

# Six Principles for the Design and Construction of an Urban Village: Park City Unterliederbach Frankfurt-Hoechst

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## INTRODUCTION

### Creating an Urban Village which Can Fulfill the Functional and the Emotional Needs of Its Inhabitants

How is it possible to design and make an urban village or an urban neighborhood which not only fulfills the functional needs of its inhabitants but their emotional needs as well? This was the main question CES/HNA was confronted with by the chief client of Hoechst Corporation for the design and construction of a part of the new Park City Unterliederbach (Parkstadt) at the outskirts of Frankfurt.

The client's and CES/HNA's concern in creating the new Park City is to make a particular place that is meaningful and cared for by its inhabitants, a place that exhibits a sense of place and belonging. Donald Appleyard called such settings "caring environments that try to communicate hospitality, responsiveness, assurance, shelter, and comfort. They play the host of welcome guests. Those that remain aloof, closed, or out of scale, fail to convey the sense of care." (Appleyard, 1979, p. 275, quoted from Crowhurst Lennard and Lennard, 1995, p. 28.)

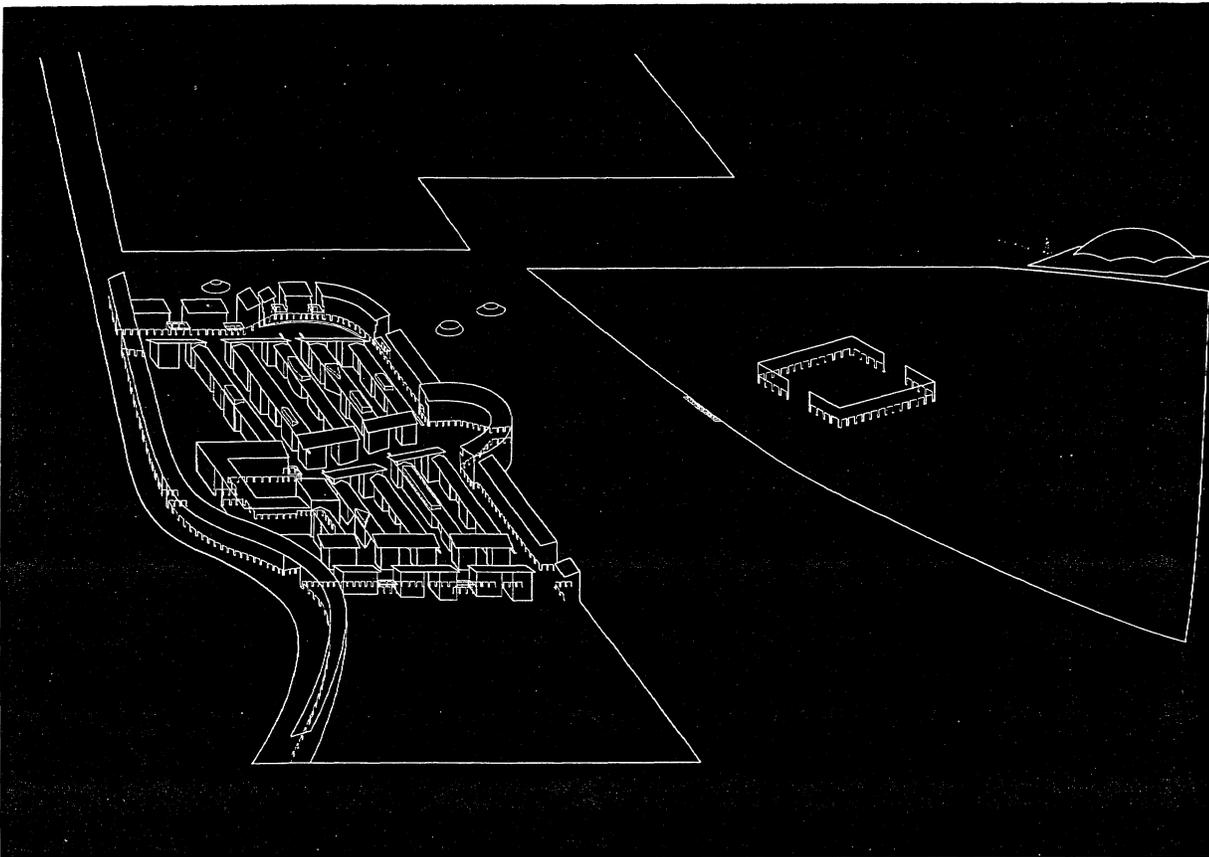


Fig. 1. Computer outline drawing of Parkstadt I (left) and the beginning of Parkstadt II (right). (Source: Berghof - Landes - Rang, Frankfurt.)

Based on previous theoretical work in the Design and Building Process Area of Emphasis at the University of California, and based on practical professional projects in various parts of the world by the Center for Environmental Structure (CES) and Hajo Neis and Associates (HNA), I will present a few essential planning, design, and construction principles (topics and themes) which are being used in the design and development for the Parkstadt in Frankfurt by CES/HNA. These planning, design and construction principles may have the potential to get us closer to the creation of a kind of urban place, neighborhood or community which can give us a sense of belonging and which are capable of fulfilling some of the emotional or feeling needs as requested by the client.

Planning, design, and construction principles (topics and themes) have been applied for various urban villages, neighborhoods, or small communities, such as neighborhoods for Guasare New Town in Venezuela (CES), Moshav Shorashim in Israel (CES), and the Christian Music Village in Japan (HNA), and others. The following six themes or principles have been applied in the planning, designing, and building of the Park City project:

- (1) LIGHT AND URBAN DENSITY
- (2) POSITIVE URBAN OPEN SPACE AND URBAN GEOMETRY
- (3) PATTERNS - FORMATION OF AN ARCHETYPE: LONG THIN APARTMENTS
- (4) USER DESIGN - LAYOUT OF APARTMENTS
- (5) VARIATION AND VARIETY IN THE URBAN SPACE AND THE APARTMENTS
- (6) INTEGRATED PROCESS OF DESIGN AND CONSTRUCTION

### **Park City Under the Singing Brook (Parkstadt Unterliederbach)**

Located on the outskirts of Frankfurt near a light rail transit station, the new Park City (PHASE I) covers 9 hectares and is comprised of about 600 units of housing with shops and communal facilities along the main street of the city. Developed by Hoechst Corporation, the Park City will include units of employee housing, combined with other private housing not associated with the company. The entire Park City project was designed as a masterplan by Berghof-Landes-Rang (BLR), an architecture firm in Frankfurt, and then the project was divided up into about eight to twelve parcels and distributed to different architects for further interpretation and development. We CES/HNA were entrusted with the North East Corner of the site with 1 ha of land. This is the part that is referred to as "urban village" in the workshop program.

### **Peter Behrens Hoechst Office Building as an Inspiration towards the Physical Reality of the New Buildings**

At the beginning of a project, we are always looking for some vision, part of a vision, some shared understanding which

gives us a common goal to work for. In this case, it was a visit to the Peter Behrens Headquarters Office Building, which gave us such an inspiration. It was largely the physical reality of this building with its thick masonry walls made of bricks of various sizes, colors and tones which we found worth striving for. One essential characteristic of this physical reality and overall feeling of quality is that the brickwork is an integral element of structure, as contrasted to current systems where brickwork is most often an applied veneer. As a result, a major theme in the development of the CES/HNA wall system is the use and integration of brick into load-bearing structure.

### **(1) LIGHT AND URBAN DENSITY**

Light is an essential building block of life, the world around us in its different kinds of lights, shadows, and colors. Without light there is no shadow. Light therefore is also a basic building block of architecture. The modernist architect Louis Kahn considered light the first and primary building element of architecture. One of the first objectives of the modern movement in architecture and urban design (starting at the end of last century) was to bring light into the dense and dark urban areas of the industrial city. However, the early protagonists of the modern movement, such as Le Corbusier created a solution of isolated buildings in green space, but without creating an urban fabric or a city. Today the question is not only how to have a green city but how to keep the density and the life of the city and have good light within a dense city.

The Park City Urban Plan which was developed by Hoechst and BLR worked with a simple block pattern of 15 meters for buildings and a street space of 22 meters in between buildings, a rather typical arrangement in Frankfurt. However, this apparently simple block pattern also offered various special modifications and interpretations for the individual architect. The block pattern could be expanded about 3 meters in each direction, so that we would have a possible block pattern of 15+3+3 m block = 21m. Using this rule in its extreme form, we could have buildings of 21m in width. However, we could also use the 3+3 m for an inside courtyard surrounded by buildings of 8 and 7 meters in width. Christopher Alexander, who had studied some similar type of urban housing in a dense 4 story urban area in Copenhagen, proposed this idea. Consequently, our first urban plan for this neighborhood was a courtyard scheme, which we presented to much acclaim in Frankfurt at our first meeting with the client and the other architects, almost exactly a year ago. (It is also interesting to note that the Peter Behrens Office Building works with interior courtyards for giving light to building.)

The buildings which were defined by the master plan as mostly 4-story buildings with some 3 stories high, were calculated for about 90-100 units including shops and other facilities. With the interpretation of the urban scheme as a courtyard scheme we increased the density to up to 130 units

—with an average of 75sqm per apartment, this results in a gross Floor Area Ratio of 1 (German - GFZ). Considering however that at least half of the area is used for streets and street parking, the net result is a Floor Area Ratio of 2 which means that the total area can be built over two times or in two stories. Considering the need for the buildings own internal open and green spaces, 3-5 story high buildings may be considered typical. The more basic question, however, is how close can you place your buildings next to each other and still have enough pleasant light, enough privacy and a space between buildings which lives.

By understanding the urban structure as an ornamental band similar to an embroidery, we could start to develop the idea of a very dense urban zone of buildings, which was perforated with volumes of light and positive urban open space. (Chris Diagram - Hajo Diagram). This idea was then developed further in plan and volumetric structure.

“Light, in all its subtle modulations, is exhilarating; the stuff of life itself made vivid to us by the surfaces it falls upon. Shade and shadow help us to measure the intensity and direction of light, emphasizing through darkness the radiance of the reflected sun.” (Donlyn Lyndon in: *Chambers of a Memory Palace*, MIT Press, 1994, p. 186)

## (2) POSITIVE URBAN OPEN SPACE

The theme of positive urban open space formulated as a principle says that with any act of physical planning, design and construction we also have to establish positive urban space. “An outdoor space is positive when it has a distinct and definite shape, as definite as the shape of a room, and when its shape is as important as the shapes of the buildings which surround it.” In trying to understand a city’s particular identity or soul, Gombrich emphasizes not only the character of the buildings, but also “the relationship of these buildings to each other and, most important of all, the spaces created between them.” (Gombrich, 1987, p. 195) Sitte goes further in emphasizing not only the enclosure of space, but also the quality of that enclosure: “The essential thing of both room and square is the quality of enclosed space.” (Sitte, 1965, p. 20) He continues to demonstrate his point with numerous urban squares from Italian cities, such as the Piazza d’Herbe in Verona. From a critical point of view one might say that the formation of positive urban space is probably the single most violated rule in modern urban development; one result of this may be seen in the absence of organic urban order.

In the case of the Park City project in Frankfurt the formation of positive urban open space is the single most important objective of the chief client Dr. Harald Kloetsch for the development of this urban village. Therefore, based on our previous studies on urban light and urban density. we continued to study the question of positive urban open space in more detail. In this case we were working with three groups of students, each group trying to create positive urban open space within our basic urban courtyard scheme.

STUDY 1: The eaves gate model works with a strong pedestrian axis as a main feature in the pedestrian street, but does not consider hierarchy of urban open space too well.

STUDY 2: The gable gate model differentiates the space within the pedestrian street but also accepts the same size of space in the two streets.

STUDY 3: The block gate model definitely works with different sized overall spaces in the main street and in the pedestrian street, but did not differentiate much further.

With these studies on urban open space in hand it was time for us to look at some real urban places from which we could learn more specific points for our project. We looked at various situations in the cities of Oakland and Berkeley which in particular aspects were similar to our own case. Here are a few examples:

### Width and Character of Ring Street

Testing a similar situation in Oakland, the width of the Ring Street felt fine at about 20-21 meters. With the sunlight falling on the north side buildings of the street, it became apparent that the arcades would be just right there. The southern and more darker side of the street needed a 9-plus-meter lawn with some trees to make it pleasant there.

### Cafe as Continuous Part of the Street

From our observation it became also clear that the Cafe should be part of the street front and not set back as far as we thought. A small arched terrace within the street marked the Cafe in a definite way.

### Width and Character of Pedestrian Street

Tests on the pedestrian street showed that the street felt best when close to 12 meters in width, that is about half of the main street. It also turned out that an opening of about 15 meters at the meeting point with the Ringstrasse would help the structure of positive urban open space.

### Sun from the West

Another example showed us to lower one of our building (E) at some point from 3 to 2 stories if we wanted to have pleasant sun from the west in the late afternoon, that is the time when people come home from work.

### More Open Northern Buildings

It also became quite apparent that the Southern sun needs to get into the northern buildings by opening them more like a U-shape at the upper floors.

After learning these particular points from simulations in real places, we consequently adjusted our urban design plan, so that positive urban open space would become more specific and clearly felt for our particular situation in Frankfurt.

The creation of positive urban space is an important principle to follow in terms of integrating and connecting up the new project to the existing context, as well as connecting up the various parts of the project to its outdoor areas and its particular site. Often the result of using this principle is a project that feels embedded within its context, and deeply connected to its site. Usually there is a feeling of relaxed structure, where any piece may seem arbitrary, but is actually very carefully placed in terms of the overall whole.

### (3) PATTERNS - FORMATION OF AN ARCHE-TYPE: LONG THIN APARTMENTS

Patterns are considered archetypal examples of good environments which can be applied repeatedly but are used and adapted to local conditions. Historically, Pattern Languages express the local or the traditional building culture in a given society, such as the feng shui patterns in Chinese culture or building patterns in the Black Forest region in Germany known for its typical farmhouses with wide overhanging roofs. Historical vernacular building followed set building patterns and traditions that resulted in a common language of building shapes, materials, details and colors that were implicitly known and understood by builders and townspeople:

“As there used to be a consensus about a community’s values, so was there also a consensus about what building materials, architectural and spatial forms represented the unique character and structure of one’s city. Each person in the community recognized and understood this unique character, and worked within its constraints, although there was still considerable variation possible, in choice of colors and materials, detailing, degree of elegance, as well as in the architectural expression of the city’s varied functions. This consensus, which the playwright Peter Shaffer calls the ‘communal eye,’ has been lost in many places, but there are still many citizens who are intuitively able to recognize their city’s unique character, and can identify appropriate or inappropriate development.” (Crowhurst Lennard and Lennard, 1995, p. 7)

In the case of the Parkstadt project, we are applying various patterns, such as **arcades, four story limit, courtyards that live, main gateways, pedestrian street, parking at the edge, etc.** The question also is what new patterns or archetypes are we developing for the Parkstadt project. The single most interesting new pattern for this project seems to be the long thin apartment.

#### Example of Long Thin Apartment

At the same time that we were investigating the urban space, we were also looking for comfortable apartments which would solidify the urban plan and also fit into the urban structure we had developed so far. From the client we had received the following apartment specification brief: 40 sqm single bedroom at 10%; 60 sqm double bedroom at 40%; 75

sqm 3 bedrooms at 40%; 90 sqm 4 bedrooms at 10%.

We began testing various kinds of apartments with various configurations. After developing various apartment sizes, we made an unusual discovery that led to an unexpected result: the following investigation is worth reporting. Taking the 70-75 sqm apartment size as a model, we were testing various configurations in which the length and width would change. The net interior sizes were the following: 8x9m, 7x10, 6x12, 5x15, and 4x18. Then we started to design these various apartments from the professional side as well as with users. It turned out that there were two particular sizes which were evaluated again and again as the clearly better apartments. This was first the 8x9 meter apartment, but it was also the 5x15 meter apartment. The reasons given included, a) better apartment layout possibilities (flexibility), and b) better light (in particular for the long apartment). This was surprising, a rather unusual long size for an archetypal apartment.

### (4) USER DESIGN - LAYOUT OF APARTMENTS

People know the most about their own needs, and they know most about how well or badly rooms, paths, buildings, and public gardens are working. In his ten principles upon which we can build, H.R.H. The Prince of Wales advocates participation as follows: “People should be involved willingly from the beginning in the improvement of their surroundings...Let the people who will have to live with what you build help guide your hand...Pride in your community can only be generated if you have some say in how it looks or how it is managed...There must be one golden rule—we all need to be involved together—planning and architecture are much too important to be left to the professionals.” (H.R.H. The Prince of Wales, 1989, pp. 96-97.) It is therefore quite beneficial for the success of a project to have the users and townspeople or other people who are interested in the project to participate in some way. Participation, then, can occur at varying levels, although it is generally defined as “any process by which the users of an environment help to shape it. The most modest kind of participation is the kind where the user helps to shape a building by acting as a client for an architect. The fullest kind of participation is the kind where users actually build their buildings for themselves.” (Alexander, et al., 1975, p. 39)

#### Example of users laying out their own apartments

Since it is our intention to work with the users, the actual inhabitants, on the final layout of their apartments, we started early in the project working with people from the Hoechst company in Frankfurt on the design of their apartments. There were two things we had not considered very carefully so far. First of all, these users definitely wanted a balcony, or some private open space, and second, there was to be a hallway after one entered the apartment. Here are some examples of users drawings from our work in Frankfurt.

The principle of user participation can be invaluable in many ways. On a physical level, user participation helps to

develop a richer, more diverse environment that is closely adapted to users' individual and collective needs. On a more psychological level, user participation encourages a deeper connection between particular people and a particular place, resulting in a greater sense of belonging and caring for place.

##### **(5) VARIATION AND VARIETY IN THE URBAN SPACE THE APARTMENTS AND THE BUILDINGS**

The theme of variation and variety within the overall structure occurs as a result of the specific site conditions and user input rather than as variation for its own sake. Variation and variety occur at all levels of scale, from the urban level to the individual apartment level as well as at the level of construction detail. When translated into physical form, the result is a relaxed variation of the urban structure, as well as relaxed variations in the apartments.

##### **Hierarchy of Urban Open Space**

At the urban level, variation and hierarchy emerged as the spatial quality of each kind of open space was looked at in detail. Working in 1:50 model and from empirical observation, open spaces were shaped by overall and specific site considerations in simultaneous coordination with the themes of light and positive space. The main open space, the Ringstr. at 20m wide, is shaped at one end by the main passage through building C and at the other by two two-story projections. The Ringstr. is joined roughly toward the center by the next level of open space, the pedestrian street which is in 15m at the start and then narrows to 12m. From these major urban spaces passages through buildings lead to successive layers and kinds of open space. First is the interior light court of each building from which another passage leads to a second larger garden space. Each particular space, within each type of open space — street, light court, garden, passageway — is of a similar, yet unique size and shape as determined by local conditions. Thus, a rich fabric of variation of variety of open space is achieved both in the larger order of a clear hierarchy of type and scale and in the finer order within each type.

##### **Variation of Apartment Types**

Once the two patterns of apartment types were established — the 6m apartment (described as the long thin apartment) and the 9m apartment — variation within the pattern occurs as each apartment is placed and shaped by the differing context of each building on the site and within each building itself. For instance, in some cases to get good southern light a 6m apartment wraps around the corner of a building creating a new variation within the pattern. At the next level of design, a high degree of variation will occur as each user lays out their apartment according to unique needs and desires.

##### **Variety of Balconies and Variation in the Balcony Positions**

Balconies are an important feature that the users have requested. A general balcony pattern was established, 2m

wide by 3m long with a roof supported by posts at the corners. As this pattern was applied several variations occurred to meet a range of local conditions as defined by the variation of open spaces and apartment types. Out of the major concerns of quality of sunlight and privacy a somewhat loose and relaxed distribution of a few balcony types was established.

##### **Graded Variation in Building Facades**

In the development of the apartment patterns ceiling height was determined as a critical feature to the quality of light and space. In this case a rather high ceiling was established with a 3.6m floor to floor height. An early site model at 1:200 was built with all floor heights according to this pattern, whether one-story, two-story, three-story or four. When this model was placed in the complete Parkstadt site model at a meeting in Germany it appeared somewhat too high in the overall context. As a result, apartment height in regard to the theme of light was examined in greater detail. First, it was clear that the first floor needed to be on a 1m plinth to gain privacy from the street and that apartments on this level needed the 3.6m height to gain sunlight from the light courts. However, successive floors — the second and third stories — needed less ceiling height since they are higher up in the light court, and the fourth floor needed even less. Thus a graded variation in the building structure and facade was established of 1m — 3.6m — 3.3m — 3.3m — 2.7m.

Subtle variation in the large as well as the small scales of a project is important because it can help to foster a sense of belonging and ownership between people and their environments. Just as people, animals, plants, and other living things are all slightly different from one another, buildings, apartments, gardens, and streets can also have this living quality. Since every spot on every piece of land is slightly different from the next, it makes sense that every building, garden, street, gate and path is also slightly different than the next just in response to its particular place. Brent Brolin calls for "...a way of designing which would reinforce the character of a neighborhood because its inspiration would be taken from the spirit of the place...Family resemblance is what counts; the eye should feel that a congenial presence has been added." (Brolin, 1980, p. 139-140.) Crowhurst Lennard and Lennard discuss variation in terms of cities: "Similarly, the physical characteristics of the city should vary within a limited range, from building to building, and from city to city. It is these small and subtle variations on architectural themes that impart a sense of identity to the street or the city." (Crowhurst Lennard and Lennard, 1995, p. 9). On a more personal level, the very act of laying out one's own apartment and participating in its creation, can encourage users to care deeply for the place they live, to take care of that place, and to feel like they belong there.

##### **(6) INTEGRATED PROCESS OF DESIGN AND CONSTRUCTION**

The application of these various themes through planning and design can help to create a more integrated environment

and encourage a sense of place; however it is in the actual making, the construction of the project, and its integration with design, that is the most important principle for creating environments with life. The theme of integrating design and construction proposes that the act of design and the act of construction should not be separate entities, but instead should be integrated so that each can help the other in producing a better building or a better environment. We are proposing that it is mainly when design and construction are integrated that fine adaptations during construction of the evolving building can be made to better respond to site, user needs, context, and the emerging building as a whole.

I have described elsewhere the benefits of integrating design and construction in the example of the Eishin Campus in Japan as follows: "As figments of design become real and one can walk through them and experience their life directly, concepts which could only be imagined earlier may be found to require fine-tuning or even alteration. This exemplifies the dynamic process of unfolding when what has been built leads to a new thing. In standard theory the claim is that the architect should be able to know all of this in advance; the reality, however, is that life is a quality of process. In the Eishin Campus it is precisely all of these acts, great and small, of design inside of construction, which create the profound quality of this place." (Neis, 1994, p. 11)

We are also proposing that in the early "design" stages of the project, typically referred to as schematic design and design development, the design of the building can be helped by certain acts of construction such as stake-outs and full-scale construction mock-ups, in order to make a better building in the end. Staking out the site, constructing full-scale mock-ups, determining building heights, window openings, building materials and color, are some practical ways in which design and construction can be integrated. These acts can help the architect make better decisions regarding questions that cannot be answered definitively using only drawings and models. In describing his ten principles upon which we can build, H.R.H. The Prince of Wales agrees with the importance of working directly on the site in his description of place: "We must respect the land...Rather than planning from a drawing board or plotting road routes on a map, we should feel the life of the land and its contours..." (H.R.H. The Prince of Wales, 1989, p. 78.)

### **Example of Integrated Design and Construction in the Frankfurt Project**

ARKADEN: STUDENT WORKSHOP - Summer 95

The first example comes from a workshop I gave to Frankfurt students in the summer of 1995. Here, the students first designed an arcade for an urban context similar to the Frankfurt Parkstadt Project. What was even more important, these students then also built their design as a mock-up. Here are some visual examples of this kind of integrated design and construction within architectural education.

### **The Wall Structure**

But let us continue with the professional side of the project.

Partially, for reasons of belief in some unifying elements of the project, and partially for reasons of cost, the client had given all the architects the following conditions to work with: A. Materials: 1. Bricks for the exterior walls; 2. Dark roof tiles; 3. White Plastic Windows. B. Design: 4. Roofs had to be sloped.

Of these the brick wall is probably the single most important building element in the project because of its large amount of visible surface and thus impact on the observer or user. Early on we started to work with sketches, models and real building material mock-ups. Soon it turned out that we did not want to work with a simple cavity wall, because of its limited exterior leaf. Instead, we started to work on an integrated wall where concrete and brick together form one heavy structurally integrated masonry wall.

The reality of a building as an actual place, as an actual environment for people, is a continuously evolving event. During this process, the architect works much like a conductor of a building orchestra. This requires a holistic-thinking approach, with the architect continually asking him/herself "what is the most important thing I have to do tomorrow in this process to make things better, to make this a better building?" Integration of design and construction enables the architect to be able to act on this question in the most productive way possible, as the project emerges from vision to completion.

### **CONCLUSION/OUTLOOK**

What can we conclude at this point in the process of this project? We are in the middle of designing the urban village with the help of various principles, and the application of various themes. I have presented 6 of those themes or principles of design and construction for the urban village in Frankfurt:

- (1) LIGHT AND URBAN DENSITY
- (2) POSITIVE URBAN OPEN SPACE AND URBAN GEOMETRY
- (3) PATTERNS - FORMATION OF AN ARCHETYPE: LONG THIN APARTMENTS
- (4) USER DESIGN - LAYOUT OF APARTMENTS
- (5) VARIATION AND VARIETY IN THE URBAN SPACE AND THE APARTMENTS
- (6) INTEGRATED PROCESS OF DESIGN AND CONSTRUCTION

These various principles, topics and themes are relevant and important for the making of good buildings and good urban environments. However, I have pointed out that the principle of integrated design and construction is probably the most important principle because of its potential impact on the quality of the buildings, especially in the small aspects of design and construction, which constitute the world around us. And I hope very much that we will be able to apply this principle to the best of the buildings and their inhabitants, because it is here where the real difference to

other modern buildings can be experienced and felt.

Let me finish this paper with a few remarks from people from my office, and their expectations for the urban village in Frankfurt:

“The quality of building that surprises you in the modern world” (C.G.)

“How to achieve the Behrens Building Quality in some modern form”(C.G.)

“Buildings which are going to be around for a long time”(C.G.)

“Buildings which are being taken care of and loved by their inhabitants”(S.I.)

“Next: Do it” (C.G.)

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#### BIBLIOGRAPHY

- Aldous, Tony, *Urban Villages* (London: The Urban Villages Group, 1992).
- Alexander, Christopher, Sara Ishikawa, Murray Silverstein, et al., *A Pattern Language* (New York: Oxford University Press, 1977).
- Alexander, Christopher, Murray Silverstein, et al., *The Oregon Experiment* (New York: Oxford University Press, 1975).
- Alexander, Christopher, Hajo Neis et al., *A New Theory of Urban Design* (New York: Oxford University Press, 1987).
- Anninou, Artemis, “The Unified Building Process,” (Ph.D. Diss., UC Berkeley, 1986).
- Appleyard, Donald, “The Environment as a Social Symbol,” *Ekistics*. (278 Sept/Oct 1979).
- Buderrath, Bernhard, *Peter Behrens Umbautes Licht* (Munich: Prestel, 1990).
- Crowhurst Lennard, Suzanne H., and Henry L. Lennard, *Livable Cities Observed* (Carmel: Gondolier Press, 1995).
- Gombrich, Ernst, *Reflections on the History of Art* (Berkeley: University of California Press, 1987).
- Habraken, John, “Cultivating the Field: About an Attitude When Making Architecture” *Places* Vol. 9.1. p. 10.
- H.R.H. The Prince of Wales, *A Vision of Britain: A Personal View of Architecture* (London: Doubleday, 1989).
- James, Kathleen, *German Expressionist Architecture: A Blueprint for Reform?*
- Lynch, Kevin, *A Theory of Good City Form* (Cambridge, MA: The MIT Press, 1981).
- Neis, Hajo, “A Vision of Wholeness and the Process of Building: An Alternative to Standard Architectural Practice in the 21st Century.” Paper presented and published at the ACSA East Central Regional Conference, Cincinnati, 1994.
- Neis, Hajo, “City Building: Models for the Formation of Larger Urban Wholes” (Ph.D. Diss., UC Berkeley, 1989).
- Sitte, Camillo, *City Planning According to Artistic Principles* (New York: Random House, 1965).
- Sucher, David, *City Comforts: How to Build an Urban Village* (Seattle: City Comforts Press, 1995).