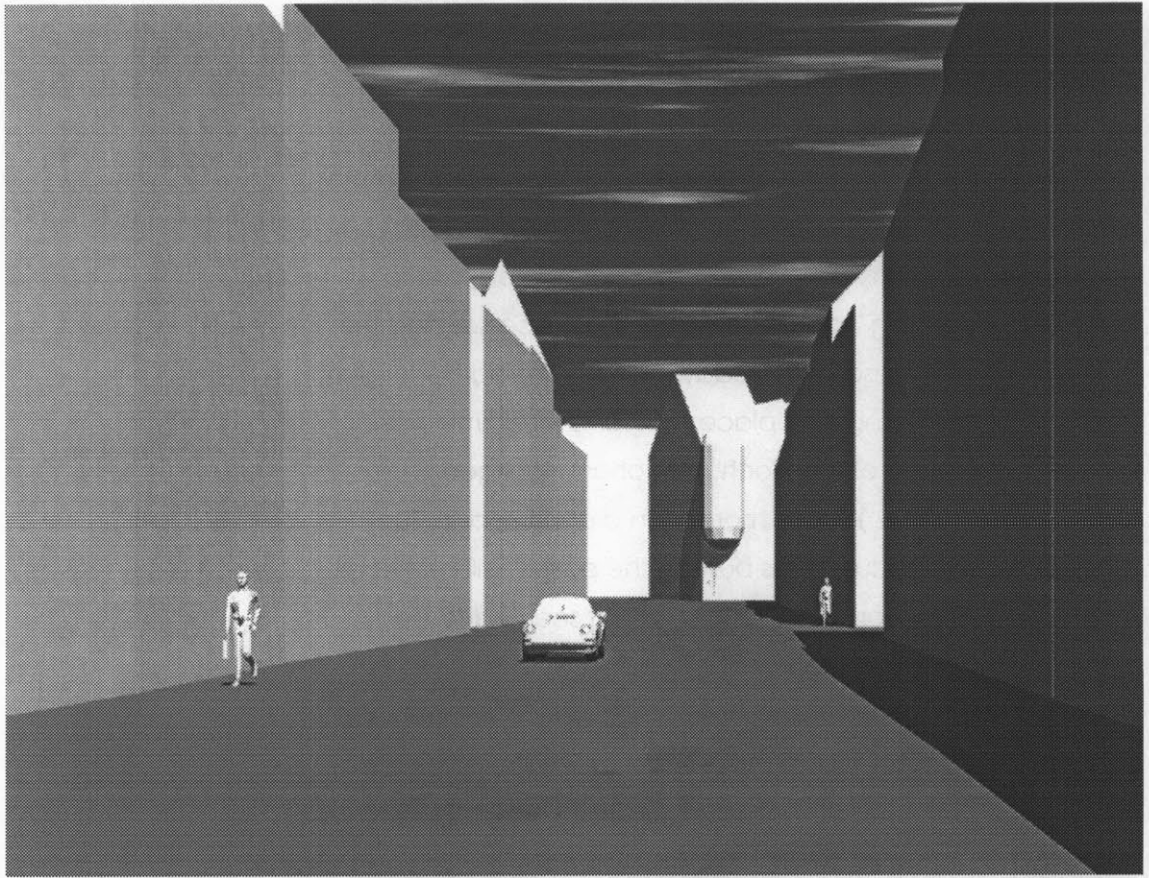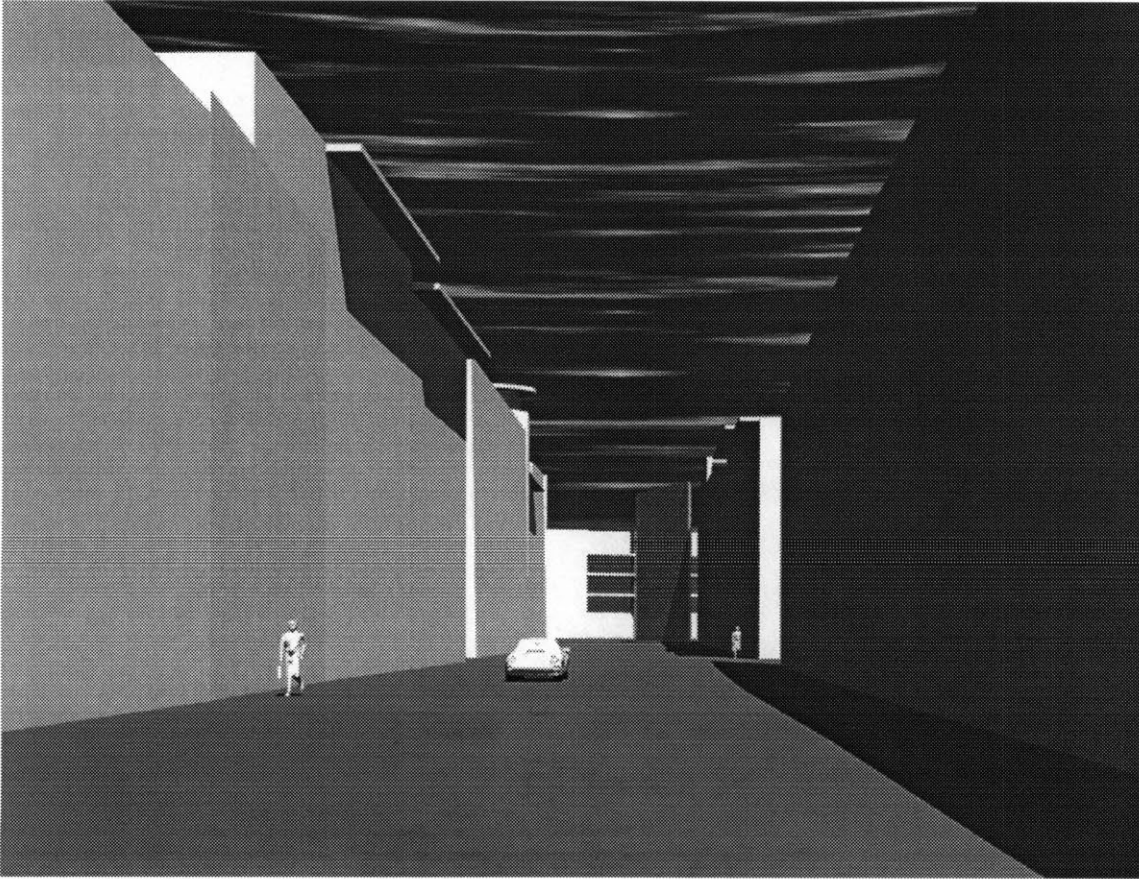
the end of Prager Strasse in the prewar condition were defined by two buildings. The Victoria House on the Ring, with its main gable at the northern end of the street axis, and the railway station at the southern end determined the street limits. Today a high rise hotel building at the southern end intends to serves that function, while the northern end is open. Since there will be no buildings in the future on the Ring, the old street layout has to be modified to mark, on one hand the northern end of Prager Strasse, on the other hand to clarify the change of the street axis.

The main market (Altmarkt) in its prewar shape was rooted in traditions 800 years old. The Kreuzkirche is one of the few surviving buildings in the whole area that can be use as a scale giving element. Its well-defined relationship to the open space of the main market once shaped the character of the space. Based on the power of its beauty it should once

top
urban model
proposal
view along Prager Strasse
at its northern end in
2008

opposite
urban model
view along Prager Strasse
at its northern end in
1944

opposite
urban model
view along Prager Strasse
at its northern end in
1990
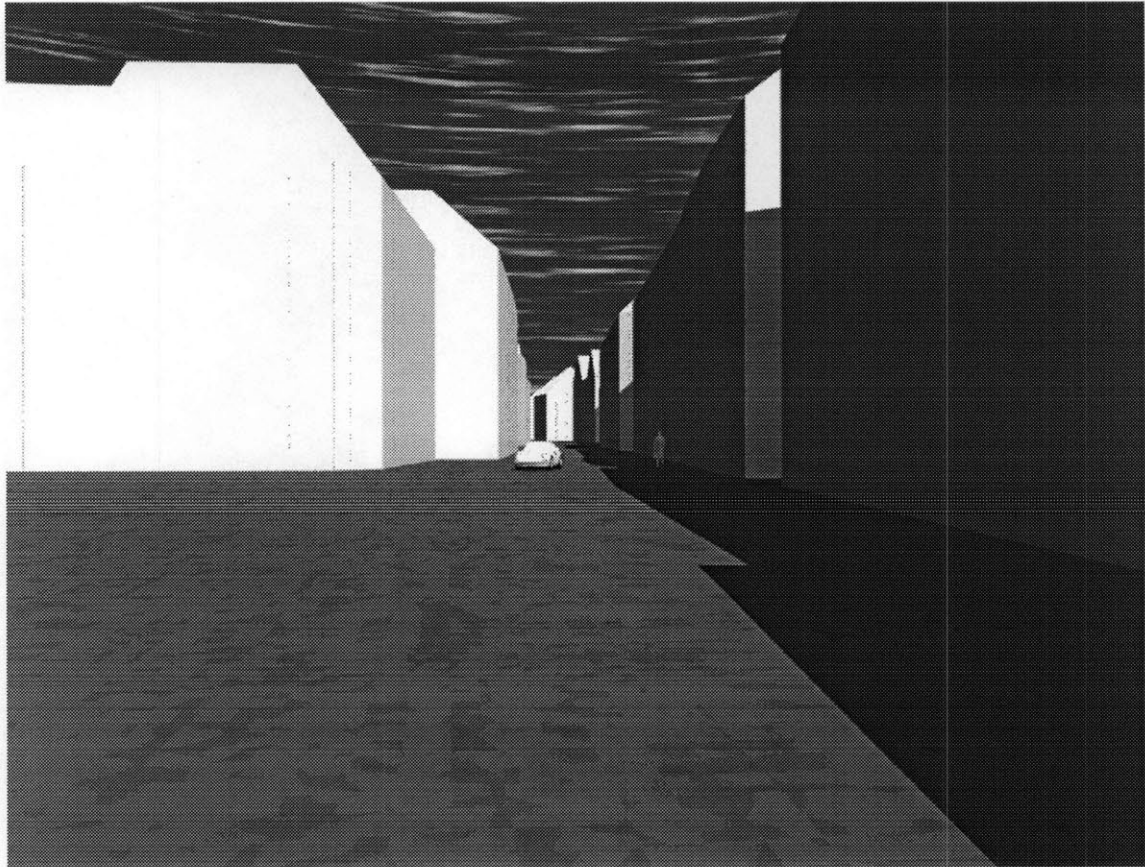
again give shape to the surrounding buildings. To do so, it is necessary to reuse the relationship it already made to the main market. Most importantly, part of the main market is the space in front of the church. As a consequence the eastern wall of the main market has to be redefined at its former position. A new building has to fill the open space teh existing structure and the proposed facade. The southern wall of the main market should be reerected according to the old layout. The building that walls the market on the western side is moved back compared to the old wall. Its design does not make any effort to define a relationship to any building on the opposite side of Seestrasse. To fill the space between the old and the existing border of the site a new facade will be erected. This new facade will suite the needs of the shape of Seestrasse.

The only building that exists today in the area known as Wiener Platz is the railway station. The railway line surrounding
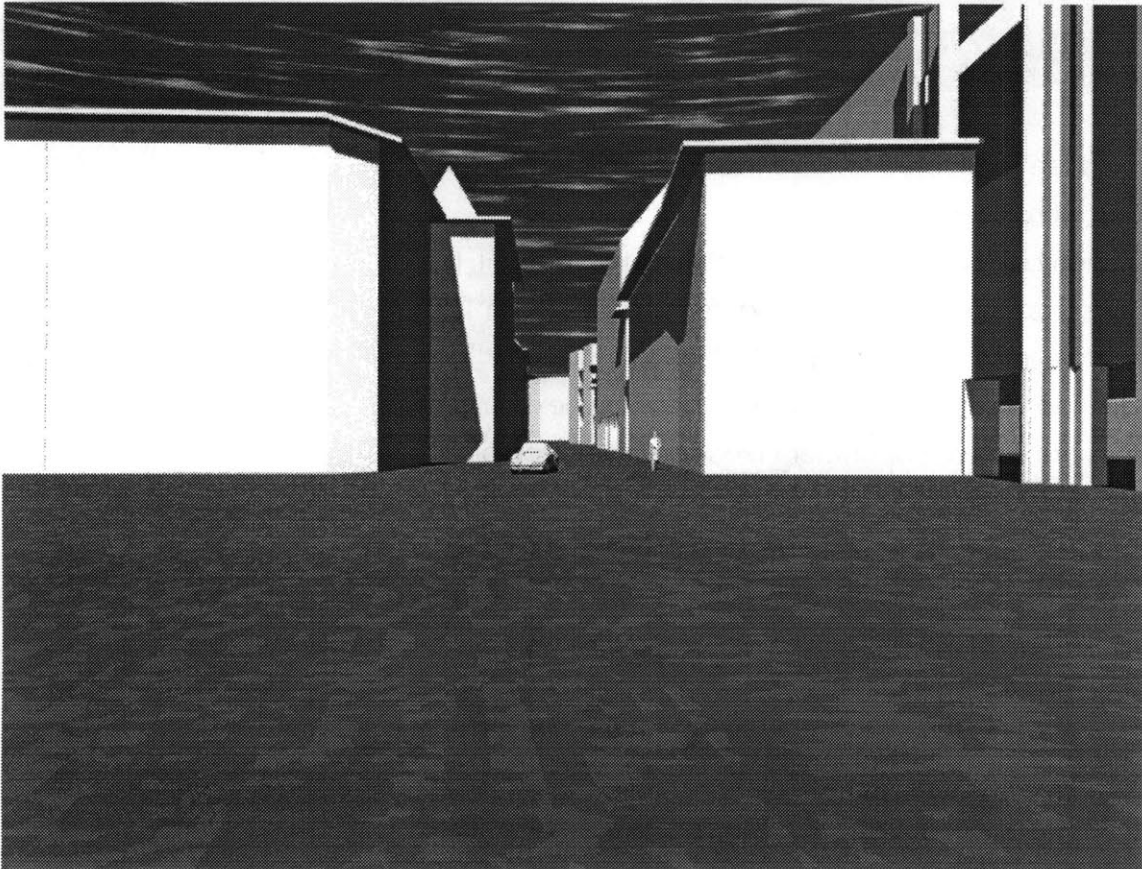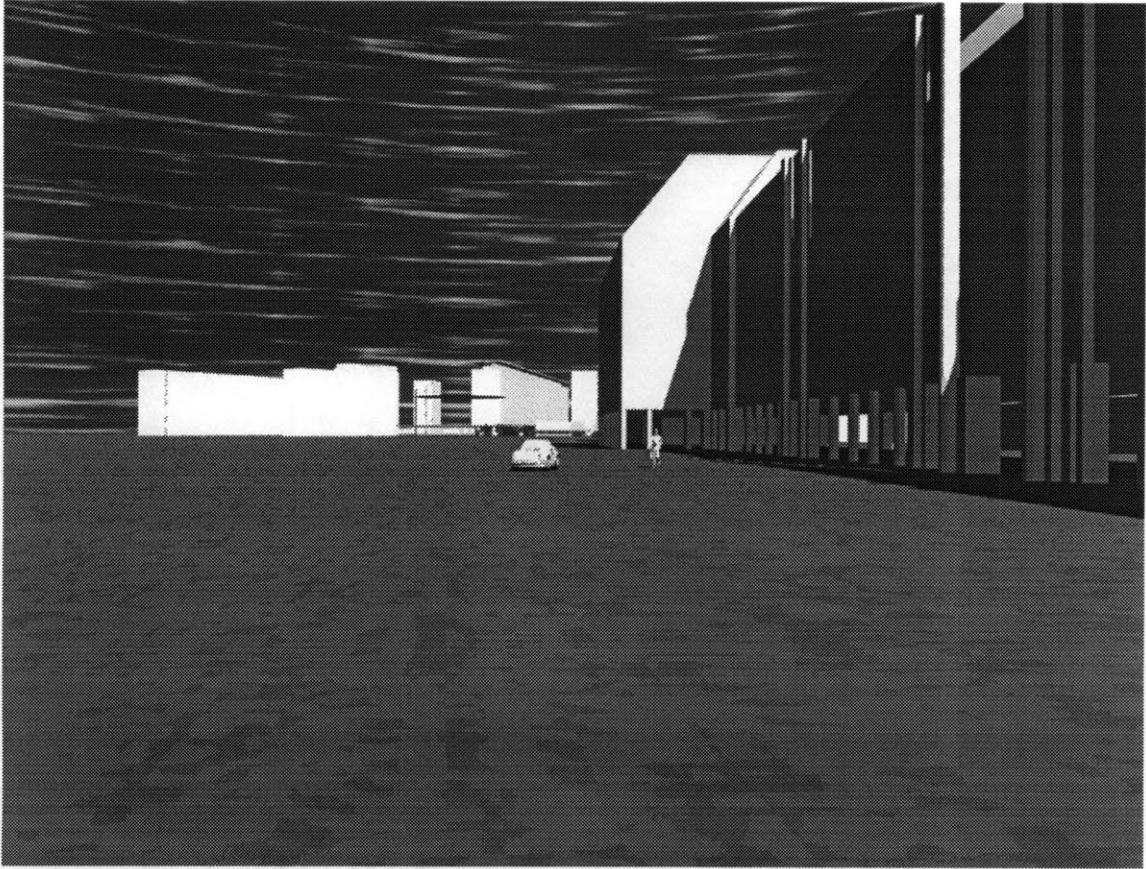
Dresden is elevated to solve the problem of intersection with other ground traffic. Not just the railway station but the line itself is an architectural element. It surrounds the city in a way that fortifications did in former times. So one wall of Wiener Platz is clearly defined while the others are still open. The next buildings are high rise apartment blocks in a distance of about 500 feet. These buildings belong to the complex of the Prager Strasse. This area is a prime location within the city limits. The space needs to be well defined to fit the needs of a growing business location. In its given form it will be an asymmetrical space with references to the railway station, Prager Strasse, St Petersburger Strasse and Wiener Strasse. The layout will make these references visible.

View form Wiener Platz near the railway station into Prager Strasse in the 1920s

42

ABOUT THE RELATIONSHIP BETWEEN THE PAST, THE PRESENT AND
THE FUTURE

In the process of rebuilding firebombed ancient cities and the
millions of destroyed housing units German architects and
planners faced the problem of how to treat the past. Many
heated discussions among the professionals continue, al-
though architects like Georg Dehio and Konrad Lange con-
clude in the discussion that emerged at the turn of the cen-
tury: "In the case of supplementation it should be done

reusing the past
Karljosef Schattner
Catholic University of
Eichstaett
library the main hall
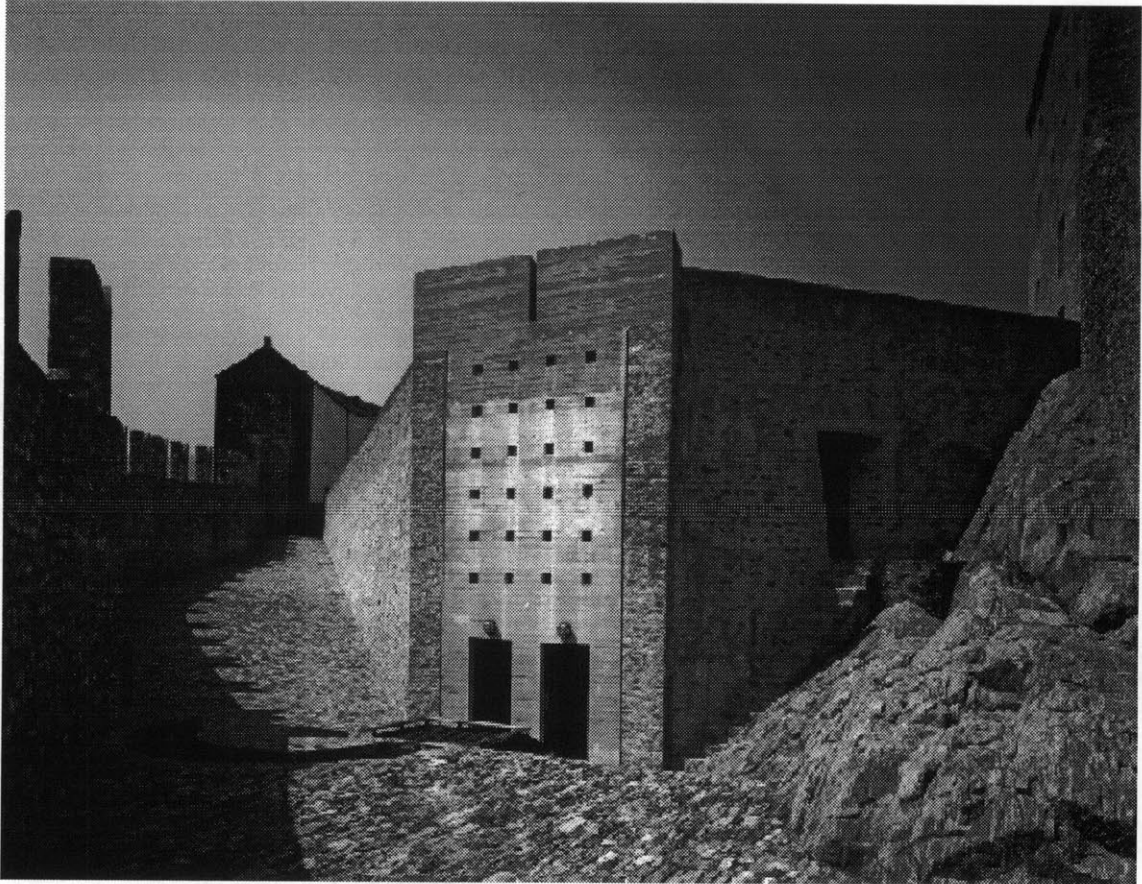
without deceiving that style...There is the old, here is the new. The ancestors have created out of the spirit of their time, we create out of the spirit of our time." This clear position didn't succeed everywhere, since contemporary sympathies for historism exist in many cities, but interesting projects developed in various places that follow these guidelines. One of the early examples is Gunnar Asplund extension of town hall in Göteborg / Sweden dated from the years 1934 - 37. One of the most prominent examples from the 1960s is Carlo Scarpa's restoration of Castelvecchio in Verona, which was completed in 1961. In Germany Karljosef Schattner in his function as architect in charge of the Catholic University in Eichstätt, one of the few not state owned universities, developed his very distinct and widely recognized style
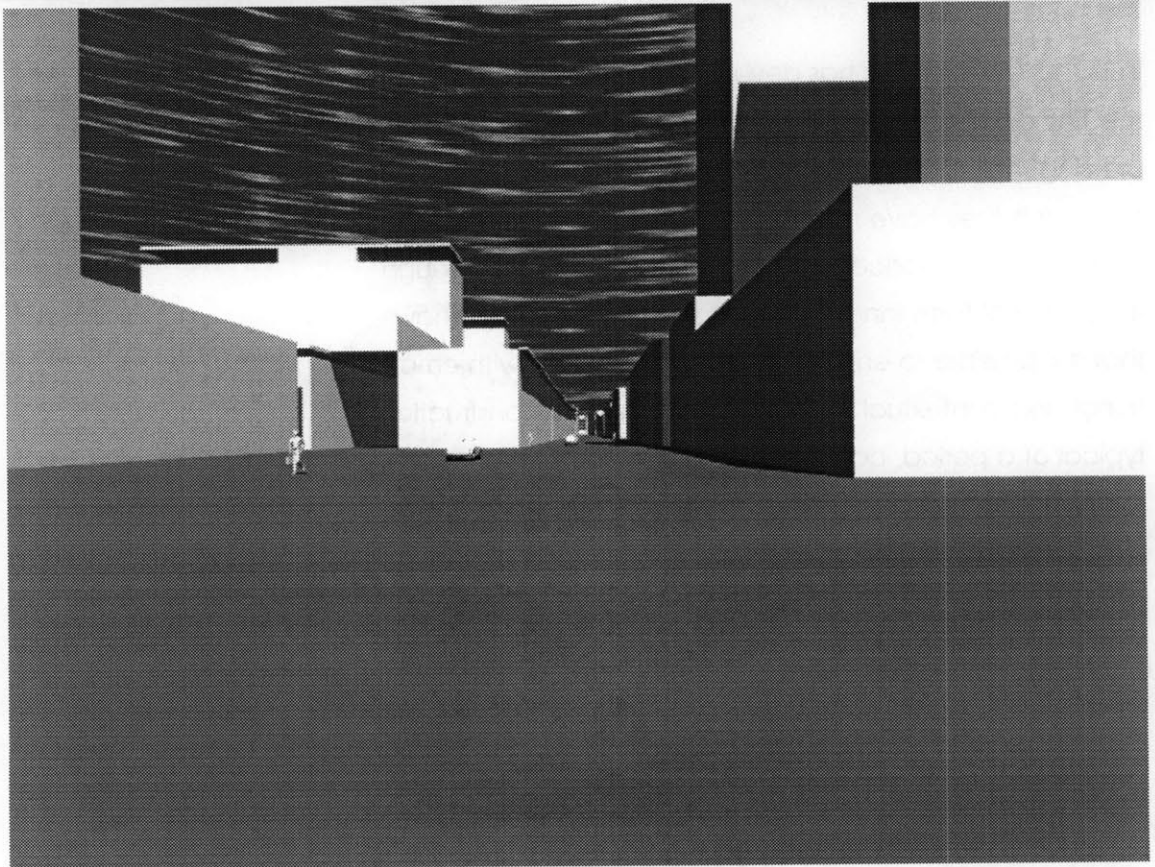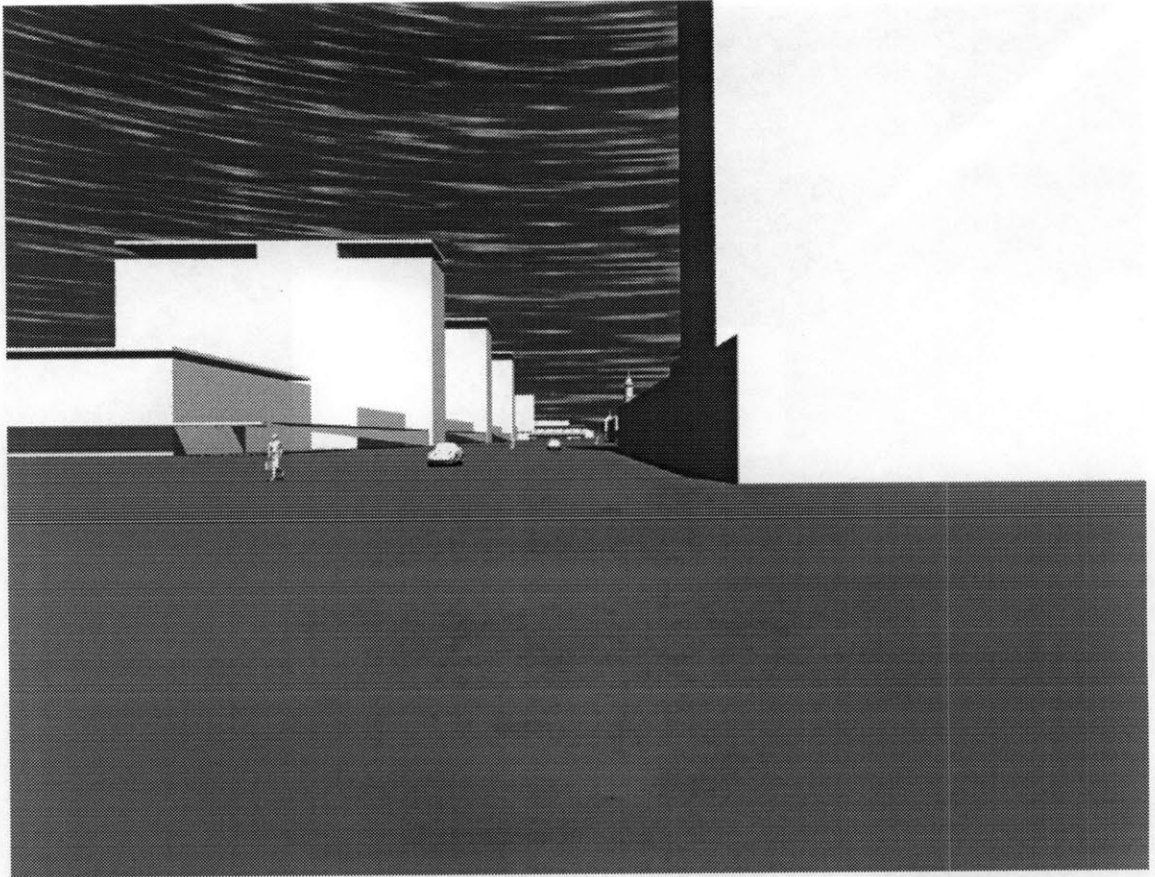
reusing the past
Aurelio Gafetti
Castel Grande in
Bellinzona / Ticino

urban model
view along Prager Strasse
at its southern end in
1944
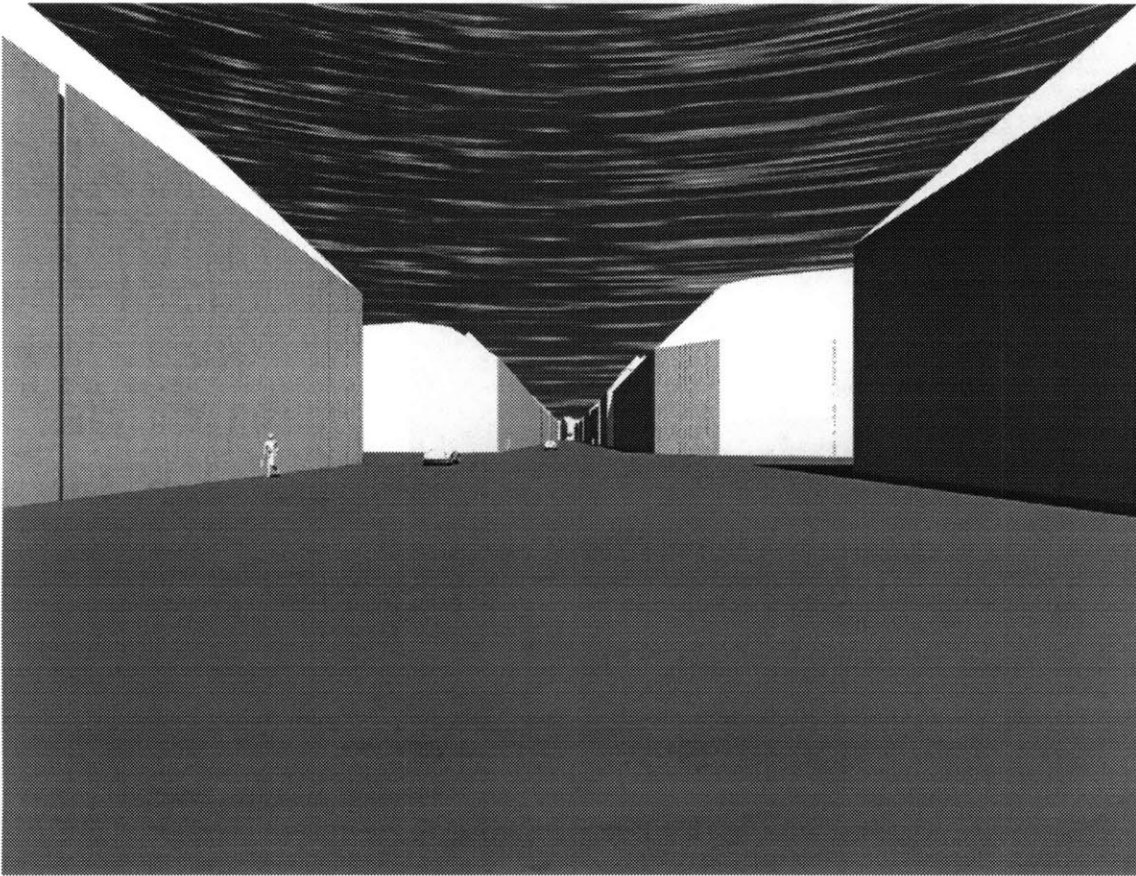
In Ticino / Switzerland has developed a style that is known as the Ticino School. These architects have a distinct way expressing their roots. Without deviating from their Modernist approach they have managed to create a synthesis of international influences and local tradition filtered through the personal form language of each designer. They show that it is possible to enrich modern architecture with emotional and contextual elements and that only construction, typical of a period, can produce a genuinely layered environment. The most well known architects are Mario Botta, Luigi Snozzi and Aurelio Galfetti. Their approach of understanding the formal features of urban structures relates closely to the functionality of this proposed planning and design tool and the architectural and urban design proposal.

The element, that is used in this proposal to connect the present situation with its past and the old context, are fa-

cades facing the Prager Strasse that are to be bebuilt. This is understood as a screen in front of otherwise modern and contemporary buildings. The level of detail necessary to express this sort of idea can be seen in the projects like those done by Karljosef Schattner or Aurelio Galfetti. Nevertheless, the most important feature representing the beauty of Dresden's past is the massing of the buildings, their relationship to the open space of the street.

It is inevitably necessary, in the intention to overcome the shortcomings of planning in Dresden, to deepen the relationship between the architectural objects and the surrounding territory as well as the history. This proposal aims less in rebuilding or restoring the past, but intends to clear the relationship between the geographical site and its history.

opposite
urban model
view along Prager Strasse
at its southern end in
1990

opposite
proposal
urban model
view along Prager Strasse
at its southern end in
2008

SUMMARY OF THE EXPERIENCE WITH THE CAAD SYSTEM

The DOS platform is not the most stable environment. I have
used various strategies to get around this problem. The first
step to protect the system against crashes is the choices of
Windows for Workgroups over the regular Windows environ-
ment. It gives higher stability and a speed advantage of
about 10% over its predecessor. The next problem I did run
into was the memory requirements when handling large
amounts of data. The memory setup is crucial, especially
when the raytracer is being used with large amounts of 3D
information: The motherboard has already installed 32 MB of
RAM but to give the renderer enough room to calculate,
additional 88 MB of virtual memory on the harddrive seem to
be adequate.

The PC Tools v 2.0 offer a nice tool to get an overview what is
going on in the system. The available memory, the system
resources and the available diskspace are being monitored
and displayed constantly. In case memory intensive tasks are
being processed, it is important to monitor the system behav-
ior to understand the problem.

When accessing and querying 3D informations from multiple
files large amounts of data are being processed. AutoCad
produces backup files every once in a while, depending on
the setup. The frequency of backups should be higher when
the process of building up map system like this is in the begin-
ning and the experience with the system is not jet well devel-
oped. Nevertheless in doing so the amount of disk space that
is being used for this task is quite high. It is necessary to man-
age the amount of space that is being used otherwise it is
easy to run out of disk space. This is true as well for the
backup files AutoCad produces when saving a modified file.

In not doing so it might result in doubling or tripling the necessary diskspace.

The more programs are being use simultaneously the more system resources are being used. If less than 80 % are being used the likelihood of a crash seems to be fairly low but beyond that the system becomes rather unstable. In other word only the really necessary programs should be running or it will be necessary to find a different way to process the task without occupying that large amount of system resources.

Although Windows for Workgroups limits the transfer speed between the hard disk and the memory to about 1.3 MB per second in burst mode, the selection of the hard disk controller and harddrive has strong impact on the performance. I have chosen a Fast / Wide SCSI disk drive and controller with its own on board processor that is capable of transferring data directly from the hard drive over the PCI bus to the memory without needing major assistance of the CPU. Nevertheless, the potential of the controller and the harddrive is being used by less than 10 % in the Windows for Workgroups environment. The max. transfer rate in DOS is about 17 MB per second in burst mode. This choices speeds up the querying time using the ADE in AutoCad more than 50 % compared to the use of an IDE hard drive.

When examining the design that was produced, it was necessary to look at some detail in perspective view. In the process of doing so, it became obvious that the capabilities of AutoCad in controlling this view are very limited and do not serve the needs of a designer very well. It will be necessary in the future to develop tools to speed up this task and bring in required ease and control.

The 17" monitor that was used in this project has proven to be the absolute minimum in size. If design is done on the computer it is essential to view the work and the monitor is the interface between the computer and the human eye.

Another element of the interface is the mouse. The control this system offers in the three dimensional world is more than limited. It was designed for the flatland of two dimensional graphics but it became obvious during this project that a different kind of interface is required to move within the world of 3D models.

When dealing with large amounts of data, as in this project, the AutoCad Data Extension (ADE) is very helpful. It allows to use just the data that are required for performing the task. That helps tremendously to work around performance problems. Nevertheless there are some shortcomings that need to be mentioned. When performing more tasks that are similar to those in Geographic Information Systems (GIS) the lack of fencing functions limit the capability and usefulness of the system.

Final there is one important issue to mention: In case of two blocks having the same name when querying using the ADE both of them will not be displayed. So it is necessary to have unique block names in all the files to be accessed. Before querying files from an outside source this should be verified.
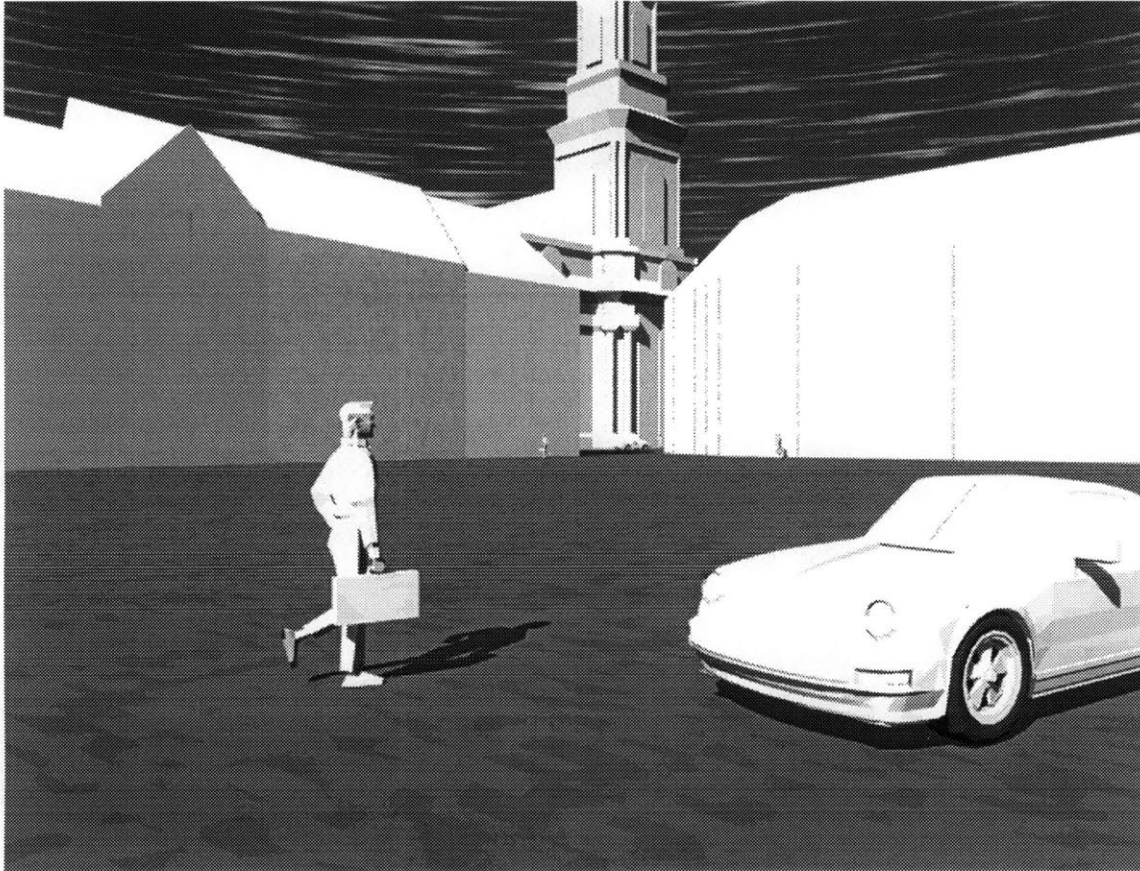
SUMMARY OF THE DESIGN AND THE EXPERIENCE WITH THE
DESIGN STRATEGY

The form of the newly created Wiener Platz addresses a
variety of issues. Standing in the tradition of asymmetry that
has developed in Germany since the middle ages, it serves
as the main entrance into the inner city. In the prewar past
Prager Strasse was the main access road to the Altmarkt.
Today's changed traffic situation made a reorganization of
traffic direction necessary. Now the main traffic stream flows
along the Ring Strasse (ring street). So St. Petersburger Strasse
connects the platform underpass near the railway station
and Ring Strasse and needs to be integrated into the spatial
structure, while Prager Strasse is more like a pedestrian area.
The size of the railway station, as the main architectural
element, determines the dimension of Wiener Platz, and its
functions have generated the framework for its design.

urban model
view from Altmarkt to
Kreuzkirche in 1944
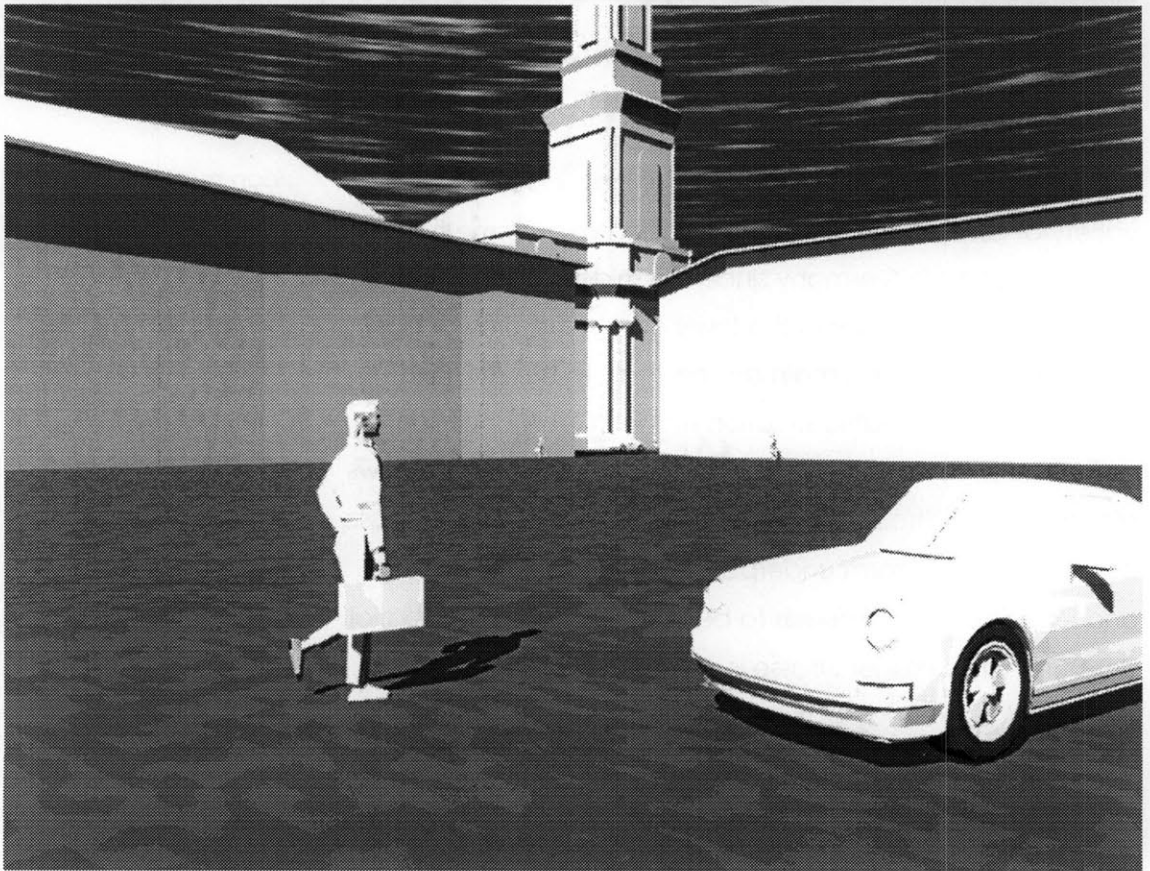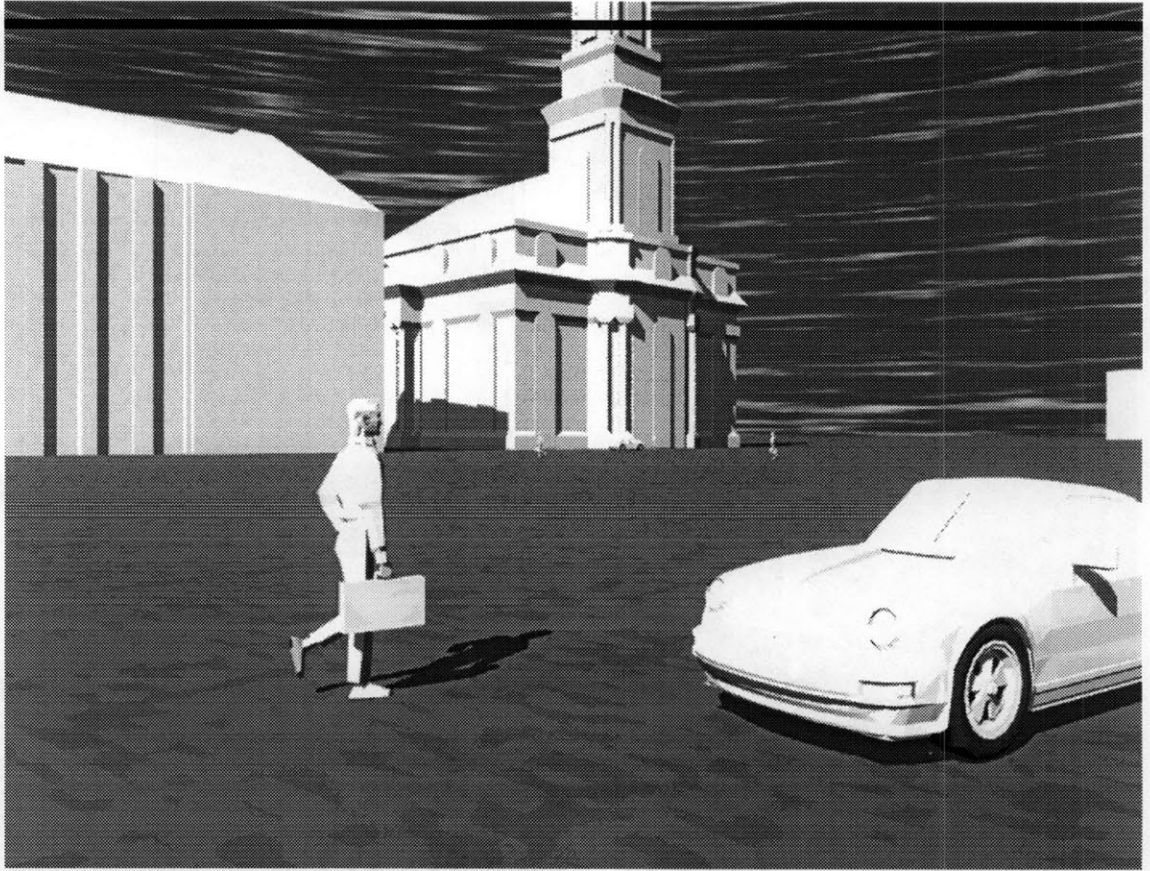
The insertion of the old layout of the Prager Strasse created a whole new "old" world within the existing structure. To make the connection between the two the row of new houses west of Prager Strasse and the present structure are joined using a glass roof. This creates a locality like a shopping mall. On the eastern side of the street the sales pavilions are torn down and a new block structure is inserted so that the formerly eastern building of Prager Strasse faces a new street. The space around the disk shaped UFA cinema building is completed. To keep the shape of Prager Strasse in this area only the old facades are reerected, just like a coulisse. At the northern end of Prager Strasse a triangular building translates the street axis into the axis of the connecting See Strasse and serves as the visual end of the street.

The erection of buildings along See Strasse and the southern and eastern side of the Altmarkt recreated the Altmarkt almost in its original size. The most important issue on Altmarkt is the reestablished relation ship between the open space of the Altmarkt and the Kreuzkirche that can be recognized now. The strategy of reestablishing the old streets lead to an extension of the existing building west of Altmarkt, in See Strasse as well as long the Ring Strasse. The extension on the Ring Strasse reflects the different scale of this street that is even wider than in the prewar condition, since the city council decided to keep the area of the former fortifications free of buildings. This design respects this constraint. The massing in the design of the present structure west of See Strasse is reflected in the buildings on the eastern side: While all the newly designed buildings have a flat roof, these have roofs parallel to the street with steep roof pitch.

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The images of the Plan de Paris and Isometric plan of Midtown Manhattan on the pages 8 and 9 are from the book *Envisioning Information* by Tufte, Edward R., Graphics Press, Cheshire, Coneecticut 1990

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The image on page 32 is from the book *Dresden und Umgebung* by Quinger, Heinz, DuMont Buchverlag 1993

The image on page 43 is from the book *Karljosef Schattner Ein Architekt aus Eichstätt* by Pehnt, Wolfgang Prestel Verlag Muenchen 1990

The image on page 44 is from the book *Aurelio Galfetti* by Aurelio Galfetti, Editorial Gustavo Gili, S.A. Barcelona 1989

The images on the pages 25, 42 are from the book *Dresden Ein verlorens Stadtbild* by Liebisch, Heike, and Schieferdecker, Uwe, Wartberg Verlag Gudensberg 1993

The image on page 29 is from the book *Das alte Dresden* by Löffler, Fritz Sachsenverlag Dresden 1955