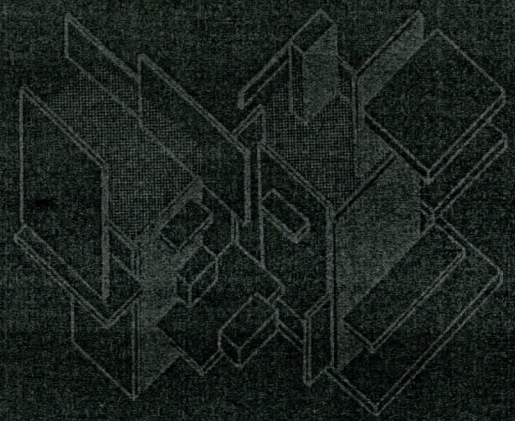
Colin Rowe
and Robert Slutzky

Transparency



With a
Commentary by
Bernhard Hoesli
and an
Introduction by
Werner Oechslin

Birkhäuser gta

Colin Rowe

Born 1920 in Rotherham (GB) and studied architecture at Liverpool University and art history at the Warburg Institute of London University. Professor of Architecture at the University of Texas in Austin, at Cambridge University and at Cornell University. He was awarded the gold medal by the Royal Institute of British Architects in 1995.

Robert Slutzky

Born in New York in 1929, trained in the Fine Arts at Yale University and at the Cooper Union Art School. From 1954 to 1956 he was a member of the "Texas Rangers" at the University of Texas in Austin. He then taught at the Pratt Institute in Brooklyn and the Cooper Union Art and Cooper Union Architecture School respectively. In 1990 he became Professor at the Graduate School of Fine Arts at the University of Pennsylvania.

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The written work concerning the concept of transparency was conceived in the Spring of 1955 by Colin Rowe, educated as an architect, student of architectural historian Rudolf Wittkower, and by Robert Slutzky, painter and student of Josef Albers. At that time, both were at the School of Architecture at the University of Texas in Austin; Robert Slutzky was responsible for the teaching of drawing and color design, Colin Rowe was professor of architectural design. The essay was ready for printing in Fall of that same year; already in Winter, a second essay had been written as a sequel to the study, and a third part outlined in Spring of 1956.

Various circumstances delayed the publication of the second part (an example would be the willingness of "The Architectural Review" to accept the piece on the condition that certain sections concerning Gropius be omitted) until it finally appeared in 1964 in "Perspecta 8", The Yale Architectural Journal, slightly abridged, under the title "Transparency: Literal and Phenomenal".

The significance of this essay is threefold: Firstly, it demonstrates both a sober as well as a precise and fact-related working technique that is seldom applied to architectural works of the 20th Century. Secondly: For more than half a century, architects and critics of architecture have seen the significance of architectural development in the fact that an avant-garde necessarily brings forth what is new in a continuous, uninterupted succession. There is, in contrast, still hardly any effort directed toward abstracting from the abundance of existing works the insights or methods which, when freed from the particular and the personal of isolated cases, become

transferable and available. Here lies the fundamental value of the work of Rowe and Slutzky; it demonstrates by way of example that theoretical bases can be obtained from what has been developed empirically. This is of particular topical interest today. And thirdly, the concept of transparency in architecture elaborated by Rowe and Slutzky demonstrates a possibility for the classification of complexity and lucidity that seems to us to be especially timely. Its applicability, moreover, is extraordinarily multi-layered.

For these reasons, I have translated and commented on "Transparency". The basis for the translation was laid by the text in "Perspecta 8" (P8). The footnotes specify where this version deviates substantially in word or meaning from the original 1955 essay (EF). I thank Robert Slutzky for making the first text available to me. For permission to reprint the article, I thank the editors of "Perspecta".

The essay is now being published in the first volume of the Le Corbusier Studies of the Institute for History and Theory of Architecture of the ETH because the concept of transparency as specifically formulated by Rowe and Slutzky is demonstrated on two of Le Corbusier's masterworks - one executed building and one project - and because, thanks to this concept, it becomes possible to clarify a typical feature of Le Corbusier's architectural work that until now has never been described.

Bernhard Hoesli (1968)

Werner Oechslin
"Transparency": The Search for a Reliable Design Method in Accordance with the Principles of Modern Architecture*

On March 12, 1968, Robert Slutzky wrote from New York to Bernhard Hoesli, who had requested information from him about the origin and development of the "Transparency" texts: "Firstly, let me again thank you for your marvellous efforts re: Transparency. It is comforting to know that one can have a forum on the other side of the Atlantic, particularly when the 'literal' transparentists reign so supreme these days ..."[1] These first lines lead directly to the center of the problematic of Colin Rowe and Robert Slutzky's co-authored writings under the title "Transparency". Even when Hoesli and the newly founded *Institute gta* in Zurich were preparing to publish *Transparenz* for the first time in book form as the first volume of a planned series of Le Corbusier studies, Slutzky himself was not sure anymore how this writing had come about.[2] He was suggesting, moreover, that there was no lack of "transparent" architecture in the world, and that the authors of "Transparency" were deceiving themselves if they thought they could assert the "metaphor" – their own sense of transparency, that is – against a far too literal interpretation of a term treated as a synonym for "modern".[3] The hope that their earlier efforts could be developed on the European side of the Atlantic – incidentally, also expressed by those in Europe – was all the more understandable. Be that as it may, in 1968, when Hoesly was preparing the German edition of the first part, complete with commentary, what had been proposed in the mid-1950s as holding great promise for the future was apparently largely forgotten. Today, that very phase of architecture discussion, prematurely fallen prey to myth, is part of history and an object of historical reconstruction, as Alexander Caragonne has proposed in *The Texas Rangers. A Short History of a Teaching Program at the University of Texas College of Architecture 1951–1958*.[4] Caragonne views the interrupted architectural discussion that took place during the years between 1951 and 1958 as bound up with the story of the Texas Rangers. He leaves off his account with the question, "what would have happened if ...?"[5] Furthermore, in an epilogue, Caragonne cites John Hejduk, one of the Texas Rangers, who in 1981 described the episode as if the move from experiment to routine had automatically led to the decay of the idea: "After the Texas thing reached Cornell, it just dried up. It became academic. They took Corb, analyzed him to death and they

* This text was written for the French edition of "Transparency" (cf. Rolin Rowe et Robert Slutzky, *Transparence, réelle et virtuelle*, Paris: Editions du Demi-Cercle, 1992, pp. 7ff.). Since then, a comprehensive account of the evolution of this text has been included by Alexander Caragonne in his book *The Texas Rangers. A Short History of a Teaching Program at the University of Texas College of Architecture 1951–1958* (Cambridge, Mass.: MIT Press, 1993), based on the material in the archives at the Institut gta. The author had the opportunity to examine the first draft of this work, for which he is very grateful to A. Caragonne. The references in the footnotes to the present article refer to the published book.

squeezed all the juice out of him ... The warm Texas breeze hit the chill of Ithaca and then rained itself out."[6] But such poetic images have done more to shore up the myth of the Texas Rangers than to diminish it. The story of the experiments and experiences of that time has remained obscure until quite recently, the only directly available theoretical evidence is the texts themselves.

Just how inadequate recollections of this event remained for far too long is demonstrated in the 1968 exchange of letters cited above. However, from Slutzky's answers to Hoesli's questions at that time, it was firmly established that Rowe and Slutzky conceived of the first "Transparency" article in the spring of 1955, committed it to paper during the following months, and completed it in the summer of the same year.[7] Immediately afterward, in fall and winter, the authors embarked on a sequel of "Transparency", and ultimately outlined a third, never published article in spring of the following year.

But this was not enough! The article was sent to the most important journals, without success.[8] The *Architectural Review* declined publication on the basis of remarks considered to be too critical of Gropius – everyone guessed that Nikolaus Pevsner was behind this[9] – a rejection which was evidently still vexing until very recently and which distracted from the main issue.[10] The text was then shelved until 1962, when Yale University contacted Colin Rowe about it. The first part of "Transparency" was finally published in *Perspecta* 8 in 1963.[11] Thus at the time that Hoesli was working on the German edition, only the first part of "Transparency" had appeared in a published, that is, a final version. Moreover, as this version had been modified from the copy of the manuscript in his possession, Hoesli decided not only to write a commentary but to put together a "critical edition".[12] As if extracting the "true" text from various codices, Hoesli cited in footnotes the small deviations from he original typewritten manuscript Slutzky had sent him.[13]

But before the German version was published, other forms of publication had been examined, again typical of the protracted process of having this text printed. The small volume *Transparenz* was to mark the beginning of a new series entitled "Le Corbusier Studien" to be issued by the Institute for the History and Theory of Architecture (gta), founded a year earlier in 1967, a series Hoesli privately referred to as "Zurich Studies of L-C".[14] Zurich was to lay the foundation stone for the upcoming phase of Le Corbusier research, and it also is in this sense – as an analysis of Le Corbusier – that *Transparenz* was evidently to be understood. Whether this research, combined with other articles about Le Corbusier, was actually to be published was still under discussion. It was then that Hoesli had his "saving inspiration" that he shared with the director of the gta Institute, Adolf Max Vogt, in a letter of February 18, 1968: "As Volume 1, along with the translation of Rowe, we'll print the study Après le Cubisme by L-C and Ozenfant! This deals with one of the first theoretical works by L-C, if not *the* first. Cited over and over again by him, hardly known, long out-of-print."[15] To what extent Hoesli's distance from Colin Rowe at this point played a role in these considerations can only be surmised. It is certain, however, that analysis of the (historical) object alone was not enough for Hoesli; rather, as he explained in his commentary and in particular in the addendum he wrote later, it was essential that there be some consequences favouring design methods in accordance with the didactic attempts in Texas he had left off. Behind the suggestion to publish "Transparency" together with "Après le Cubisme" thus lay this reasoning: "The combination would also be in the spirit of the Institute's work: factual foundation and elaboration; Rowe's article, which begins with painting and moves to architecture, would be the mid-century echo of earlier postulates. And thus the whole is our contribution *through direct confrontation*, not simply a new publication or translation."[16]

No doubt, for Hoesli at this point, the Texas experiment lay far back in time. After he began to teach at the ETH Zurich on April 1, 1960, his path led him only sporadically back to the USA, the final time in 1967 when he was a visiting professor at Cornell. He had exchanged letters during that year with his later collaborator and colleague at the ETH, Franz Oswald, about the situation and development at American schools of architecture, and he had also maintained contact with old friends from Austin who had kept him up to date on the current state of affairs. This was how Hoesli learned from John Hejduk that the concept of transparency definitely had its advantages: "It begins to be useful."[17] Oswald himself was searching at that time for a way to put the Texas Rangers' model to the test within a practical curriculum. He reacted to Hoesli's "Transparency" publication project with enthusiasm – despite Cornell's rather unencouraging attitude toward his course – and sent Hoesli a list of definitions and descriptions that would doubtless aid him in his undertaking.[18] The 1968 publication on transparency was thus intended to stand as "*the* contribution of the still inexhaustible possibilities of the Cubist aesthetic" and "demonstrate the relevance and application" of the concept.[19] The exchange of letters with Oswald makes it very clear that Hoesli's objective with "transparency" continued to be first and foremost to tie into the original attempt of the Texas Rangers to formulate and further a method of design. This was confirmed in his teachings at the ETH then as well as later.

On March 19, 1968, Slutzky telegraphed Hoesli: "article two requires revision unavailable for present publication."[20] Because the gta volume was to come out shortly, the inclusion of the second "Transparency" article by Rowe and Slutzky was not possible. It would appear for the first time in 1973 in *Perspecta* 13/14.[21] But it was not included by Rowe in his own collected articles of 1976, nor was it integrated into any of the later editions of the gta publication. The reason for this lies in the fact that in his 1968 commentary Hoesli had made reference to examples presented in this second article – Michelangelo's San Lorenzo façade, for instance.[22] Thus the history of *Transparenz* was influenced not a little by contingency and – *nomen* est omen – belied many of the expectations that accompanied this publication; it was certainly anything but transparent! The reason probably resides in the fact that "transparency" was not simply synonymous with the Texas Rangers' experiment, as Hoesli himself realized.

Obviously, the didactic experiments at the University of Texas School of Architecture, at least when one reads between Hoesli's lines, were not adequately reflected in the "Transparency" texts of Rowe and Slutzky. But these were the experiments that were decisive for Hoesli as a teacher of architecture. The experiences and knowledge he had gained between 1951 and 1956, at which point the Texas Rangers were dispersed after their relatively short period of activity together, he later carried forward at the ETH Zurich. His fundamental insight into the universal nature of learning – identical to that of research – was the conviction that architectural thinking was a form of intellectual activity. To get to the core of this thinking, pealing away the outer layers to arrive at a reliable method, was his professed, if never explicitly defined, objective. Hoesli did not tackle the problem by means of a basic analysis of the theoretical model along the lines of an Alberti, for example.[23] He tried much more to arrive at a systematic position *empirically*, by way of experimentation on the object of modern architecture – particularly on the work of Le Corbusier.[24] As the notes from his lessons in Austin testify, Hoesli had his students undertake practical exercises, like the production of "three-dimensional relational diagrams" for example, and then to answer in writing the question "What is architectural design?"[25] In this way, the students would be able

to verify their methodology for themselves. They would also avoid ending up with answers that were overly definitive or final. Instead, the emphasis was on the experimental nature of the exercise.

In an internal memorandum, sent in March of 1954 to Harwell Hamilton Harris, dean of the College of Architecture, Rowe and Hoesli specified the intellectual requirement of the architecture curriculum, speaking of "certain principles" as well as of "essential knowledge".[26] They considered such requirements cornerstones and orientation points, indeed the basis of a didactic approach that was, in fact, the central piece of the Texas Rangers' program. Critical assessment of the "formal systems" of Wright, Le Corbusier, and Mies was the declared goal of the curriculum. After affirming "their form will be used with or without conscious knowledge", Rowe and Hoesli then laid down the challenge: "It is the duty of an academy to make knowledge conscious."[27] This was exactly as precise as it was general in that it still left the possibilities of such a "coming to consciousness" undefined. Peter Eisenman, in an overview of the significance of American architectural journals – in which he referred to the concept of "transparency" as "still unexplored" – prefaced his reflections with a quotation from Panofsky: "It has rightly been said that theory, if not received at the door of an empirical discipline, comes in through the chinmey like a ghost and upsets the furniture. But it is no less true that history, if not received at the door of a theoretical discipline, creeps into the cellar like a horde of mice and undermines the groundwork." This variation on the theme of the eternal relationship between theory and practice also has its application with respect to the Texas program.

But in Austin, a certain poetic license was welcome, the privilege of a younger generation who not only permit themselves a partisan point of view, more precisely, but detect certain advantages in it. If vanity was injured – clearly that of Gropius, for instance – or progressive thinkers rather disdainfully dismissed, they thought little of it. This must be remembered today if the discussions of that time are to be newly assessed. Giedion, whose comparison of the Dessau Bauhaus with Picasso's *Arlésienne* would become a famous *pièce de résistance* with respect to "transparency" had, of course, already thought long and hard about the subject. In *The Beginnings of Art*, however not published until 1962, he portrayed transparency, abstraction, and symbol as sources of both prehistoric and modern art.[28] But as early as 1944, in his foreword to Gyorgy Kepes' volume *Language of Vision,* he endorsed Kepes' desire "to put earlier demands into concrete terms and on a still wider social plane" – a goal that fully corresponds to that pursued later by the Texas Rangers – and at the same time condemned a blind avant-gardism – "change for change's sake".[29] Yet, while the authors of "Transparency" explicitly derived their concept and its double meaning from Kepes and Moholy-Nagy, from Giedion, who was responsible for placing the theme of the dependence of modern architecture on painting at the heart of *Space, Time and Architecture,* they selected out exactly those points of friction that were best suited to illustrating and distinguishing their own position. Later, in his German translation, Hoesli critically noted that the quotations from Giedion found in *Transparenz* should be taken polemically inasmuch as they were inessential to the basic argument.[30] On the other hand, Slutzky confirmed still in 1989 that the "transparency" discussion had essentially arisen out of a critique of Giedion, and any conceptual and fundamental clarification should be sought on this basis.[31] That Gropius' Dessau Bauhaus should become a victim in this connection – and, as a consequence, that the publication of "Transparency" should almost have been prevented – is understandable in view of the situation at that time, when Bauhaus-oriented didactics at American schools of architecture were by this time thoroughly predominant.[32]

Consequently, the didactic goals of the Texas Rangers were diametrically opposed to those of Gropius and Breuer at Harvard. This becomes strikingly noticeable when one compares the tasks that were assigned to the students. The recipes recommended at Harvard – combining material and constructional preconditions with individual solutions, so as to produce "visual variety" – were later portrayed not altogether unjustly by Klaus Herdeg as entirely meaningless in terms of a definite architectural result.[33] If at Harvard one proceeded pragmatically, on the basis of economic and constructional factors, and ultimately also on the basis of "less definable psychological requirements",[34] then the reverse was true for the Texas Rangers, for whom "form follows form".[35] The Harvard process of architectonic "form-finding" had to be radically attacked from the standpoint of artistic premises of form. Only thus can it be explained why Rowe and Hoesli went beyond the immediate requirements in their 1954 memorandum in Austin returning to the incunabula of modern architecture: to Le Corbusier's Dom-ino scheme and Van Doesburg's series of "Counter Constructions" of 1923.[36] These images were over thirty years old at the time, but nevertheless little had occurred since that was not already implicit in these drawings.[37]

Thus, despite the American presence of Giedion and Harvard, the starting point for the Texas Rangers was distinctly linked to the beginning of the modern movement in Europe. There, at the root itself, problems could best be detected and further elaborated. It is said, that Hoesli especially liked to point out that the first generation that had matured with the modern period was now grown, and with this maturation had assumed a particular obligation no longer merely to expound modernism as a creed or doctrine, but to systematically and methodically research it with the aim of helping it prove its validity and gain acceptance.[38] In so saying, objectivity was at least set up as a goal, although naturally not a completely new one. De Stijl had long ago waved the banner of objectivity, and Gropius as well had already propagated the "objective validity" of the new architectural results in his *International Architecture* in 1925 – even if coupled with a wholly different subject matter. In America, too, it had been impossible for a long time to ignore the demand to describe and define the objective foundations of modernism. The Museum of Modern Art in New York – an authority on the subject since its exhibition *Modern Architecture* and its simultaneous propagation of the "International Style" in 1932 – had provided a genealogy for the origins of modern form in 1936 in their exhibition *Cubism and Abstract Art,* and had thereby suggested that modern architecture was the synthesis of Purism, De Stijl and the Bauhaus.[39] But even the Museum of Modern Art quickly fell back on commonplaces, going so far as to turn to the old Vitruvian triad *firmitas, utilitas* and *venustas* in an attempt to make the principles of modern architecture available for popular understanding.[40] In this context it is even more self-evident and understandable that the Texas Rangers should see their efforts as a counter to the situation of the time, a situation in their eyes sweepingly vague and unclear.

But it was with *Cubism and Abstract Art* that the role of America rather than Europe as spearhead of modernism was displayed and claimed.[41] In the catalogue for the New York exhibition the theme was illustrated – in the best propagandist tradition – under the title "Contrast and Condescension" by means of two posters created for the 1928 Pressa exhibition in Cologne: according to the commentary in the catalogue introduction, the more conventional poster had been published for the Anglo-American public, which at the time "would not appreciate ... simplicity and abstraction", but now the roles were reversed: "Today times have changed."[42] Yet how correct was this assessment in 1936 – or for the time that followed? A look at the American publications of the period that aligned

themselves less with the avant-garde and thus were free of a future-oriented pamphlet rhetoric affords a more representative picture of the general state of architecture and architectural education in the USA. In his portrayal of the development of the School of Architecture at Columbia University, published in 1954, Theodor K. Rohdenberg entitled the chapter concerning the years 1933–1954 "Revolution and Clarification".[43] But it quickly becomes clear that this revolution was confined to the "implications of the contemporary materials and methods of construction" and, incidentally, relied on the thesis – by this point long since revised and supplemented by Giedion himself – that new spatial concepts would be guaranteed by the new technical requirements.[44] Here one finds again the reintroduction of the Vitruvian "synthesis of 'commodity, firmness and delight'".[45] Initiatives relating to the design curriculum, on the other hand, were reduced to the general, noncommital formula of "form conceptions in three dimensions", incidentally without disowning in any way the Beaux-Arts tradition.[46] Similarly, in Yale, in 1950 – the same year Josef Albers was named director of the Department of Design – Assistant Professor Richard Adams Rathbone came out with a textbook under the promising title *Introduction to Functional Design*, part of the great tradition of such textbooks since the turn of the century; however, absolutely nothing of the "Cubist revolution" is to be detected in it.[47]

These, then, are indications – along with Herdeg's serious criticism of the curriculum at the Harvard Graduate School of Design – of the situation of the architectural education in the USA in the early 50's, a situation characterized, by the way, to cite Werner Seligmann's review of the time, by the prevalence of "hyperbolic paraboloids and warped surface structures".[48] Once looked at in this way, the Texas Rangers' undertaking can properly be seen as directed to a revision of the history of the origins of modern architectural form, considered as transcending all limits of time, and to the exposition of the design methods that led to it. This necessarily involved a look back into history – which may be rather surprising from today's view. This also meant that those in Texas had to disengage their own activity and objective from direct connection with the architecture of their own day in favour of a new view and assessment of the origins of modern architecture a generation in the past. It is also symptomatic of this moment of consciousness, of recourse to history, that a remarkable library was being assembled in Austin at this time. The works of Letarouilly were acquired for it, which of course satisfied the highest graphic standards.[49] Doubtless more important however was the quickly spreading "modular" euphoria which at least since the "Proporzioni" congress at the 1951 Triennale in Milan and under the influence of Rudolf Wittkower's *Architectural Principles in the Age of Humanism*, made possible a new and unbiased atemporal approach to history on the basis of general geometrical references.[50]

In Austin, the signal was understood. The no longer satisfactory definition of an architecture based on variable external factors and their social implications led to a preoccupation with immanent formal design processes, if not necessarily to formalism. Hoesli would argue with these developments later, in 1968, the year of the publication of Transparenz, as the pendulum began to swing in the other direction in Zurich and elsewhere. A confidential letter to Hoesli from Aldolf Max Vogt testifies that this particular aspect – the formal competence of the architect who "deduces form" from given data – gained its particular interest though in obvious contradiction to the tendencies of that time.[51]

There was a further, even more "surprising" aspect of this form-related orientation on the part of the Texas Rangers, that of "style". Of course, the concept of an "International Style" had broken the taboo against style much earlier

and placed modern architecture under an equally notorious stylistic classification. Hower, according to Werner Seligman, it was not this source for Hoesli but a different one that was the trigger for related thoughts: Matthew Nowicki's *Origins and Trends in Modern Architecture* of 1952.[52] Hoesli concluded from this article that modern architecture should be conceived as a homogeneous and self-contained phenomenon, therefore as "style". Such a conception was, according to him, at the same time, a prerequisite for deriving (didactic) rules. Naturally, Hoesli was hardly concerned in a scholarly way with style and concepts of style – certainly not at all with art historical concepts of style. On the other hand, Wölfflin's "fundamental concepts" and theoretical ideas, for example, had had an effect far outside art history, and time and again demonstrably influenced architectural discussion. Such was also the case with the notion of "style". Art history was long since familiar with "the timelessness of essential intellectual concepts – at least since the beginning of the modern period – and the claim to understand "art historical development as a logically (or psychologically) necessary self-development of specific problems" might indeed have provoked Hoesli's interest, had he been closer to art history.[53] His concern, however, was certainly not to rethink art history from the ground up. This might explain the sometimes evident indecision that characterizes his transformation of such concepts into practice. It is then even more remarkable, how clearly the Texas Rangers differ in their specific approach to modern architecture from, say, the Smithsons, who confined themselves to the fixed formulation of primarily phenotypic characteristics ("white", "cubis", "autonomous") in *The Heroic Period of Modern Architecture*, conceived, according to their own declaration, in 1955–56, exactly the same time as the Texas phenomenon. Conversely the Texas Rangers, in their orientation toward didactic goals, were occupied with essential characteristics, and in this sense with general principles.

However, while Rowe and Slutzky's "Transparency" strictly confined itself to an analysis of chosen historical examples, Hoesli, on the other hand, because of his insistence on extending the argument to a design method, was occupied – inspite of all possible ambiguities – with this issue his whole life long. The metaphorical – and not literal – interpretaion of "transparency" guaranteed from the beginning that banal uses of the word would be precluded. Yet they could not entirely be avoided. Just as Slutzky labelled Giedion's comparison of the Dessau Bauhaus with Picasso's *Arlésienne* a "syllogistic pairing", so would the new interpretation of Le Corbusier – seen largely through Cubist glasses – also be read in such a "determinist" way.[54] One of Hoesli's students later wrote that he had regarded the strict methods Hoesli had tought – "discipline, reason, perseverance, and order" – as abstract principles. Some had unterstood, wanted to understand, or even misunderstood Hoesli's statements to the effect that the "architectonic product" was now "determinable".[55] Prior to writing his commentary and addendum to the 1969 *Transparenz*, Hoesli had publicly outlined his ideas on different occasions. In his inaugural lecture at the ETH Zurich, February 4, 1961, he argued against interpreting modern architecture exclusively as a product of "form follows function", seeking to elucidate from its 40-year evolution, "formal laws and formal systems" that had heir own innate principles of development.[56] And when in 1975 he again took up "transparency" as the theme for a seminar within the Department of Architecture at the ETH, the formula "transparency as organization of form" was of particular importance to him.[57] That this could lead to determinism and to prescriptive results may be seen from his 1968 addendum. Yet if he tended toward such a model, then this was a result of his primarily didactic intention, as evident in his 1975 lessons on "transparency", sketched out in a logical succession

of "4 parts": 1 THE CONCEPT "Transparency" /·DEFINITION / > predominantly examined in painting. 2 THE TRANSFER TO ARCHITECTURE / Rowe & Slutzky (see gta Vol. 4) / > Studies of the Work of L-C. 3 GENERALIZATION / Hoe (see gta vol. 4). 4 APPLICATION OF MEANS / and / MEANING.[58]

Hoesli saw himself as one who would and should uphold the process of generalization (toward method). On more general terms, he opposed a highly individualistic and subjective modern architecture – surely on the grounds of a completely other cultural tradition – anyway. He preferred the Neubühl housing development in Zurich to the Stuttgart Weissenhofsiedlung with its "artistic collection of very personal and self-conscious works by architectural prima donnas".[59] Thus, when accused of determinism, he defended himself vigorously and decisively. In connection with a letter from Julius Posener, who had suspected "a certain danger" in the transformation of "transparency" into a general principle, he noted, "raised to a principle? no: means to organization".[60] Again, much later, in October 1983, in a private letter to Dolf Schnebli, Hoesli acknowledged that the whole question had left him very uneasy: "[... in the meantime it has incessantly preoccupied me] HOW this knowledge – or this conviction – can be made 'instrumental'; how the intellectual and artistic tools of the professing might be formulated."[61]

Hoesli continued until the end of his life to elaborate the promise of the Texas Rangers, having been closest from the very beginning to the practical consequences of architectural teaching. This continuity could not be maintained by his American colleagues. Rowe had written his famous essay "The Mathematics of the Ideal Villa" as early as 1947, in which he had analyzed Palladio and Le Corbusier from the standpoint of systematic architectural conception, what he called the "logical disposition of motifs dogmatically accepted". But then, after the period in Austin, he set out for new horizons of "meaning", of "contexts" – toward *Collage City* – not without taking a few sideswipes at the "Neo-Rationalists" who mournfully hung on to the idea of predictable foundations in their conception of a future architecture.[62] Although after 1956 not only teachers but also former students from Austin met at Cornell, the Texas Rangers' experiment was – as everyone could see – impossible to repeat. Meanwhile, Hejduk had established his system of teaching at New York's Cooper Union. In a compendium of his activities there between 1972 and 1985, which appeared under the eternally valid title *Education of an Architect*, the spirit of Texas was revived only in poetry. Hejduk wrote of tree trunks exuding a phosphorescent light, still laden with the shells of the insects that once inhabited them but had now vacated: "While we fix out eyes on these apparitions, we hear the sound of the insect in its new form hidden in the trees."[63]

But would the architectural conception of the "New York Five" even have been imaginable without the Texas Rangers' experiment? Even if one does not insist on the evidence of shared models from Mondrian's painting to Le Corbusier's Garches as starting points for a formal approach to architectural solutions, nonetheless a certain continuity in the architectural discourse must be admitted. Colin Rowe's introduction to the catalogue *Five Architects*, including the later additions, does not contradict this conclusion, even though by this point he already condemned the "rational" answer of modernism to architectural problems and qualified the efficacy of all options with questionmarks – those options, that is, that took architecture to be a logical outcome of its requirements – ironically, however, only to end up with formulations equally as hermetic and sibylline.[64] On the other hand, Kenneth Frampton, who had taken part in the "CASE Group" meeting in 1969 at the Museum of Modern Art, from which the subsequent publication

of *Five Architects* came, noted in 1972 that far more important than the common interest in Le Corbusier for the younger architects was Rowe and Slutzky's "Transparency" article, an "immediate critical import".[65] Thus was the story of the influence of the Texas Rangers in the USA registered as a footnote, and at the same time completed. Yet the new and altered positions of Hejduk and Eisenman, whose intellectual pedagogics spread quickly in the unfocused environment following the Austin experiment, cannot be understood without this background.

What has gotten lost in all this – with the exception of Cooper Union with its own traditional European links – is a thorough significant teaching of design, as Hoesli formerly persued it on both sides of the Atlantic. Instead, intellectual fancy gained ground in New York. Thus Hejduk, when recently asked the question in an interview, "How do you teach architecture?", answered, "Osmotically by osmosis."[66] And with this we have obviously reached the end of the tradition that had nurtured a systematic approach to a teaching of design built on the principles of modern architecture. History! In a letter to Hoesli dated September 26, 1983, Hejduk, who professed to be amazed by Hoesli's vivid memory of the time in Texas, wrote: "... Texas did affect architectural education and architecture itself during the past thirty years. Yours was a very important influence and passion upon architecture."[67]

1 Letter from B. Hoesli to R. Slutzky, March 5, 1968; answer from Slutzky to Hoesli, March 12, 1968, Hoesli Archives, Institut gta, ETH Zurich.

2 Cf. Colin Rowe and Robert Slutzky, *Transparenz, Kommentar von Bernhard Hoesli. Le Corbusier Studien I* (gta Series, Volume 4, Basel/Stuttgart, 1968, 2nd printing, 1974. (The second printing is an unrevised reprint of the first, up to the point of the additional note on p. 63, which contains a reference to the second "Transparency" article, which appeared in the meantime in *Perspecta* 13/14, 1971.) 3rd printing, revised and expanded, Basel/Boston/Berlin, 1989 (this printing contains Hoesli's 1982 Addendum, pp. 72ff.)

3 The article "Transparency" is built upon the ambiguity of the concept, which the authors define in terms of "literal" and "phenomenal", Proceeding from a distinction made by Gyorgy Kepes, they seek to elucidate the figurative meaning of transparency as a means of spatial ordering as opposed to a mere condition of non-opaqueness of a curtain wall. A number of critics have reacted strongly to this. See the review by Stanislaus von Moos, in *Zeitschrift für Schweizerische Archäologie und Kunstgeschichte* 27 (1970), pp. 237–8. Von Moos went so far as to speak of an "almost compulsive fetishism driving this word 'transparency'", and contrasted this meaning with the (ordinary and literally construed) concept as it had "long been used all over the world". The later discussion of the "Transparency" articles by Rosemarie Haag-Bletter ("Opaque Transparency", in *Oppositions* 13, 1970, pp. 121ff.) was also essentially aimed at the definition of the concept and its application.

4 Cit. note 1.

5 Ibid., pp. 324ff. "Worlds of 'if': a speculative assessment of the Texas School."

6 Ibid., p. 334.

7 Ibid., pp. 165ff. Caragonne reveals the perhaps surprising fact that Rowe conceived the article with Slutzky and not with Hoesli. John Shaw, in an interview with Caragonne, describes this set of circumstances as a "falling out between Colin and Bernhard". Caragonne justifiably calls the "Transparency" article "the first tangible document issuing out of the teaching program of the College of Architecture" (p. 165), "the intellectual linchpin of the program at Texas" (p. 173), and "a touchstone of the school's raison d'être" (p. 105. (There also the obvious attempt to establish the contribution of Rowe and Slutzky.)

8 Letter from Slutzky to Hoesli, March 12, 1968: "As for the first (article), we sent it to all the important architectural journals in the USA and abroad ... I distinctly remember AR sending us a reply to the effect that if we would consent to remove certain rather unfavorable reference to Gropius it would see print! (N. Pevsner ??) Anyway, upon the constant rejections over a period of a few years, we finally decided to shelve it indefinitely until that day when it could be published in its entirety."

9 Pevsner would also react negatively to Hoesli's publication of "Trans-

parency" – this time, however, with reference to the sequences of illustrations in Hoesli's commentary. This was interpreted in Zurich as a "verdict" and became the cause of some uneasiness. Letter of January 17, 1968, from N. Pevsner to AFM. Vogt, Director of the gta Institute; from Vogt to Pevsner, May 20, 1968; from Pevsner to Vogt, May 22, 1968. Copies of the latter two letters are in the Hoesli Archives, Institut gta, ETH Zurich.

10 The "misinterpretation" of Gropius' Dessau Bauhaus by Rowe and Slutzky occasioned an article by Harmen Thies, as recently as 1989 ("Glasecken" in *Daidalos* 33, pp. 14ff.). Compare to Gropius' assessment written at the time, a product of the conditions of the day, below.

11 Colin Rowe and Robert Slutzky, "Transparency: Literal and Phenomenal", in *Perspecta* 8, The Yale Architectural Journal (New Haven, 1963). The article was introduced there – not without a certain skeptical undertone – as "an example of a methodology for modern architectural criticism that the authors feel will help to place this notoriously imprecise subject on a more rigorous basis".

12 In addition to this, we also have the account in Slutzky's letter of March 12, 1968: "Then one fine day in 1962 Yale established contact with Colin who was, if my memory is correct, back at Cornell. He had some reservations about allowing J. Barnett (the then editor of *Perspecta*) to make deletions and changes due to an avowed shortage of format space. In turn, J.B. insisted upon slenderizing it if it was to be published at all. It was then that I stepped in and became responsible for keeping its projected weight loss from reaching starvation proportions. And so, with a few meetings with J.B. in which compromises were finally effected which I felt to be fair and non-debilitating, Transparency finally appeared in issue 8. Of course, the original had more bite ... and the published illustrations were quite poor ... but on the whole I think it ended up rather happily for all."

13 Cf. Hoesli Archives, Institut gta, ETH Zurich: Ms. (24 pages, paginated 1–21, 12a, "Notes", "Plates"; labelled "Original Text, Transparency received from Bob Slutzky Summer 67" with hand-written markings by Hoesli). Cover letter from Slutzky dated July 28, 1967.

14 As apparent from a letter to Adolf Max Vogt on February 18, 1968 (compare note 15), Hoesli was enthusiastic about this idea: "Your wonderful idea ... is so good and convincing that in fact we will have to start on it immediately."

15 Letter from Hoesli to Vogt, February 18, 1968, Hoesli Archives, Institut gta, ETH Zurich.

16 . . Ibid.

17 Letter from Hejduk to Oswald, May 7, 1968; copied in part from the Hoesli Archives, Institut gta, ETH Zurich. Oswald informed Hoesli on April 4, 1968, about Hejduk's attempt to judge architecture – in a lecture about Le Corbusier's Carpenter Center – from the point of view of the Cubist ideal.

18 Letter from Oswald to Hoesli, February 21, 1968. The full letter – especially the 18 points about "Transparency" – contains notes and marks by Hoesli. Next to the sentence "Transparency is at the same time frame/field and figure", for example, is written in Hoesli's hand: "*good*, very important." After his return to Zurich on March 1, 1968, Oswald took part in the preparation of the publication of *Transparenz*.

19 This formulation from Oswald, cit. note 18.

20 Hoesli Archives, Institut gta, ETH Zurich.

21 Colin Rowe and Robert Slutzky, "Transparency: Literal and Phenomenal", Part 2, in *Perspecta* 13/14 (1971), pp. 286ff.

22 In the letter already cited (note 17), Hejduk writes: "I believe Colin and Rob will finish and publish second article – my memory of it is that it is superb, extremely interesting discussion of Michelangelo's San Lorenzo with marvellous configurational overlays. Colin at his best in constructive writing ..."

23 In this he differed strongly from Rowe, who had been educated in art history and was interested in the history of philosophy and ideas.

24 With respect to Hoesli's nearness to, or rather distance from, "theoretical positions", Colin Rowe's later formulation under the title "Program vs. Paradigm", in *The Cornell Journal of Architecture* 2 (1983), pp. 8ff. – fundamentally skeptical toward every analytical as well as synthetic method and a *downright* frontal attack on "program" – was not without its explosive effect.

25 Caragonne, *The Texas Rangers*, pp. 103 and 64, March 10 and May 3, 1954.

26 Caragonne, *The Texas Rangers,* p. 33. In 1953 Hoesli was commissioned by Harris to restructure the design curriculum. Colin Rowe came to Austin in January 1954. (Caragonne writes, pp. 9ff. "with the appearance of Rowe ... the intellectual foundation of the program and its operational rationale would quickly emerge.") Shortly thereafter, John Hejduk and Robert Slutzky, Lee Hirsche, and Irwin Rubin (the last three having just come from Josef Albers at Yale) were appointed teachers. The four introductory points of the March 13, 1954 memorandum read: "1. That the process of design is essentially the criticism of a given situation. 2. That the power of generalization and abstraction (in the student) must be aroused.

3. That the act of selection assumes a commitment to certain principles. 4. That an academic situation should offer essential knowledge and an essential attitude." (Caragonne, p. 33)

27 Caragonne, *The Texas Rangers*, pp. 33–34.

28 S. Giedion, *The Eternal Present (1): The Beginnings of Art,* The A.W. Mellon Lectures in the Fine Arts, 1957 (New York: Bollingen Foundation, 1962). Giedion had already published a paper in 1952 entitled "Transparency: primitive and modern", in *Art News*, summer 1952, pp. 47ff. Hoesli must have taken note of this piece only much later. (The photocopy in the Hoesli Estate contains the note: "27 März 1979 Hoe/von R. Fu[rrer]."

29 In Gyorgy Kepes, *Language of Vision* (Chicago: Paul Theobald, 1951), pp. 6-7. Giedion's forword, entitled "Art Means Reality", is signed "New York, June 12, 1944.

30 Rowe/Slutzky/Hoesli, *Transparenz*, cit. note 3, p. 22: "The presentation of this particular citation here and also the one on page 41 is unmistakably polemical; it is not necessary to the train of thought and contributes nothing to the argumentation (the trans.)."

31 Cf. Robert Slutzky, "'Transparenz' – wiedergelesen", in *Daidalos* 33 (1989), pp. 106ff.: "Their origin was basically a semantic dispute with Giedion's *Space, Time and Architecture*, wherein the syllogistic pairing of Picasso's *L'Arlésienne* and the intersecting glass walls of the Bauhaus led us to a more careful reading of certain modernist icons."

32 Ibid., p. 106.: "... an excessive predominance of Bauhaus-derived pedagogy."

33 Cf. Klaus Herdeg, *The Decorated Diagram. Harvard Architecture and the Failure of the Bauhaus Legacy* (Cambridge, Mass.: MIT Press, 1983), pp. 78ff.

34 Ibid., p. 84.

35 Hoesli later applied this formula in his Zurich teachings: cf. Hoesli Archives, Institut gta, ETH Zurich: Seminar "Transparency", summer semester 1975, lecture of April 25, 1975. His critique of the noncommittal "form follows function" was amplified with the topics "form and function are one", "form follows form", and with the reversal "form evokes function". With respect to "form and function are one", Hoesli noted: "attributed to Wright." (The full relevant text can be found in Frank Lloyd Wright, *Genius and the Mobocracy* (New York: Duell, Sloan and Pearce, 1949), p. 83, under the title "Form and Idea are Inseparable.") "Form follows form" led him back to Matthew Nowicki's "Origins and Trends in Modern Architecture" (*Magazine of Art* 44 [1951]), the significance of which for Hoesli was emphasized by Werner Seligmann ("Die Jahre in Texas und die ersten Jahre an der ETH Zürich 1956–1961", in J. Jansen/H. Jörg/L. Maraini/H. Stöckli, *Architektur lehren, Bernhard Hoesli an der Architekturabteilung der ETH Zürich* [Zurich, 1989], pp. 7ff.: p. 9).

36 Directly beforehand, Rowe and Hoesli had precisely stated: "An academy must also concern itself with the dichotomy between the pedagogical systems of the Beaux-Arts and the Bauhaus." Cf. Caragonne, *The Texas Rangers*, p. 34.

37 "Both these illustrations are over thirty years old. They offer the diagram of the contemporary situation. Very little has been generated since that time which is not implied in these drawings." (Ibid.)

38 This was explicitly emphasized by Werner Seligmann in a discussion with the author (on July 3, 1992).

39 This is already implied on the jacket of the catalogue, edited by Alfred H. Barr, Jr., which contains a diagram of the modern movement's development.

40 Compare the Museum of Modern Art's "educational brochure", *What Is Modern Architecture?* (introductory series to the modern arts 1, New York, 1942). The explanation begins, "the modern architect is a scientist ... and a psychologist ... and an artist ... but most contemporary architects are not modern", and proceeds to the demand: "Architecture ... should meet three requirements: utility, strength, beauty" (pp. 5–6).

41 Paradoxically, this claim had already been formulated in 1932 in Henry-Russell Hitchcock and Philip Johnson's *The International Style, Architecture since 1922* (New York, W.W. Norton, 1932), p. 25: "But it was in America that the promise of a new style appeared first and, up to the War, advanced most rapidly." Compare Werner Oechslin, "'Neues Bauen in der Welt' banned by the Nations", in *Rassegna* 38 (1989), pp. 6ff.: p. 8.

42 *Cubism and Abstract Art*, p. 10.

43 Theodor K. Rohdenburg, *A History of the School of Architecture: Columbia University* (New York, 1954), pp. 34ff.

44 Ibid., p. 54 ("The School at Present", "The Course in Construction").

45 Ibid.: "The constantly growing number of new building materials has made the study of design inseparable from the study of construction. Architecture has again become a synthesis of 'commodity, firmness and delight'."

46 Ibid., pp. 50ff.: "The Course in Design": "Architecture being a three-dimensional expression, it is essential that the beginner be taught at once to form conceptions in three dimensions."

47 Cf. R.A. Rathbone, *Introduction to Functional Design* (New York/Toron-

Bernhard Hoesli
Commentary

In 1948 Henry-Russell Hitchcock's book *Painting Toward Architecture* was published in New York by Duell, Sloan & Pearce. Until the subsequent appearance in 1964 of "Transparency", by Colin Rowe and Robert Slutzky, there was no further work in English concerned exclusively with aspects of the connection between modern painting and architecture.

Hitchcock, writing in 1948, considered it essential to explain, by way of introduction, the uniqueness and significance of abstract painting and to contrast his theme historically with the 19th Century; he was then able to characterize the main currents of development in painting and architecture in a predominantly descriptive manner. Thus Frank Lloyd Wright, Le Corbusier, Gropius, Oud and Dudok, Mies van der Rohe and ultimately Niemeyer, Japanese woodcuts, Cubism, Léger, Mondrian, Arp, Klee and Miro are all similarly mentioned, while the 20's in Paris, De Stijl and the Bauhaus receive special attention. In every argument, ideas and observations rely heavily upon the completeness of the references and

chronological ordering for their significance; if we therefore disregard digressions into possibilities of the "integration" of modern works of art and the "new architecture" , it would appear that Hitchcock is interested first and foremost in differentiating between the various climatic zones and symbiotic relationships within the Modern Movement.

As a conclusion to this survey, two theses emerge which prove themselves sooner, however, in the consequences of the above than the subsequently revealed premises, theses which form the basis of the entire study, and which should provoke and stimulate the goal-oriented "Toward" in the title far more than they substantiate or prove it. The intention, no doubt, is not to be polemic but rather mildly pedagogic. The first of these theses is embodied in the declaration, not exactly new at that time, that "the central meaning and basic value of abstract art, whether painting or sculpture, is that it makes available the results of a kind of plastic research that can hardly be undertaken at full architectural scale." The studio or workshop of the fine artist is to be conceived of as a laboratory, so to speak, where experimentation and research take place. The second thesis states that the forms of the "New Architecture" whose decisive impulse for being arose from new technical methods and a new consciousness of social responsibility, could only have crystallized owing to the catalytic effects of Modern Art: "But these forms remained generally invisible (except in the work of Wright), unrealized and merely immanent, until catalytic contact with the experiments of the advanced artists of a quarter century ago brought them to crystallization." And it follows from this that the study of abstract art not only has the capacity to help us understand how the forms of contemporary architecture are brought into being but also has the power to further influence their development.

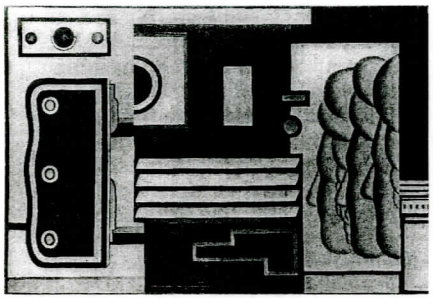
It should be obvious why this work, hardly known any longer today, has been gone into here in some detail: it concentrates concepts and ideas which grew and spread in the two generations following 1918 and reminds us of the climate that continued to exert a strong influence for many years after 1945. The thoughts that form the basis of this work and the knowledge which has been condensed into the foregoing theses are not mentioned here in order that we may test their suppositions and import. Rather, they have been brought up because, within the narrow framework of this theme, they document – as intact and unshakeable qualities of a concept of the Modern and its development – the pragmatic goal-orientation of thought and empiricism of method in which the complex and innately contradictory legacy of the 1920's developed in the period after 1945.

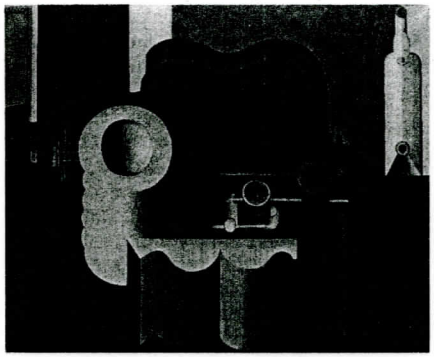
Seven years after the appearance of Hitchcock's overview, "Transparency" was written. There is an unmistakable shift in mood from the first sentence: where the earlier work expanded and suggested, this one contracts and defines; where Hitchcock is content with enumeration and description, Rowe and

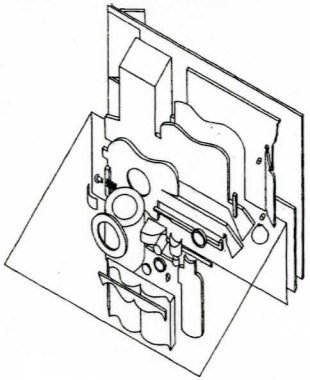
Slutzky strive for differentiated clarification of concepts and for conclusions that require nothing less than precise observation and the ability to draw the necessary distinctions. There is nothing in the later work of the almost imploring urgency with which the new forms of expression in painting and architecture were brought to the reader in 1948 – a matter-of-fact acquaintance with these forms was much more tacitly assumed by 1955. And above all, Hitchcock sees all the forms he is itemizing as elements of a present and continuing development of the new and unique that will lead to an ideal result in the end. He sees his own task in this process as that of bringing all these new expressions of form, certainly still confusing and difficult to survey but all thoroughly welcome and equivalent in effect, into relationship with one another, to explain them and to substantiate them through study and reflection. In contrast to this, an exploration into transparency ensues upon material no longer embroiled in controversy, requiring no justification, and dating from a period of development perceived as belonging to the past. Its grasp reaches into the present through the distance of history, and if it is not bereft of passion, the intensity of its engagement arises nevertheless from a valuation of the already existing and not from a welcoming of the new. Certainly differences in age and temperament may well be exerting their influence here – crucial, however, is the understanding that a significant climatic change has taken place: The "Modern Movement" is now history. With this detached and impassioned distinction between a phenomenal (figurative) and a literal transparency, the authors also differentiate between two kinds of "modern" architecture. With this they demonstrate that the "modern" is not homogenous, that its manifestations are not the same in kind or in worth. And this discernment in turn implies that distinctions must be made between totally differing requirements and intentions, that empirical thought and pragmatism suffice neither for the study nor for the production of architectural achievements. Sullivan's "every problem contains and suggests its own solution" and "the vital idea was this: that the function created or organized its own form" *(The Autobiography of an Idea)* proves to have been as grave a seduction into confusion as it was an inspiration. The requirements of the commission and the location are no more than modified factors upon which the application of a theory can work. The process of defining and clarifying the concept of transparency reminds us that architecture exists only in relation to a theory of architecture.

Exactly defined, this twin concept of actual and apparent transparency appears above all to be a precise tool for the study of architecture. It distinguishes between Essence and Appearance in the concept of transparency, and refers to the relationship between Content and Form in architecture – and to the still enormous question of whether a building is, or whether it means.

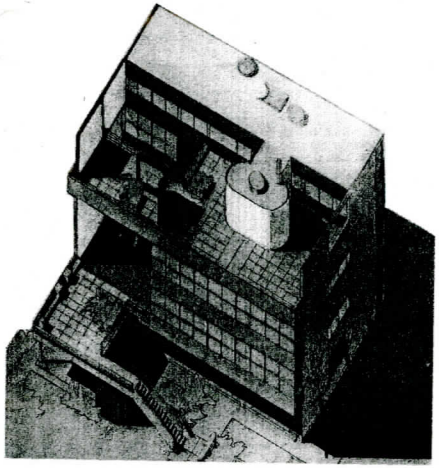
Applying the concept of transparency in the figurative sense to buildings from Le Corbusier's first creative decade reveals essential insights into the principles of his spatial organization and makes it possible to expose and comprehend a characteristic uniqueness of the Le Corbusier spatial effect. The dialectic between full corporeality and the illusion of shallow space, the multiple interpretational possibilities of his formal relationships, the classification of form and function in his buildings – these have never been made clearer. And indeed made clear from the object itself, without benefit of "extra-architectural" association. The concept of transparency, as defined by Rowe and Slutzky, becomes a tool for study; it makes understanding and evaluation possible. But it also becomes immediately and simultaneously an employable operative means enabling the intellectual ordering of form during the design process, as well as its graphic representation.

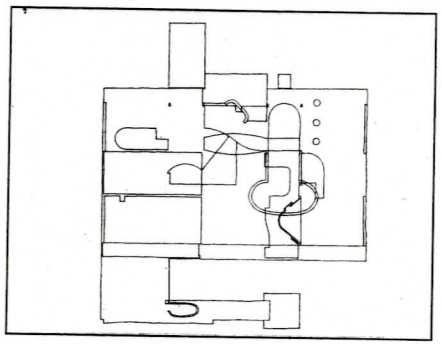


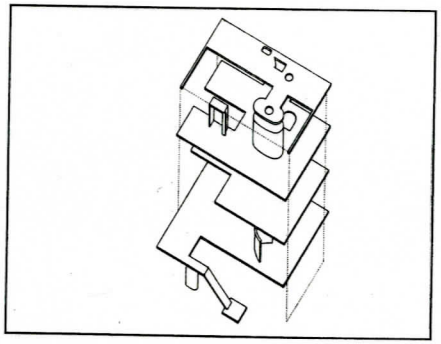


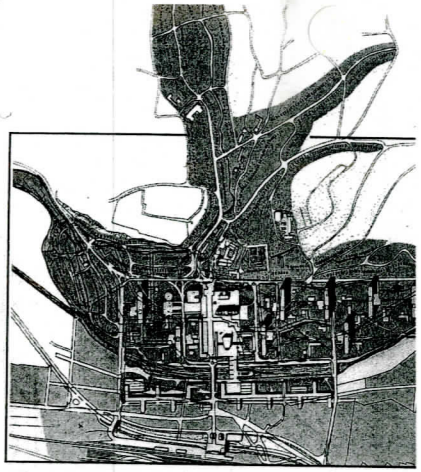


Le Corbusier's purist image is correspondingly built up in layers in the Cubist tradition. The attempt to break up the formal organization **clearly and unambiguously** into actual planes demonstrates that it is impossible to fix all the forms clearly in space. It is typical of transparency in the figurative sense that the **situation of individual forms** in space is **ambiguous**.

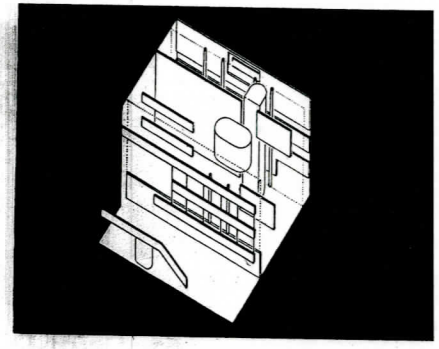






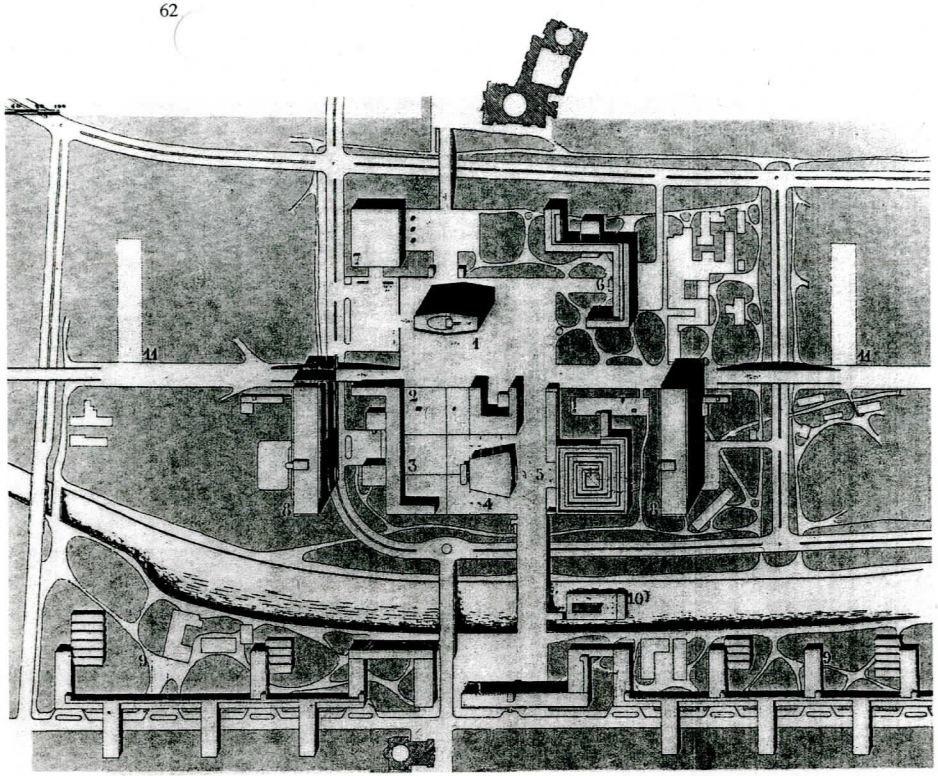


In general: Transparency arises wherever there are locations in space which can be assigned to two or more systems of reference – where the classification is undefined and the choice between one classification possibility or another remains open.



"...the façade [is] cut open and depth inserted in the ensuing slot" (p. 38).

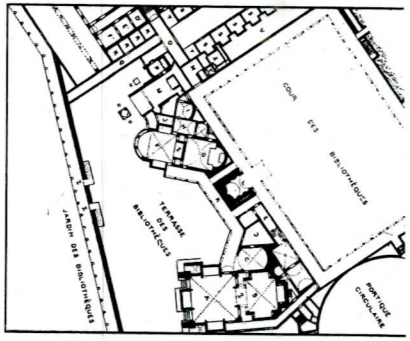
"The reality of deep space is constantly opposed to the inference of shallow space" (p. 41). **This is perceptible at every point in space**; the observer can see himself in relation to one or the other order, "and by means of the resultant tension, reading after reading is enforced."

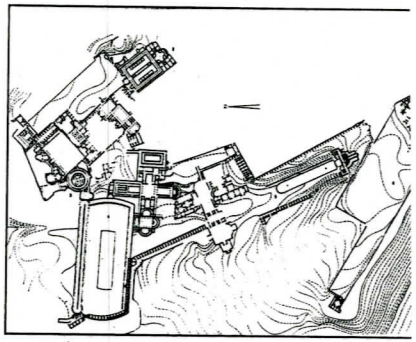


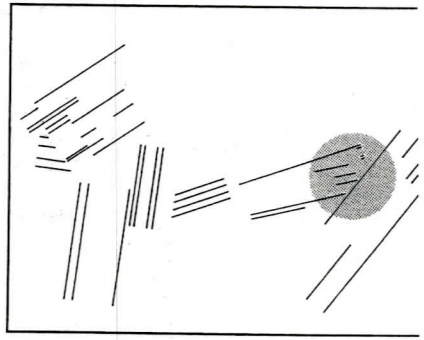
In the ideal plan for Saint-Dié, the arrangement of layers is parallel to the Meurthe Valley; from the cross view it can be seen that the silhouette of the Vogesen landscape has been incorporated into the architectural order, transformed into the "rear plane", and that "frontally displayed objects" have been clearly presented "in a shallow, abstracted space" (cf. pp. 30 and 32).

In the idealized space of the layers, the long sides of the Unité assert the depth of real space.

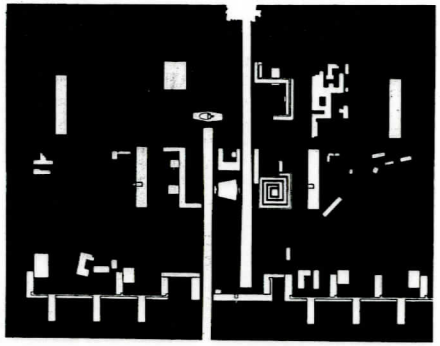
Hadrian's Villa







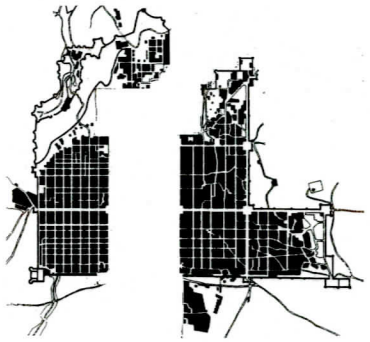
L-C: Saint-Dié 1945



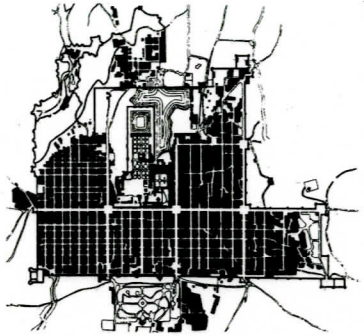
Characteristic is employment of the axis, the strongest means by which to architectonically capture spatial depth: a deep cut penetrates the arrangement of layers from both north and south. Into the resulting depth the Centre administratif (1) and the cathedral have been inserted; compare also p. 38:

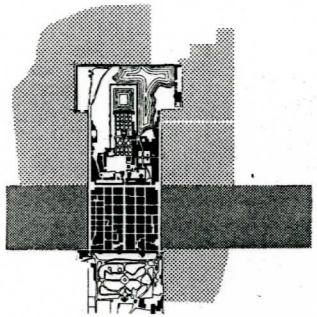
"Deep space is contrived in similar coulisse fashion with the façade cut open and depth inserted in the ensuing slot."

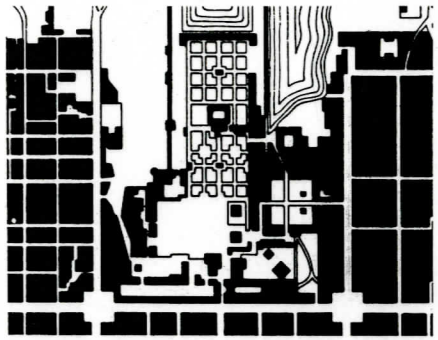
Hadrian's Villa is a structure of two orthog onal systems twisted away from yet against one another. Where these systems push together, seams are created between the structural groupings that could fall within two or more systems of reference. Here, however, the systems are bluntly shoved against each other (compare with the detail of the library), the **seams** are **merely fitted together**, the systems do not overlap. Only in the area of the **Canopus** is transparency in the figurative sense inferred.

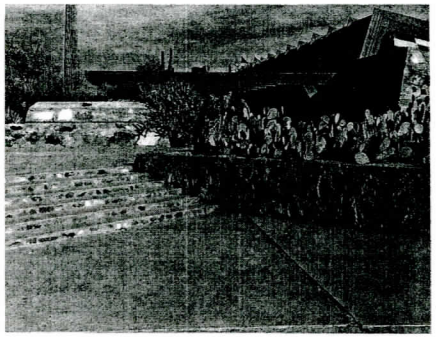


Jaipur



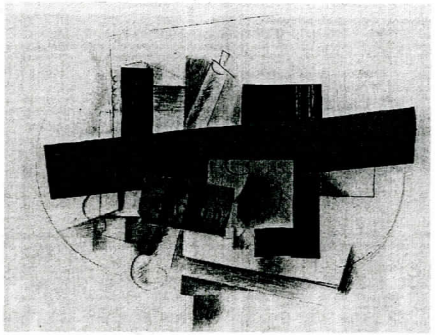






Transparency makes possible an analogous classification of function and architectural form.

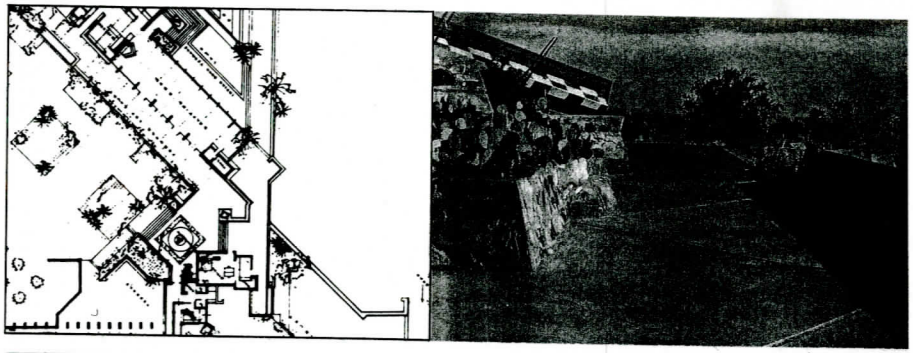
Braque

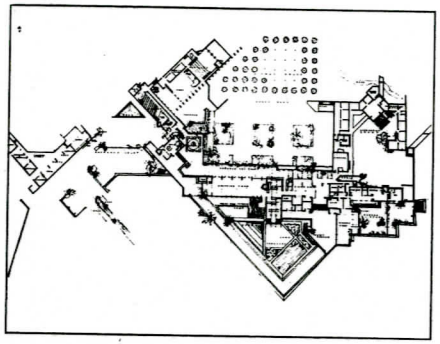


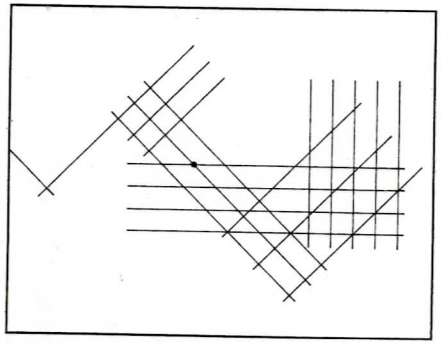
The network of streets and the system of palace grounds, parks and topographically determined irregularities penetrate and overlap.

In such visual presentations lies an approach to a study of the concept of **"collage"** in **city planning**. Colin Rowe's and Fred Koetter's study "Collage City" was first published at MIT Press, Cambridge, Mass. 1978.

FLlW: Taliesin West







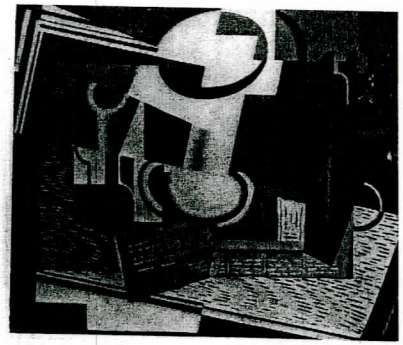
The entire layout is related to two orthogonal grids turned at a 45° angle to one another. In contrast to Hadrian's Villa, there are in this case numerous points where both reference systems intersect, overlap and inextricably interweave.

This gives rise to transparent organizations of form which indicate above all **spatial transitions** and announce the existence of possible directions for movement in space or make them clearly visible and available to choose.

At the characteristic point where the outer and inner paths to the core of the complex diverge, the observer can see himself clearly in relation to both systems of order.

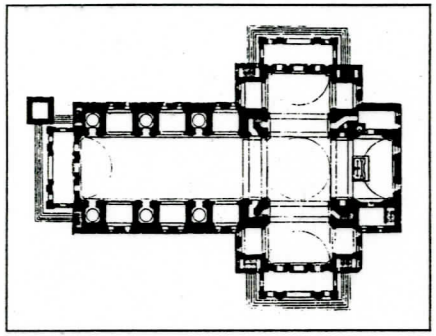
The choice for one or the other path also means entry into one or the other system of geometric arrangement. **Geometry as image.**

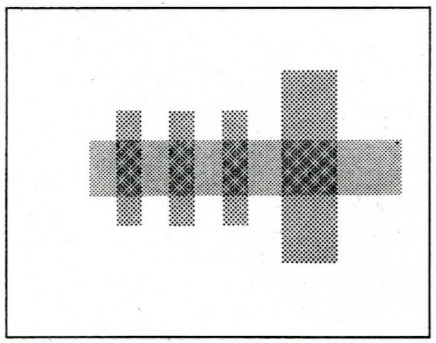
Gri



Transparency as differentiation and integral ordering, as figure and field.

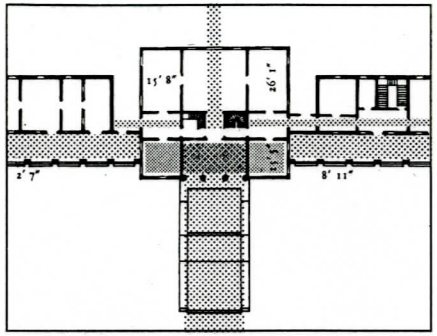
Alberti: Sant'Andrea, Mantua





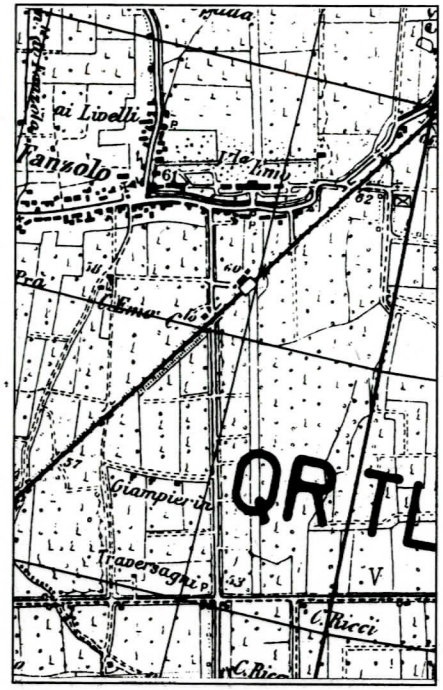
The side altar niches are set off from as well as incorporated into the standardized interior, which forms the fertile ground from which transparency in the figurative sense arises: the observer is **virtually suspended** between the forward momentum of the nave and the opposing effect caused by the perpendicular layers of space that penetrate its length one after the other.

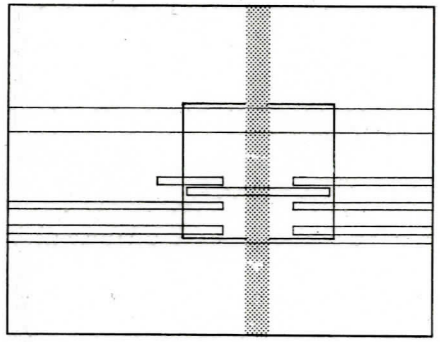
Palladio: Villa Emo



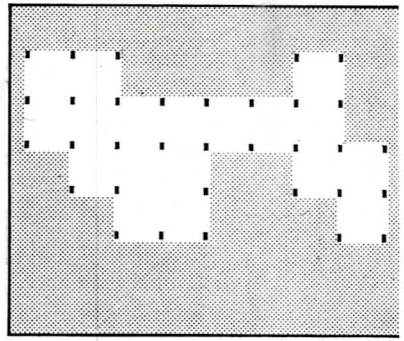
Transparencies typically appear in Palladio's floor plan along the main axis of the composition: in this way the porch is made part both of the distinct arrangement of levels in the center structure of the Villa as well as of the segment of the axis that passes vertically through the whole complex and shapes the exterior space.

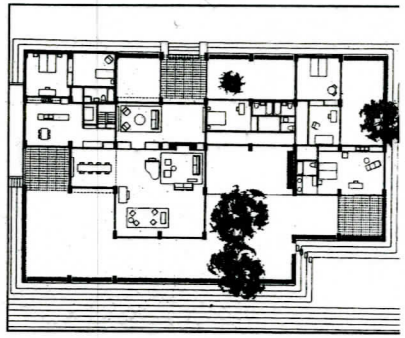
For each and every interior space on this main axis, **two spatial groupings are possible**.

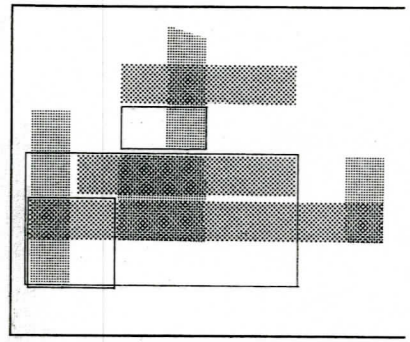




Ph. Johnson: Boissonnas House

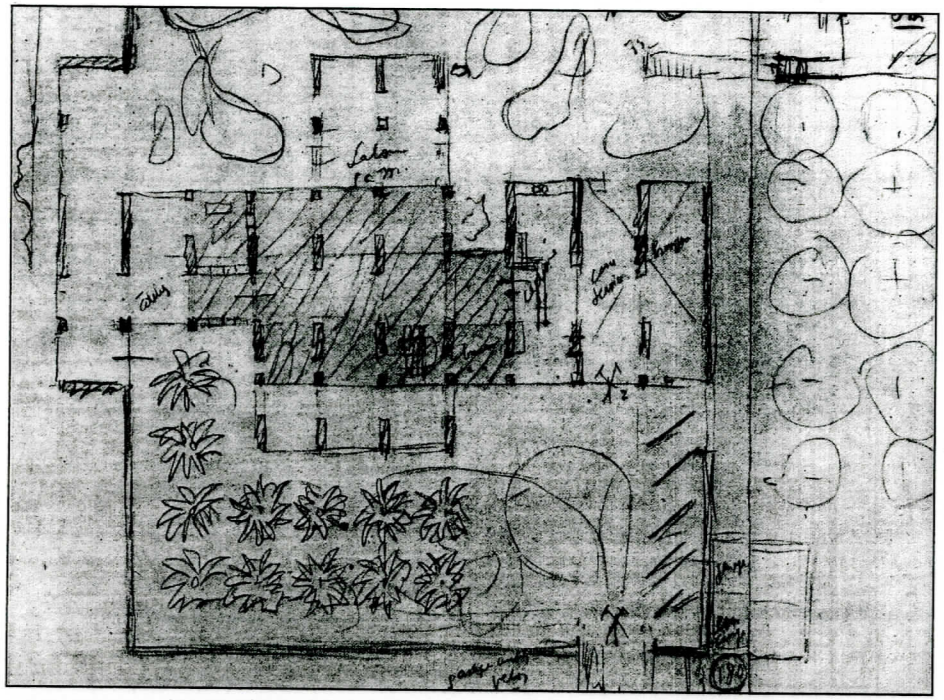


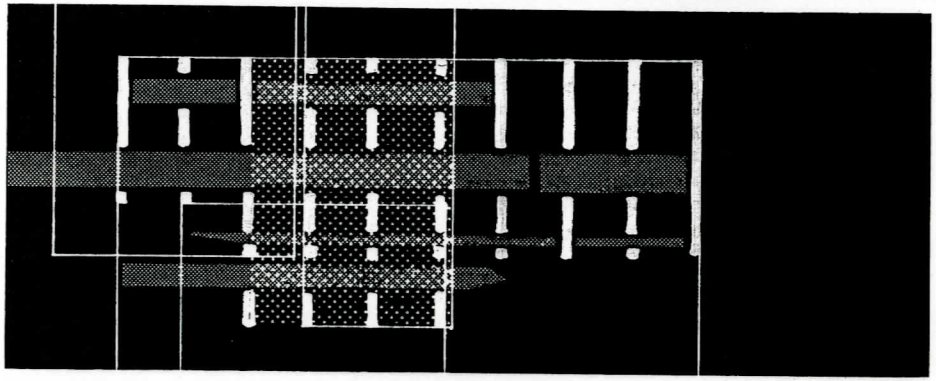




Inside this complex arrangement, which incomparably fuses constructive regular with the diversity necessitated by functional use, transparency creates the multiple **readings** of possible spatial relationships and connections.

L-C: Résidence près de Cherchel 1942



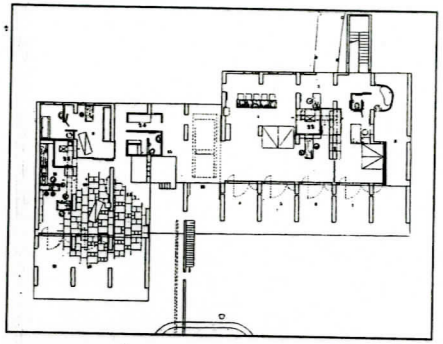


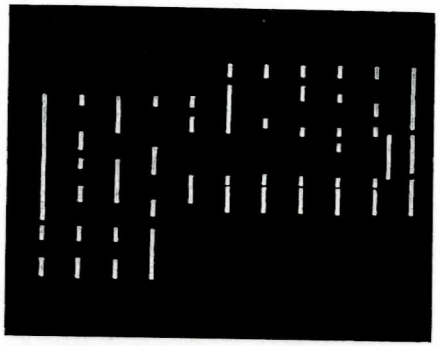
In the additive structure of the chain of Citrohan cross-sections, alignments of the lateral wall perforations create spatial relations perpendicular to the primary direction of the room segment.

Transparency permits flexibility within a formal arrangement.

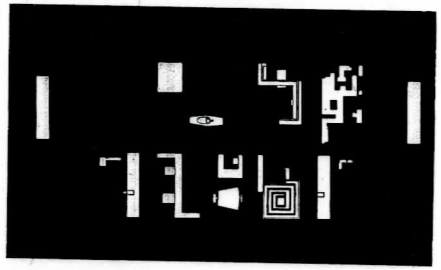
L-C: Villa Sarabhai 1955

The chain of cross-sections and the numerous lateral extensions readable as lying perpendicular to them "will all from time to time claim attention; and this gridding of space will then result in continuous **fluctuations of interpretation**" (cf p. 41) of the spatial connections.

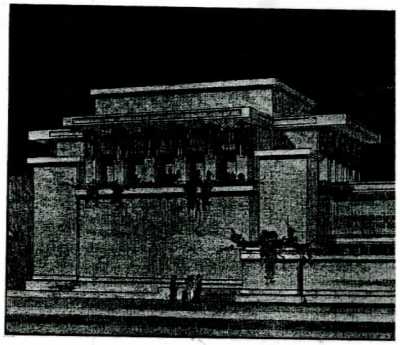


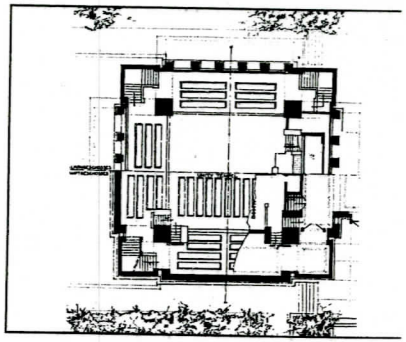


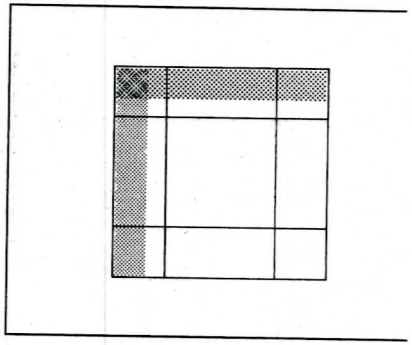
L-C: St. Dié 1945

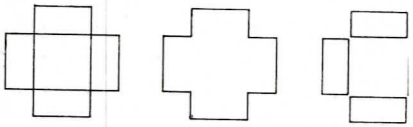


FLIW: Unity Temple



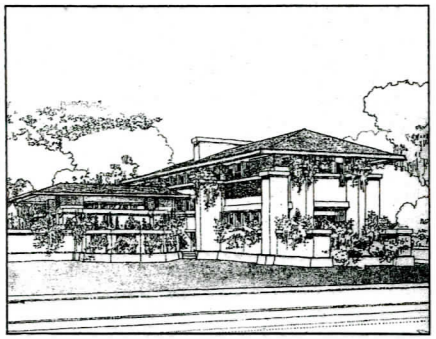


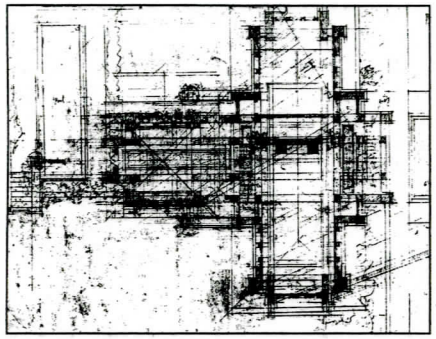


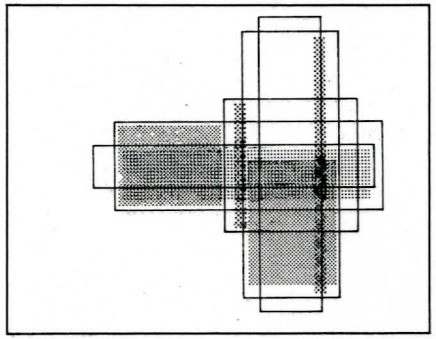


The connection between the central cavi and transept arms can be read as intersec tion, protrusion, attachment.

Ullmann House



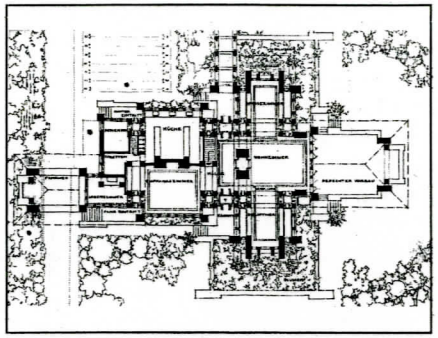




The **cruciform** floor plan model that intensively preoccupied Frank Lloyd Wright for more than a decade after 1893 is an ambiguous form *par excellence*.

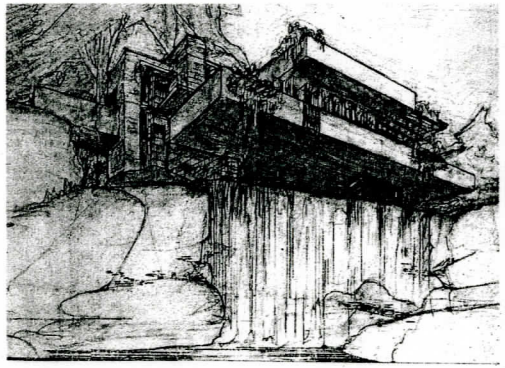
Martin House 1904

In the volumetric structure, however, the cruciform does not lead to a transparency of space but rather to clear and defined intersections of prismatic structures* in which at most **incidental areas of space** develop which can be simultaneously classified as various volumes.

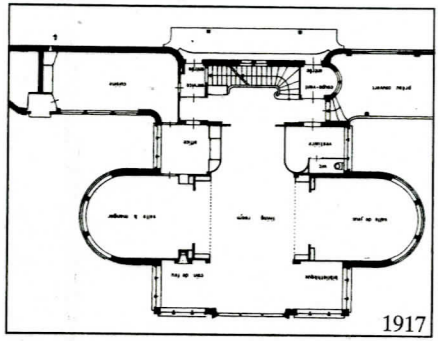


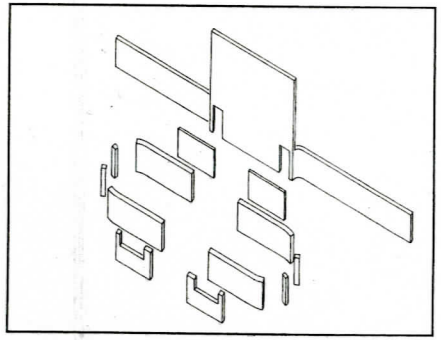
The pillar as a solution to the limitations of space creates a fusion of interior and exterior space almost without transition, and allows for numerous intersecting zones that can be perceived horizontally in every possible connection. Perceived vertically, however, this **ambiguity** is **volumetrically resolved** and clarified.

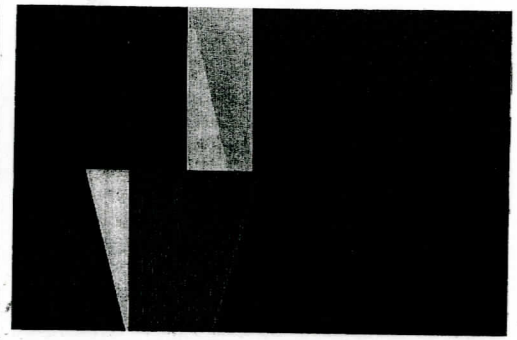
Falling Water 1936 **

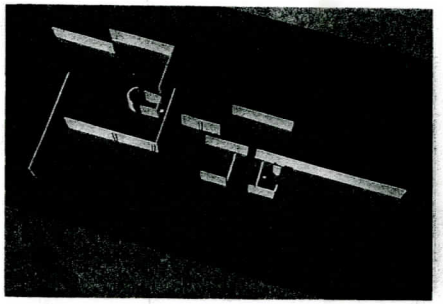


Already in 1917 the space of the "Maison Turque" in La Chaux-de-Fonds – recalling motifs of Auguste Perret and Frank Lloyd Wright – was unmistakably built up in layers over the cruciform floor plan.









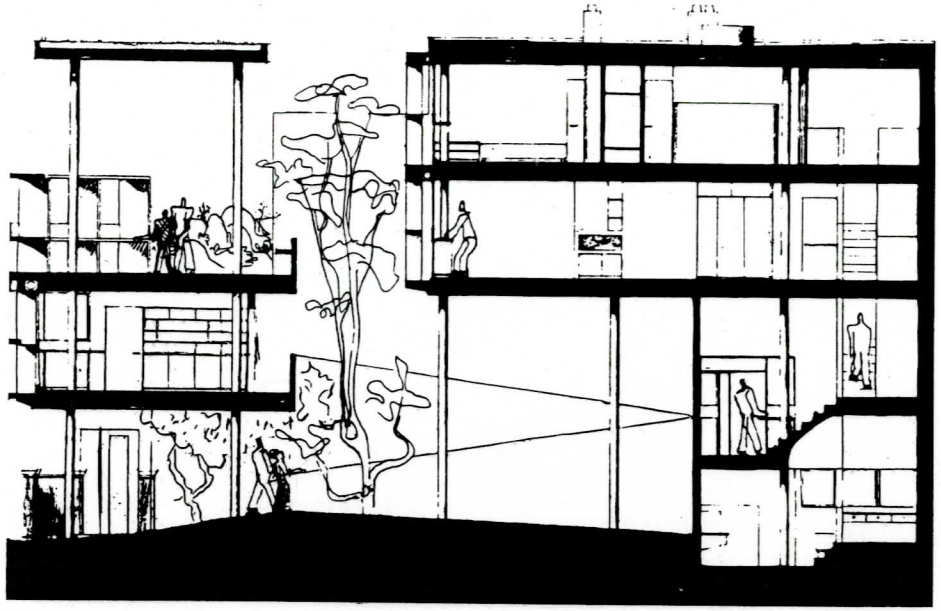
Mies van der Rohe ?

The reduction of space-defining elements on free-standing walls and the dissolving of spatial borders between interior and exterior space encourage **literal transparency**. Transparency in the figurative sense, though, is as impossible in the space between the floor and ceiling slabs as it would be in a Moholy painting where, it is true, partially transparent formal elements hover **in a continuous space**, dividing and activating it, but where the spatial relationships nevertheless remain clearly readable (cf. p. 31 top).

* A wonderful work on Wright's formula for the volumetrical organization of the Prairie House: Richard C. MacCormac, "The Anatomy of Wright's Aesthetic", The Architectural Review, February 1968.

** "Falling Water" and Jean Baier's image are layers of **slabs in space**. The opposition of stratification and space, however, does not disintegrate into a higher order of mutually organized form (in which only then the ambiguity of transparency would be able to occur); rather, it remains clearly defined.

L-C: Maison Currutchet 1950



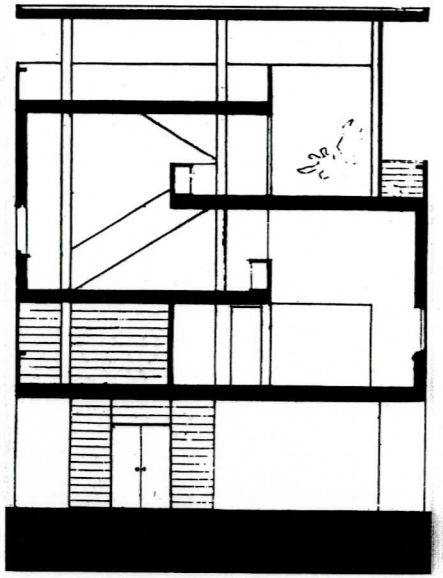
In a structure characteristic of Le Corbusier, horizontal layers are continuously pierced by deep, vertical cuts.

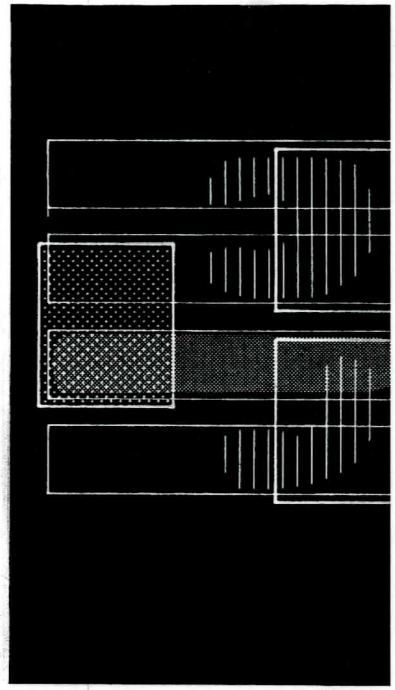
Le Corbusier's pronounced and persisting preference for two-story atelier-type living spaces with inset balcony floors – typical of the earlier villa designs as well as for the living quarters of the Unity Temple – acquires new meaning when seen through the concept of transparency.

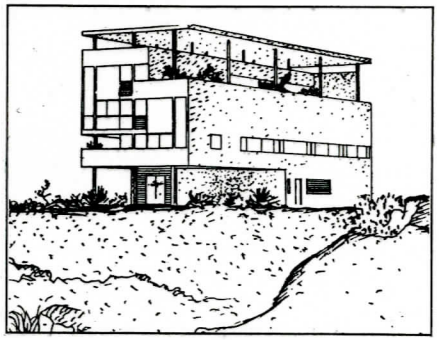
The two-story space with interior balcony is obviously charged with a kind of folkloric emotion*. However, it also embodies Le Corbusier's always provocative **opposition** of effects (here, the horizontal and the vertical), **simultaneously postulated and overcome** (here, actively sharing a common air space): **transparency**

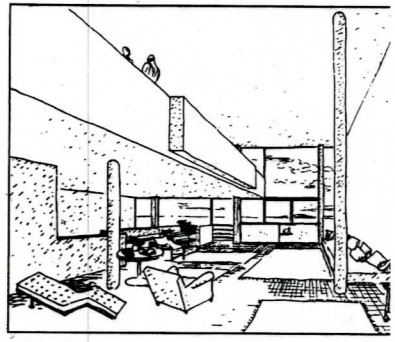
The connection between the space of two separate levels through a common expanse of air has the effect not only of optically increasing the size of small rooms but also of generating ambiguous spatial relations.

Villa à Carthage I 1928



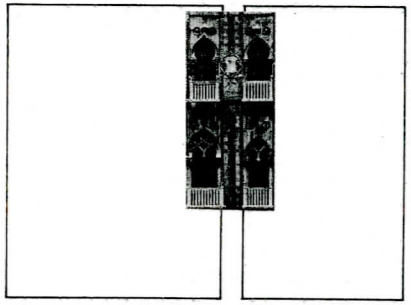


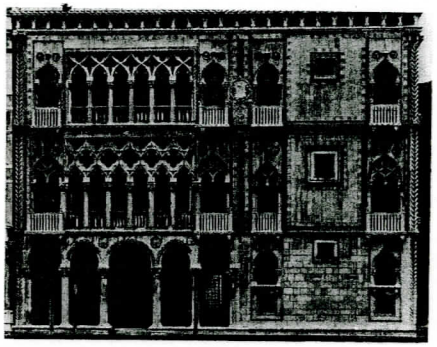


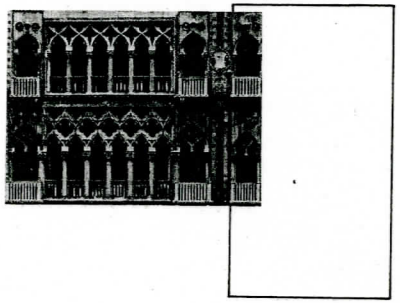


* Œuvre Complète, Vol. I, p. 31: "OUVRIR LES YEUX! – Nous mangions dans un petit restaurant de cochers, du centre de Paris; il y a le bar (le zinc), la cuisine au fond; une soupente coupe en deux la hauteur du local; la devanture ouvre sur la rue. Un beau jour, on découvre cela et l'on s'aperçoit que les preuves sont ici présentes, de tout un mécanisme architectural qui peut correspondre à l'organisation de la maison d'un homme."

The spatial zones are differentiated and united. Transparency makes the analogous classification of use and space possible.

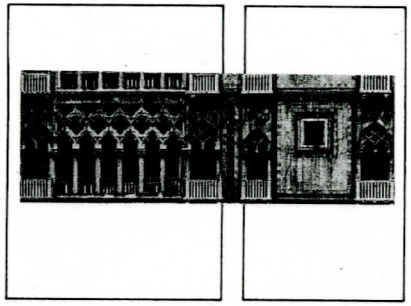


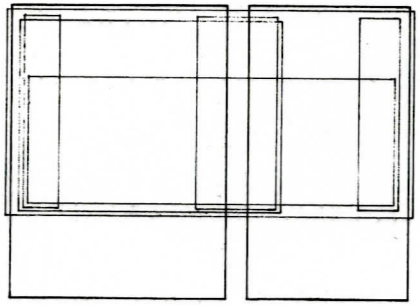




Cà d'Oro, Venice

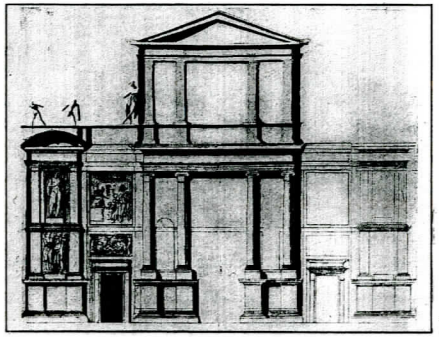
Symmetry as a means of organization is exclusive, subordinate and absolute; transparency as a means of organization places series of visual grouping possibilities in relation to one another and throws them open.





and through the transparent organization of formal elements a **series of readings** are set in incessant fluctuation; compare also p. 41:

"There is a continuous dialectic between fact and implication."



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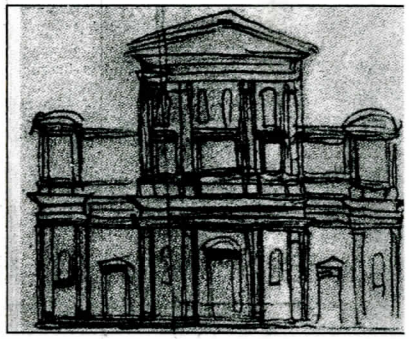

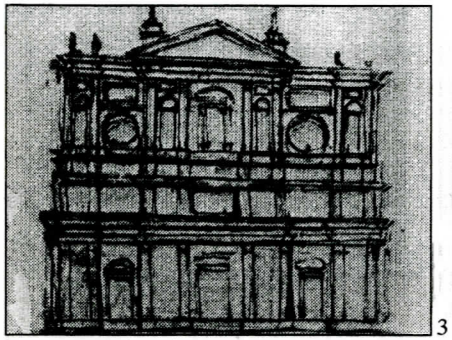

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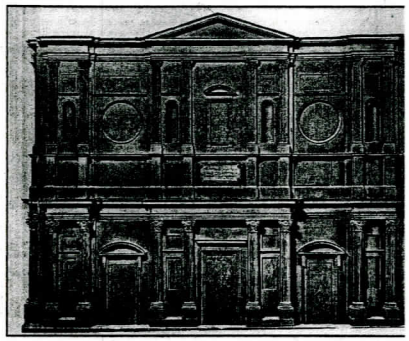


Michelangelo: Stages in the design of the façade of S. Lorenzo, Florence*

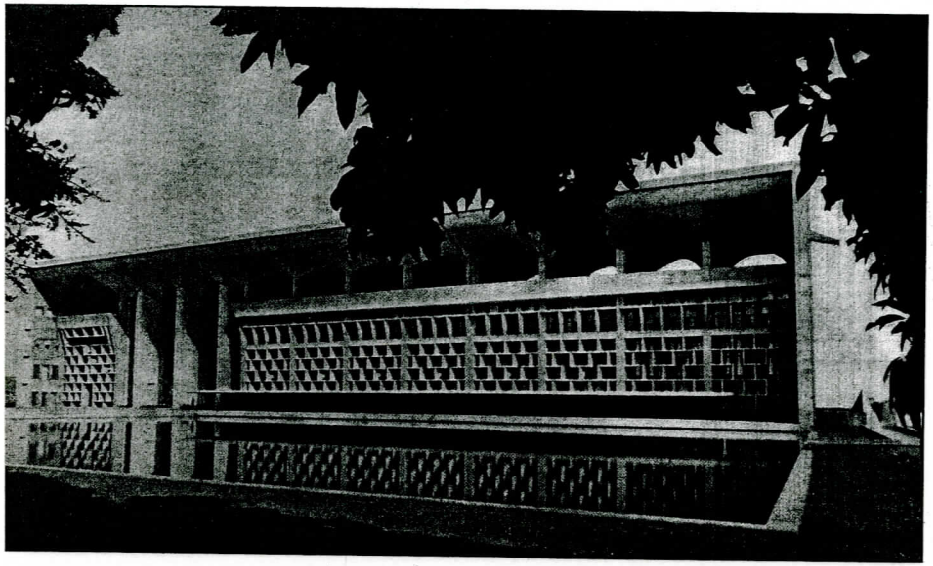
The series of sketches from 1 to 4 for the design of the façade beautifully demonstrates how the distinct yet conflicting contrast between the spreading lower segment of the façade and the superimposed, elevated center portion (1) is gradually resolved.

In the last design, a situation has been reached whereby first the tectonically stratified organization of the vertical, then the horizontally laid rows of vertical elements lay equal claim to the observer's attention with a continuous interaction, all taking place within the generally unified effect exerted by the façade.

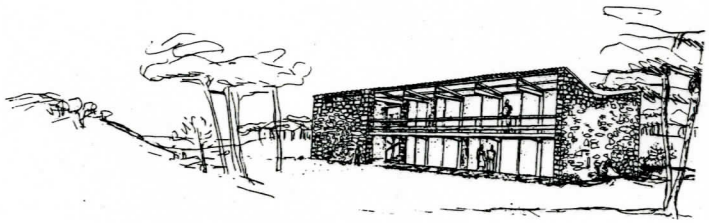
Each element in the façade organisation is ambiguous, and can be seen in always new connections of form and meaning.

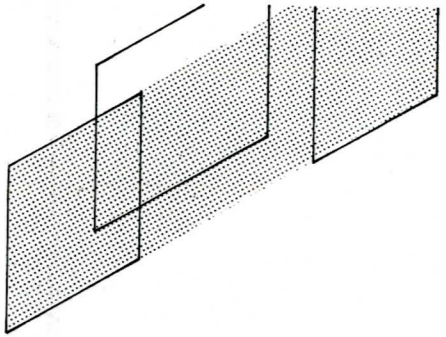
* Rowe and Slutzky referred to the example of S. Lorenzo already in 1955.
Part of the first sequel to the 1955 study is a detailed analysis of the transparent forms in this wonderful façade; hopefully the two sequels to the present work which are mentioned in the Forward will one day be issued.

1973. In "Perspecta 13/14", 1971, a sequel appeared to the study of 1955, "Transparency: Literal and Phenomenal". Analysis of the S. Lorenzo façade pp. 293-296.

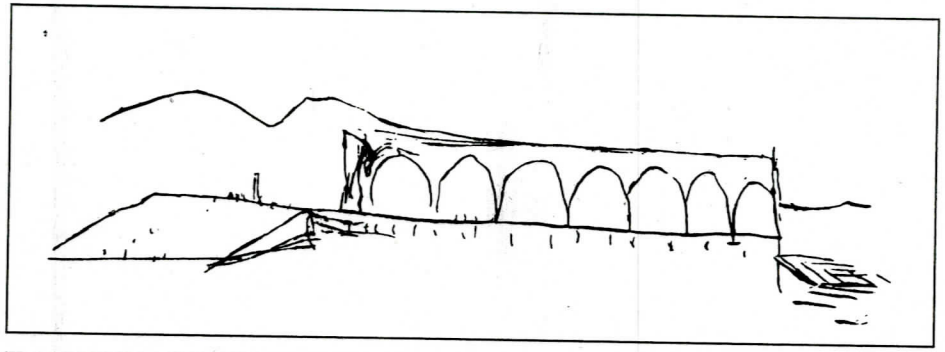


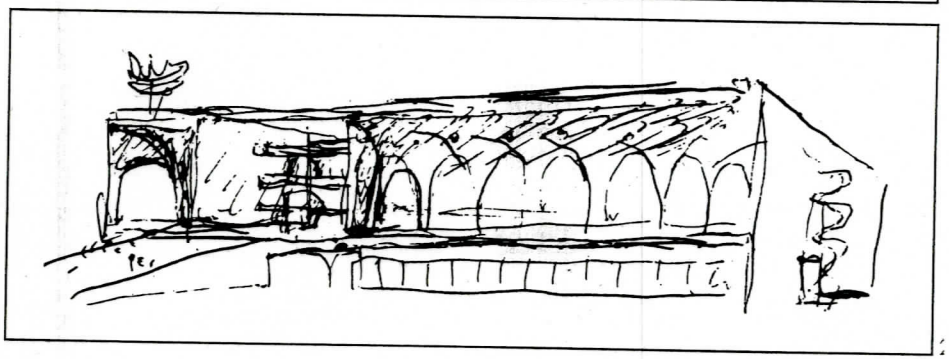
The development of the façade of the High Court building is a demonstration of transparency as a means to formal organization in the frontal elevation.

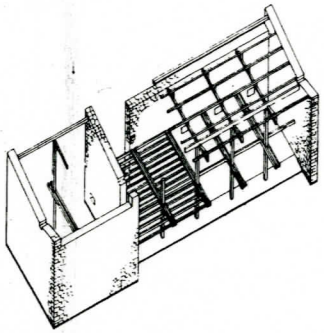




To begin with, the overall form – a sprawling shaft-like structure – is defined (1) and identified as a **vertical layer of space** by a clear differentiation between the open length of the front and the closed walls spanning the sides. The framework constructed by the edge of the ceiling and the narrow rim of the end walls stretches the space into a field similar to a picture plane, thereby carving out a border.

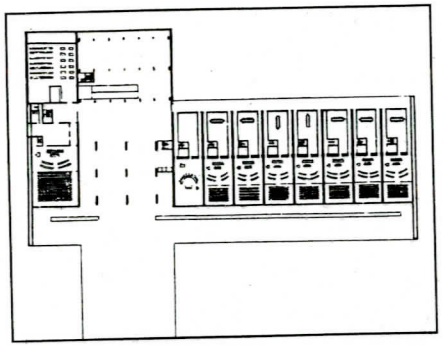


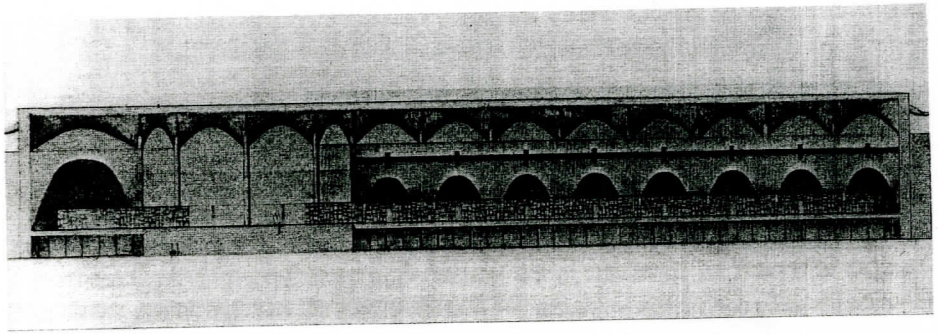


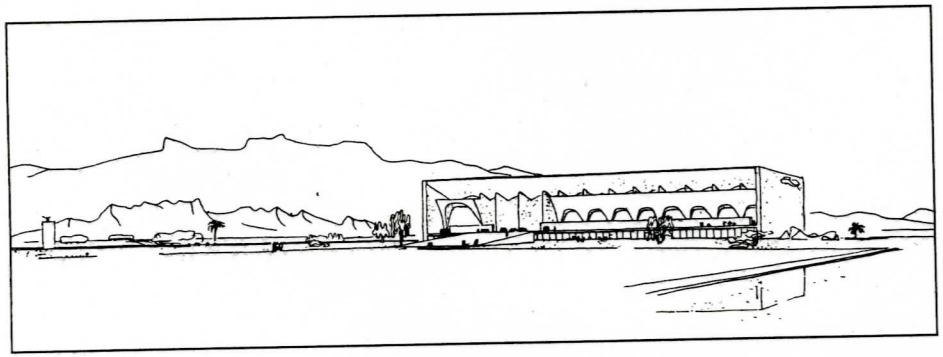


Next, the **planes implied by this framework are immediately pierced** and the sculpture of the ramp system is inserted into the newly formed opening (2).

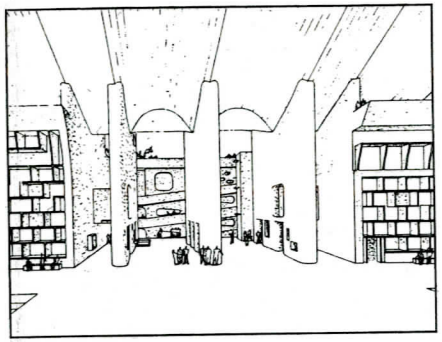
In the weekend house "aux Mathes" of 1935, the primary spatial tension is brought about by use of the same means and in the same way.

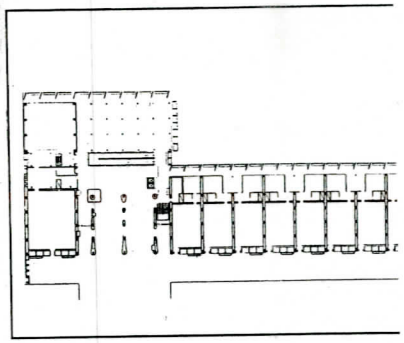


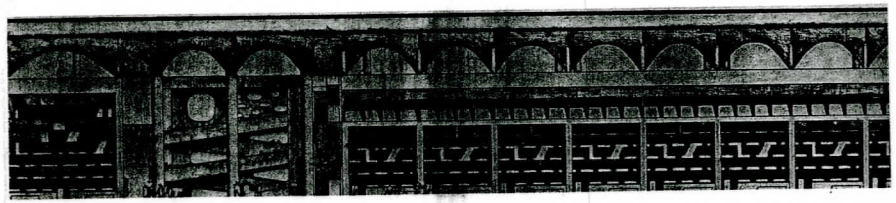


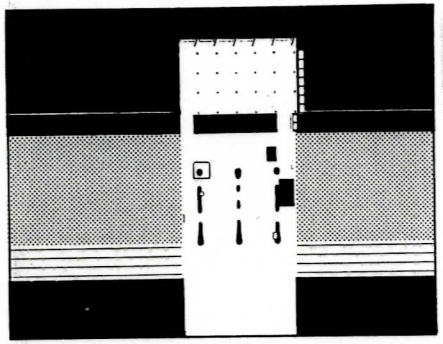


The first stage of development is an **inventory** of all structural elements; the areas of the main floor have been made externally clearly readable and function as simple itemization, addition or series – the actual constructional state of the multiple stories is clearly visible as layering (3). All relationships are clear; the horizontal series and the vertical layers remain unconnected.





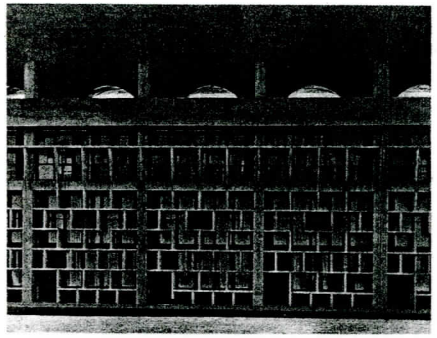


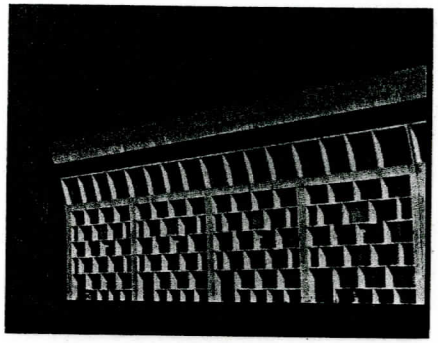


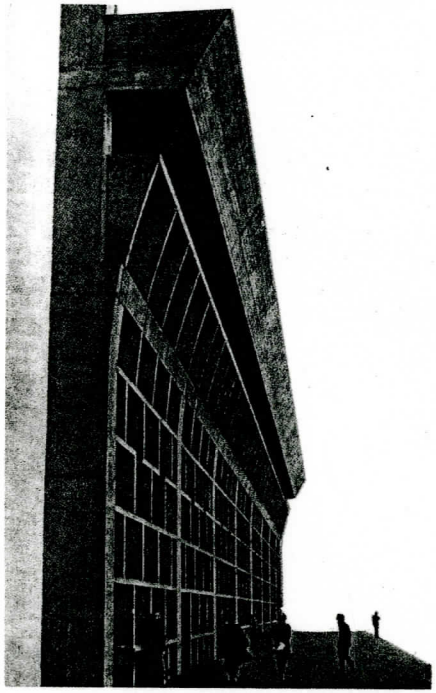
In the "projet d'exécution", the organiz tion of the façade is radically altered: it i no longer concerned with the direct "word-to-word" expression of the spati and constructive groundwork completec for the construction. These are now **repr sented by** horizontal and vertical **formal elements** woven into a complex system c form in which series and layers overlap and intersect, and it is this complex inter weaving which fosters the development transparency.

The row of supports at the uppermost level appear from the front to be part of bulging and massively perforated concre skin (an inversion of the horizontally curved wall of Ronchamp?), implied by the slender frontal planes of the *brise-*

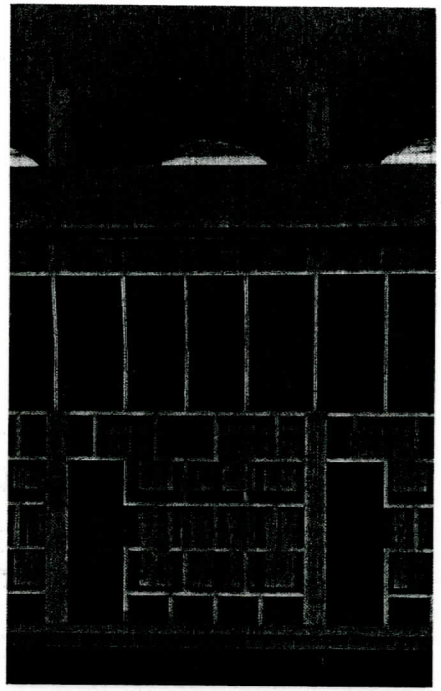
soleil latticework. **The two layers of the facade are laid o lly one inside the other, creating a se of space containment.**

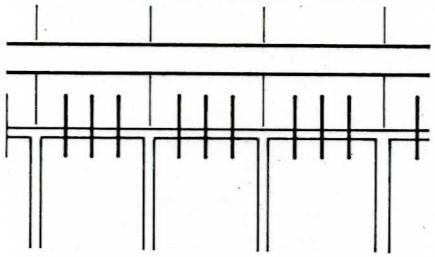




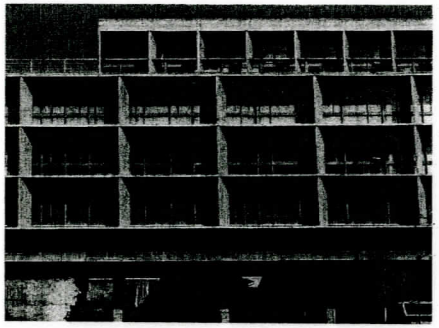


The two uppermost rows of the *brise-soleil* imply one row of vertical formats **optically intersecting or overlapping** the horizontal continuity of the balcony.

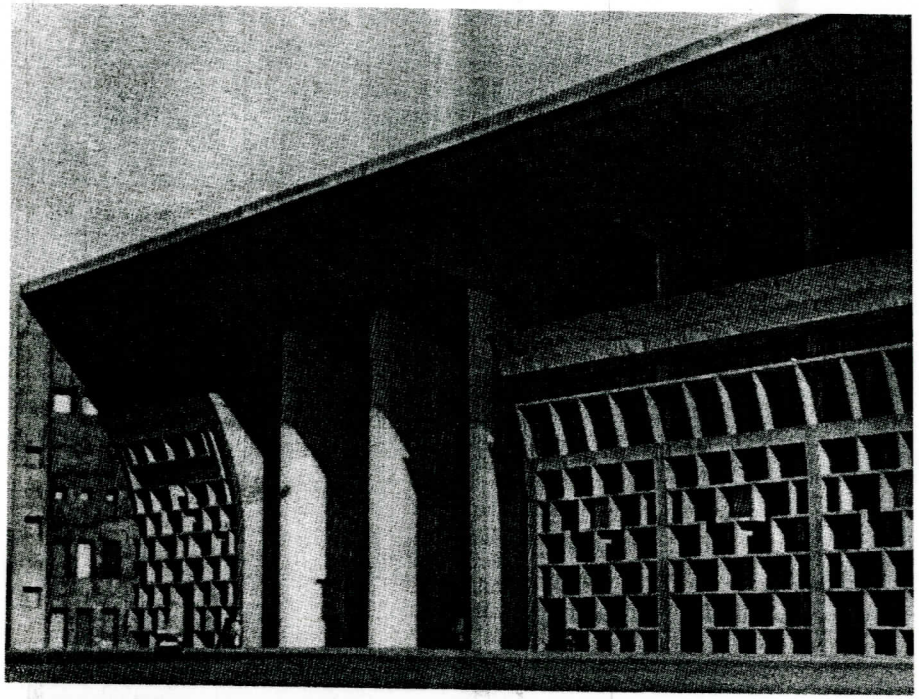


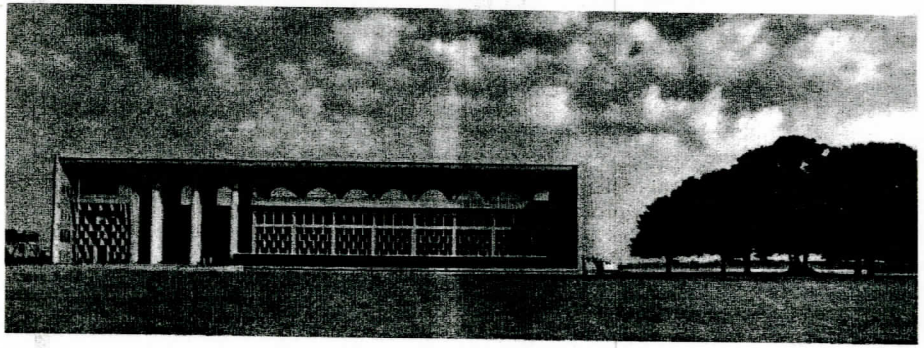


Manufacture à Saint-Dié



The horizontal is related to the vertical support system through the suggestion of resistance.





The planes of the brise-soleil, pan de verre and alignment of supports that stand one behind the other are clearly separated in the Manufacture Saint-Dié; in the High Court building at Chandigarh, they appear to interpenetrate, then once again to diverge.

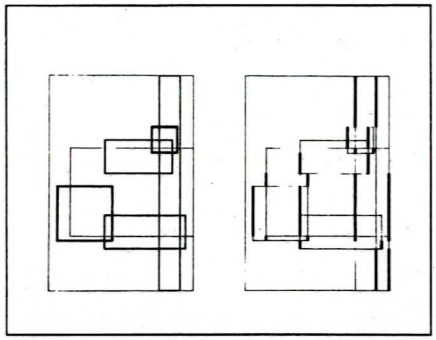
In this way, a "dialectic between **fact and implication**" (cf. p. 41) is once more produced, typical of transparency in the figurative sense.

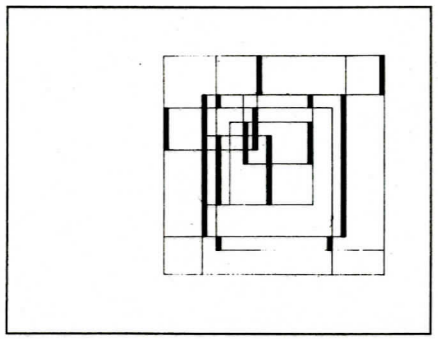
It enables the undivided union of complexity and coherence.

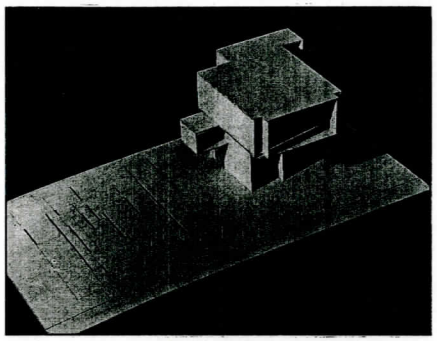
Towards architectural education:

An example from the architectural curriculum: To establish transparency in a system of overlapping rectangular surfaces using a number of parallels; next, to interpret the drawing as a floor plan projection and translate it into a system of interpenetrating prismatic volumes.

Credo of the "Modern": Form as result. In comparison: **Form** as means, as **catalyst of design**.







So the concept of transparency has consequences in two directions. It gives us first of all the possibility to see familiar historical structures through new eyes, and it frees us, because we allow it, to see buildings and structures in connections independent of the differences between "historical" and "modern": secondly, it is a tool for the production of complex systems of order during the design process. The fact that this is not only possible for us but even self-evident reveals a special relationship to *the development of architecture after 1918*: it must be seen *as history*. Our familiar image of the Modern appears to be just as much a history of an orthodoxy, of canonical succession, with faithful believers, unconverted heathens and heretics, which means that "modern architecture" has been put into perspective. Before 1950, this was still unimaginable.

It already seems to be difficult to imagine oneself back in that time. At the CIAM Congress of 1953 in Aix-en-Provence, the first voices were heard in a still clumsy attempt to suggest a new relationship to the architecture of the 20's and 30's: The model of the "Villa Radieuse" had lost its fervent fascination and compulsion. In 1954 in London a new generation formulated, in the manifesto of the "New Brutalism", the consciousness of a new architectural climate. The "New Brutalism" demonstrated for the first time a manner of behavior for the enlightened architects. It was thoroughly familiar with the executed buildings, the theoretical writings, manifestos and unbuilt projects as well from 1918 to 1933.; at the same time, separated as it was by a generation from the spread of the "New Architecture", it must have seen it as history. In Milan, too, an attempt was made to find the guidelines for the changed situation, while in Switzerland a recovery from a well-tempered passion for the Scandinavian was begun. Simultaneously, the genius Louis Kahn emerged from a period of studying the tradition of city planning in Philadelphia, and in a few years created – out of the unassailable tradition of the Ecole des Beaux Arts and the legacy of Frank Lloyd Wright, Mies van der Rohe and Le Corbusier – the foundation upon which an alternative to "Modern Architecture" quickly developed. The development since that time has also taught us to recognize the subliminal or repressed currents in architecture since 1918 and to see them anew.

Between 1950 and 1965 a threshold was crossed. Since then it seems hardly possible to hold fast to an idea of continuous linear tradition in the architecture of the 20th Century. The examination of the concept of transparency in architecture belongs – like the elucidation with which Philip Johnson, in "The Architectural review", displays his house in New Canaan as a commentary for precedent-setting cases, or the way Vincent Scully's article in "Art News", March 1954, proves the connection between Frank Lloyd Wright and the International Style – to the numerous symptoms announcing the end of "Modern Architecture". And it engenders the thought that perhaps the *idea of the Modern* in architecture is altogether paling and beginning to lose its force.

Zurich, March 1968 B.H.

Addendum

(1982)

Bernhard Hoesli
Transparent Form-organization as an Instrument of Design

In my commentary of *1968 I was first of all concerned with generalizing the concept of phenomenal transparency* which Rowe and Slutzky had established by evolving it from intense contemplation and a tightly reasoned morphological analysis of two Le Corbusier buildings: the villa Les Terrasses at Garches and the League of Nations competition project.

Above all it was my intention to show that the generalization: "transparency exists where a locus in space can be referred to two or several systems of relations – where the assignment remains undetermined and the belonging to one or the other remains a matter of choice" is a universally applicable criterium for characterizing form-organization just as for instance symmetry or asymmetry. To ask if there is transparency in a form-organization is like applying a piece of litmus paper and permits the distinction and exact description of a quality which might go unnoticed or, if not, can only be circumscribed in an elaborate and cumbersome way.

To apply the test of transparency is part of a morphological approach that holds the exact description of a phenomenon as the necessary and indispensable prerequisite for any insight, understanding or knowledge. It belongs to the great tradition of systematizing effort that, say, in the case of botany, culminated in the sovereign work of Linné.

The attempt to describe buildings or urban patterns independently from their historical context, to see them side by side across periods of stylistic differences and to insist on a common quality in works from widely differing epochs, produced by distinct social, technical and political conditions may disturb or shock and dismay the historian. But of course it is not proposed to remove a particular building from its historical and cultural context; to look for transparency is merely a possibility to disengage part of its characteristic form.

The concept of transparency invites to see differences that can provide the key to understand qualities of uniqueness or similarity. And, especially at a time when architects seem intent to consider history as a self-service store stocked with an inexhaustable supply of motifs and forms, it should be useful and might be sobering to welcome precise tools that help to reduce motif, form and effect to their "essential significant facts and forces"[1], so that we can, starting from these, create the motifs and authentic forms out of the constituent factors of our own time *conceptually*, leaving out of count flirtation or abuse on a perceptional level.[2]

With the numerous examples where phenomenal transparency once singled out can be observed, I then, in 1968, endeavoured to convey the *idea* that *transparency* defined as a state of relationships between the elements of a form-organization, can also be considered and used as a *means of organizing form*. That aspect should have been stressed, the idea made explicit.

Soon after the publication of my commentary schools of architecture entered the rapids of "la contestation". Architecture is a form of sociology, we were told and, if concerned with buildings at all, a kind of social engineering at best. There could not possibly be an interest in architectural form, which was declared of no importance at all or "unmasked" as a device of oppression to the advantage of the interest of a ruling class and to the detriment of the common good. Interest in problems of architectural form was held in contempt. Space was denounced as architect's fiction.

Nobody can complain about a lack of interest in form today. It has come back with a vengeance. To the impairment and impoverishment of all the rest "Functionalism" is criticized because it is imputed that it considered form as result; now form is considered an agent of typology or a precedent at one's disposal.

1 Bernard Berenson: Italian Painters of the Renaissance, in Meridian 40, 1957, p. 180.

2 I use the term "authentic" as introduced by Christian Norberg-Schulz. See: Towards an Authentic Architeture, in: The Presence of the Past, Academy Editions, London 1980, p. 21.

Architectural form must claim "autonomy" – we are now told – that however it doesn't really seem to enjoy.

The idea of form as neither an end in itself nor as a result of design but as an *instrument of design* seems still quite difficult to grasp.

The predicament of form

One evidently creates *forms* in order to *designate* and *inform*. Something that is, is designated for someone whom one wishes to inform about something that is. And he who tells wants to be understood. So there are two possiblities to corrupt architectural form: The corruption of its relation to the reality of the use of the building, to what it is – or the corruption of its nature as information.

Obviously there are several possibilities to explain the origin of form in architecture, to define the relation of form and use or to specify the connection between form and "function". They all purport to relate the inward functioning and purpose of a building to its external expression.

Now if architectural form is "autonomous", if it should be divorced from the intent and content of a building, emancipated from a palpable relation to its use – there is a loss of truth, hence morality.

Two opposing views of the relation of content and form claim our attention today, and both claim orthodoxy – one in the defensive and engaged in rear guard actions, the other in full vigour and expanding in various disguises.

There is first the supposedly "functionalist" position contending that "Instead of forcing the functions of every sort of building into a general form, adopting an outward shape for the sake of the eye or of association, without reference to the inner distribution, let us begin from the heart as the nucleus, and work outward. The most convenient size and arrangement of the rooms that are to constitute the building being fixed, the access of the light that may, of the air that must be wanted, being provided for, we have the skeleton of our building."[3] Or, as Louis Sullivan put it in the *Autobiography of an Idea*: "...the function of a building must predetermine and organize its form." That was based on observation of biological growth and form in nature and certainly must have been meant

3 Horatio Greenough: Form and Function, University of California Press, 1947, p. 60, 61, xvii.

as analogy. It prefigured Le Corbusier's poetic metaphor "Un édifice est comme une bulle de savon. Cette bulle est parfaite et harmonieuse si le souffle est bien réparti, bien réglé de l'intérieur. L'extérieur est le résultat de l'intérieur."[4] That understanding of the relation of purpose and form in architecture established the connection of cause and effect. The form-reality of a building is seen as a function of its envisaged use in the sense of the mathematical term function: $y = f(x)$, a variable depending on constants and variables, the old "form follows function".

The second, so called "rational", understanding maintains in exact opposition to the first that "function follows form". And there is a coherent argument based on observation to demonstrate the validity and usefulness of this view. Most buildings in a historical context demonstrate the basic continuity of form to which ever changing use was adapted; the Diocletian Palace of Spalato, the stadion of Domitian of Imperial Rome, the list of glorious fragments of fabric and of artifacts that bear witness is almost endless.

When the first explanation proclaims in the most radical formulation of Mies van der Rohe "*we refuse to recognize problems of form*, but only problems of building. Form is not the aim of our work, but only the result. Form, by itself, does not exist..."[5] – the second declares that in architecture *there are only problems of form* and design means to transform, to adapt form through deformation and by quoting typological form-precedent, while the usefulness of a building will take care of itself as a matter of course .

Of course this seemingly revolutionary stance in the "postmodern" late sixties was shrewdly anticipated in the early fifties in the relaxed, more sophisticated, less polemical and possibly slightly puzzled observation of Matthew Nowicki that "form follows form".

Both positions in opposition mentioned in this argument have however this in common: they both are "either – or" and are concerned with establishing what has ascendancy, takes precedence or must claim priority – purpose or form.

Frank Lloyd Wright's contribution to the collection: "*form and function are one*" indicates a possible position outside the polemic. If rendered operative this formula can lead to the hunch that suggests the idea that form is an instrument of design. *Form* in architecture could be *understood as instrument* – neither as typologically preexisting original position to which all else has to become subordinate, nor as following from premises as result.

Use and form of a building or urban context must be understood as but two *different aspects* of the same thing, and to design means that they have to become fused through stubborn, patient work in a process of mutual adjustment,

4 Le Corbusier: Vers une Architecture, Vincent, Fréal, reprint 1958, p. 146.
5 Philip Johnson: Mies van der Rohe, The Museum of Modern Art, New York 1947, p. 184.

adaptation and reconciliation in which each is judiciously interpreted in terms of the other.

This obviously presupposes a particular attitude of mind. One has to be willing to renounce a fixed point of view; one has to be prepared to see contrasting or even contradictory notions as not necessarily excluding each other and accept that "certainty" can only reside in a temporary stage in a sustained debate in which each partner supplements and completes the other's position in a dialogue of give and take, of this-as-well-as-that.

Excursus on the concept of architectural space

Everthing that is implied by the term "use", that is all activities for which a building is intended, is a manifestation in space as is everything that is implied by "form" of a building. Space can be said to be the common matrix of use and form. So it seems necessary at this point to introduce a concept of space to provide a possible reference for the further train of thought.

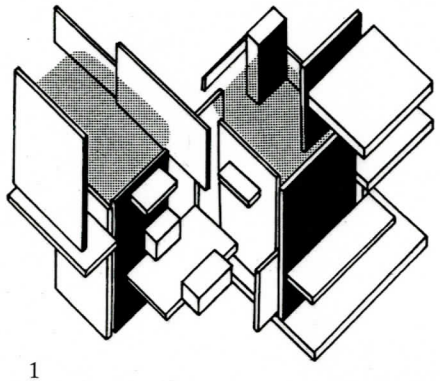
Concepts of space are inventions. They have their usefulness, life span and history. We can start with the axiomatic ascertainment that "space" is first of all an elementary existential experience of conscious man. "Taking possession of space is the first gesture of living things,... The occupation of space is the first proof of existence."[6] We can acknowlegde that this is the space of Plato: "the mother and receptacle of all created and visible... things..., the universal nature which receives all bodies... and never in any way or any time assumes a form...".[7] It hardly neither helps nor matters to call this "natural" space. Descartes made this 'universal' space accessible in terms of arithmetics and geometry; in the second half of the 17th century, Newton succeded in formulating the universal laws that govern in terms of physics the possible mechanics in this space. We can term this mathematical-physical space. It is homogeneous, isotropic and infinite. It seems that psychology too accepts this kind of space as the basic condition of perception [8]. No need to point out that it possesses no animism, is not animate, that it can be neither "exploded" nor "compressed" and certainly does not "flow". It's just there. Nothing mysterious about it. It is.

6 Le Corbusier: New World of Space, Reynald and Hitchcock, New York 1948, p. 71.
7 Rudolf Arnheim: The Dynamics of Architectural Form, University of California Press, 1977, p. 9.
8 ibid.

To create *architectural space* man has to interfere in mathematical-physical space in order to claim, stake out or mark a particular part of it. Thus architectural space is made noticeable, it can be experienced, it *is defined*. One can distinguish two different kinds of space-definition.

First: space-defining elements (e.g. walls, screens, piers, columns) set bonds to, delimit, enclose, encircle, fence in, contain, a particular piece of mathematical-physical space that can be felt henceforth. A space-boundary or space-delimitation must be created and the sensation of space-definition is determined by the measure of enclosures a space-boundary provides. One can then distinguish interior, exterior, "inside" and "outside" space and space between objects (Fig. 1).

Second: a space-defining element activates by its volumetric presence a locus in mathematical-physical space, it occupies space and thus by "dislodging space" makes that we experience space. Its corporeality suggests that we experience our bodily existence and thus experience space.

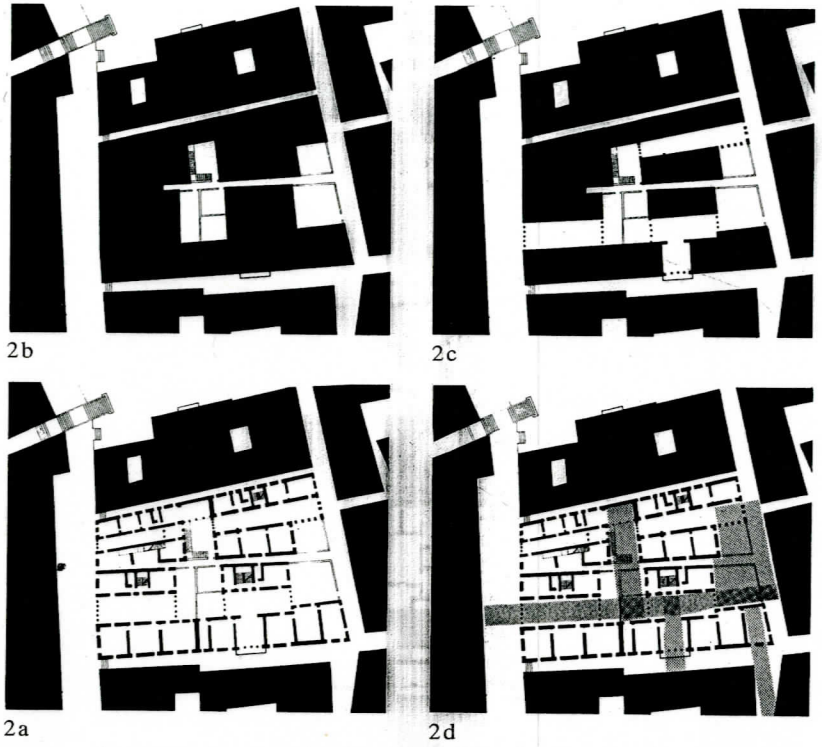


1

Part of the substratum of mathematical-physical space is transformed by being architecturally defined: it has become architectural space with distinguishing qualities and attributes.

1
From a Doesburg diagram.

It follows that space in terms of architecture is conceptually a continuous medium comprising the perceptually distinguished solid of mass and void of space (Fig. 2).



2b 2c

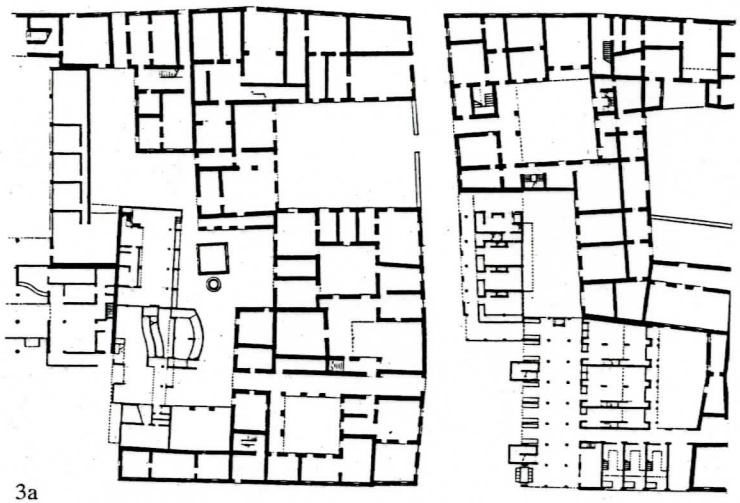
2a 2d

As soon as we see and understand solid and void as equally participating in or equally constituent of a figure-ground continuity it is no longer necessary to insist on their perceptually antithetical nature. We know that buildings, volumes,

2
a Pattern of space-defining elements in continuous space.
b Colloquial distinction of solid (mass, volume) and void (space) between volumes.
c Depending on the degree of enclosure the space-boundary exerts, "inside space" can be felt as part of "outside space". Space is continuous.
d "Inside space" can be an "outside" in relation to other "inside" spaces – all depends on the degree of enclosure.

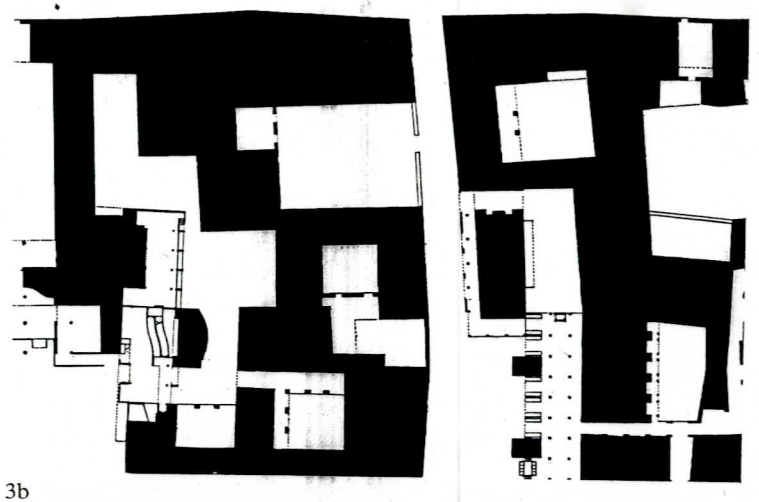
contain space; in architecture "solids" are only colloquially solid mass. Space inside and between architectural objects is part of the same medium, the same whole (Fig. 3a, b, c). One might suggest by hint of analogy that "volume" or solid and "space" or void are but phenotypical aspects of genotypically continuous space.

This dualistic concept of a figure-ground continuity of solid and void as complementary aspects of space is, as all evidence reveals, the concept of *continuous space of Modern Architecture*. Frank Lloyd Wright arrived at it empirically from about 1893 to 1906, de Stijl presupposes it for its spatial inventions, Mies van der Rohe no less than Le Corbusier conceives and works in it[9]: continuous space is the common denominator in relation to which much of the obvious differences of their work can be assessed. It is the reference that permits distinction of species (Fig. 4).

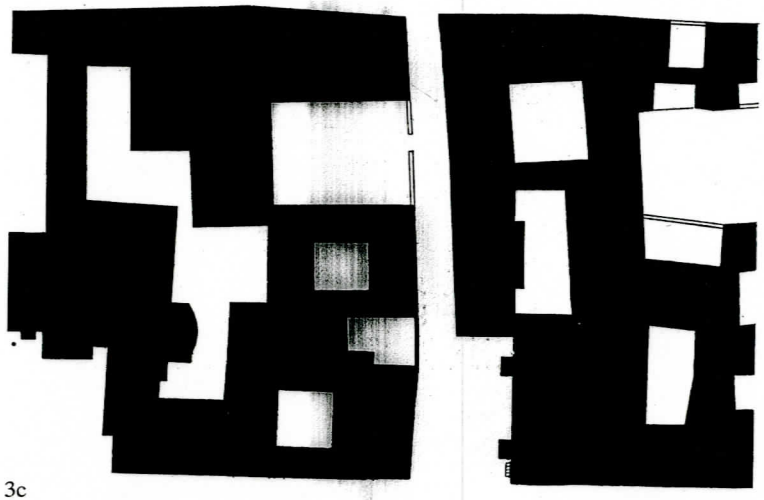


3a

9 Arthur Drexler says of the Barcelona Pavilion: "Interior space becomes a fluid medium channeled between planes. Interior and exterior space, no longer rigidly opposed, are now simply degrees or modulations of the same thing." Arthur Drexler: Mies van der Rohe, Ravensburg, 1960, p. 15. And Le Corbusier notes of the Pompeian House in a remarkable sentence: "Il n'y a pas d'autres éléments architecturaux de l'intérieur: la lumière et les murs qui la réfléchissent en grande nappe et le sol qui est un mur horizontal. Faire des murs éclairés, c'est constituer les éléments architecturaux de l'intérieur." Le Corbusier, Vers une Architecture, Vincent, Fréal reprint 1958, p. 150.



3b

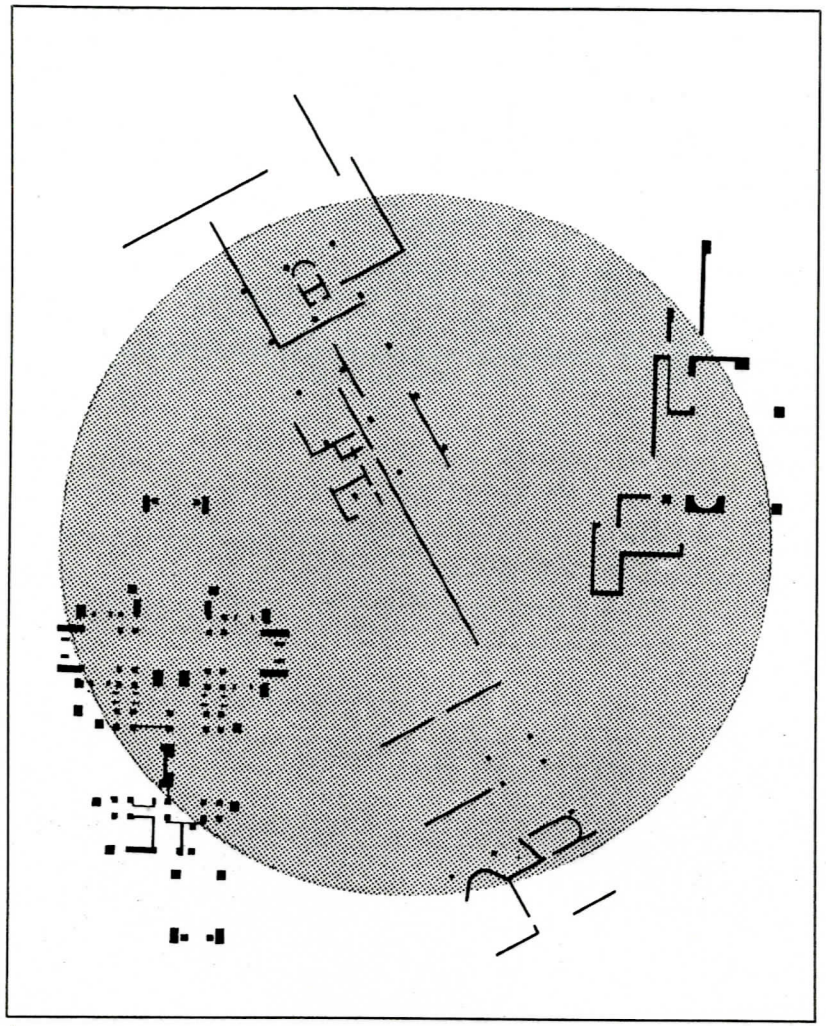


3c

3

a The degree of enclosure is a measure of how strongly architectural space can be felt.

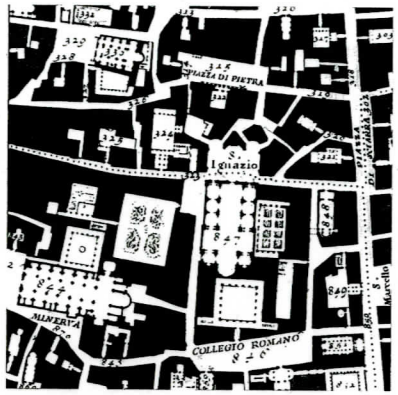
b/c The degree of enclosure decides on the range of the perceptual field or reference; it determines "inside" and "outside", whether figure or ground.



4

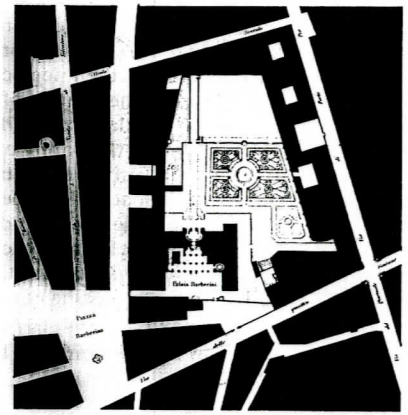
4
Space-defining elements – walls, piers, columns, slabs – constellated in the medium of continuous space define architectural space of varying degrees of enclosure; there are "degrees or modulations of the same thing". Arthur Drexler, Mies van der Rohe, Ravensburg 1960, p. 15.

In view of this concept of continuous space the Nolli technique of showing the space of a square extending into the nave of a church or into the colonnade of a palazzo, though no less remarkable, seems only "natural" and obvious (Fig. 5).



5a

5b



5c

5
a Nolli's method of extending the "open" space of street, alley, and b square or garden into the main "inside" hollow of church or palace is perhaps an unconscious demonstration of a feeling for the figure-ground continuity of space of which solid and void are only colloquially and perceptually distinct but conceptually complementary aspects of the same medium – "se non è vero" we are at least entitled to that interpretation.
c Palazzo Barberini, after P. Letarouilly.

Unnecessary the invention of such innocently endearing and cleverly amusing notions such as "space and anti-space" or "positive space" (for void) and "negative space" (for mass)[10] – one a quite flirtatious and unnecessary reverence for nuclear physics, the other an only colloquially useful and not very helpful transfer of the device of positive and negative signs from arithmetic to the subject of space. There is of course no questioning the matter that is brought into focus by such attempts to distinguish nor doubting the necessity of distinction, but to term it thus seems weak, because in doing so one uses quite inadvertently a perceptual every day colloquial distinction of mass and space to presumably attain conceptual vigour. I think it worth-while to work with a general concept that admits of no exeptions but then provides for special conditions and explains them as special cases as such – rather than providing every single phenomenon with a new term that suggest a new notion. And, anyway, it may be useful to remember Bernard Berenson's impatient and slightly sarcastic passage in *Aesthetics and History*: "...So the art writing of the German-minded has been more and more dedicated to discussing space determination, space filling, space distortion, space this, space that..."[11].

It may be that attention to space is the expression of an open society where plurality is accepted and recognized, where contradiction is not only tolerated but held in esteem as inherent in the condition humaine and where dialogue is an indispensable technique for mutual advancement. And then, perhaps concentration on isolated objects is indulged in by a society seeking to escape complexity with the help of simplification of issues and in trying to find refuge in willingly accepted authority or in the surrender to "history". If these conjectures should not be refuted, if these assumtions are true – and, given the interest of the Neo-Rationalists in volume, their neglect of space and their unabated concern for the solitary object even in the context of an urban situation, – we may cherish the hope that a persistent avoidance of all memory of "The Moment Of Cubism"[12] and a continued evasion of the barely explored and yet inexhausted possibilities of Modern space will prevail for some time to come; or we can worry and regret that the "New World of Space"[13] has perhaps vanished for good.

The concept of a figure-ground relation of solid and void in *Continuous Space* permits conceptually effortless oscillation between the two opposing aspects of space, solid and void, which are not seen as mutually exclusive but mutually presupposing each other and being of equal value and enjoying "equal rights" as aspects or parts of the same whole. So buildings and spaces between buildings are seen as partners in a sustained debate protagonists in a dialogue "who progressively contradict and clarify each other's meaning".[14] To move at ease in the space that this dualistic concept of space describes most certainly helps the designer who has to deal with plurality, complexity, contradiction – with the manyfold demands of everyday reality.

10 Steven Peterson, Space and Anti-Space, in: The Harward Review, Vol I, MIT-Press, spring 1980, p. 89.
11 Bernard Berenson: Aesthetics and History, Doubleday Anchor A 36, 1954, p. 97.
12 John Berger: The Moment of Cubism, Weidenfeld and Nicolson, 1969.
13 Title of Le Corbusier's book, Reynald and Hitchcock, New York 1948.

For the present argument it would appear that a concept of space, that conceives of the world of space as consisting of the two but complemetary aspects of solid and void, is the very matrix on which transparency can thrive. It is not suggested that the concept of Continuous Space is the prerequisite or one of the necessary conditions for the existence of transparency or for creating a transparent form-organization. But to work with this concept just possibly reveals an inclusive mentality refusing an "either-or"-approach, a willingness and capacity for conceiving and dealing with the "as-well-as" – just as a taste for transparent form-organization might. The concept of continuous space and transparent form-organization can thus both be seen as manifestations of a frame of mind. One gives meaning to the other.

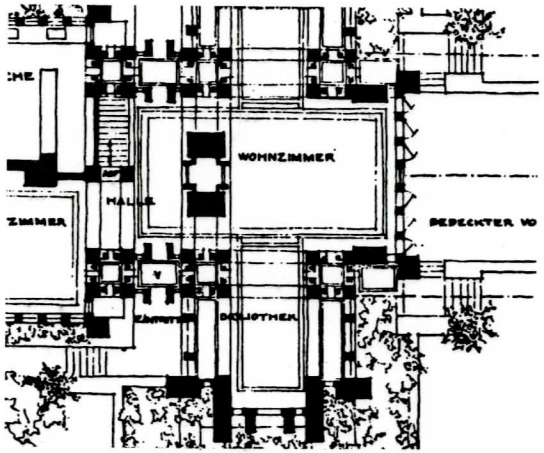
Transparency – Instrument of Design

Transparent form-organization should be considered as an instrument of design, as a technique for creating intelligible order as are for instance the use of axial addition, repetition or symmetry. Transparency as organization of form produces clarity as well as it allows for ambiguity and ambivalence. It assigns each part not only one definite position and distinct role in a whole but endows it with a potential for several assignments, each of which though distinct can be deter-

14 Colin Rowe's felicitous turn of phrase. Cf. The Mathematics of the Ideal Villa and Other Essays, MIT-Press, 1976, p. 194.

mined from time to time by deciding in which connection one chooses to see it. Transparency then is imposed order *and* freedom of choice at the same time. The transparent organization of ambiguousness would seem a particularly useful way to create order at a time seeking emancipation from obligation, at a time of multiple and often irreconcilable conditions for a building, and perhaps contradictory expectations that ought to be met by successful design. Transparency as form-organization is inclusive: it can absorb contradiction and local singularities, such as local symmetry for instance, without endangering the cohesion and readability of the whole.

A transparent organization of space has, because it allows and even encourages multiple readings of the interconnections between the parts of a whole system of related spaces, a built-in flexibility of use (Fig. 6). (Flexibility is provided and exists through possible interpretation, through flexible use of a supply of possibilities inherent in a given arrangement of spaces and not through physical flexibility of, say, movable partitions. Again we have the life-enhancing vigour of the tension between fact and implication, between physical fact and interpretation.



6

6
Flexibility of use: an offer of differentiated spaces for possible uses is supplied by the transparent organization of space. Now a part can be separated now integrated in the whole (Frank Lloyd Wright, Martin House, Buffalo 1904, floor plan detail; cf. page 70).

Since a transparent organization invites and encourages the fluctuation of multiple readings, and suggests individual interpretation, it activates and involves. The spectator remains not observer "on the outside", he becomes part of the composition through his participation. He enters a dialogue. He has to decide and in "reading" a facade, choosing one of several possible readings of the composition he is, at the same time, in his imagination, engaged in its creation.

If thus supremacy of the visual and its individual interpretation over the subjectmatter is assured, then *meaning* could be a *quality* that comes into being through accruing, through sedimentation, and not be "attached" to certain forms or motifs to which meaning is thought to be attributable by association or is believed to derive from precedent. Meaning can thus consist in the adhoc or repeated identification of the beholder with the object. Meaning then blossoms from personal involvement, it is created in the act of focusing on one of the possible readings of form relations that are latent, inherent or implied in the form-organization.

It is for these reasons that at a time of presumably pluralistic expectations, of contradictory wants, of individual needs and demands and the mannerist penchant for inversion and allusion, transparent form-organization might be of particular value and should enjoy considerable favor where the desire to create inclusive form under contradictory conditions persists.

It would seem that transparent form-organization would be the instrument of design par excellence that permits *collage* as an attitude conducive to artifacts resulting from a technique that would render feasible "a way of giving integrity to a jumble of pluralistic references" [15]. It would materialize collage as a state of mind encouraging the "politics of bricolage", activity that "implies a willingness to deal with the odds and ends left over from human endeavour"[16]. Phenomenal transparency is a means of form-organization that permits to incorporate the heterogeneous elements in a complex architectural or urban tissue, to treat them as essential part of collective memory and not as embarrassment.

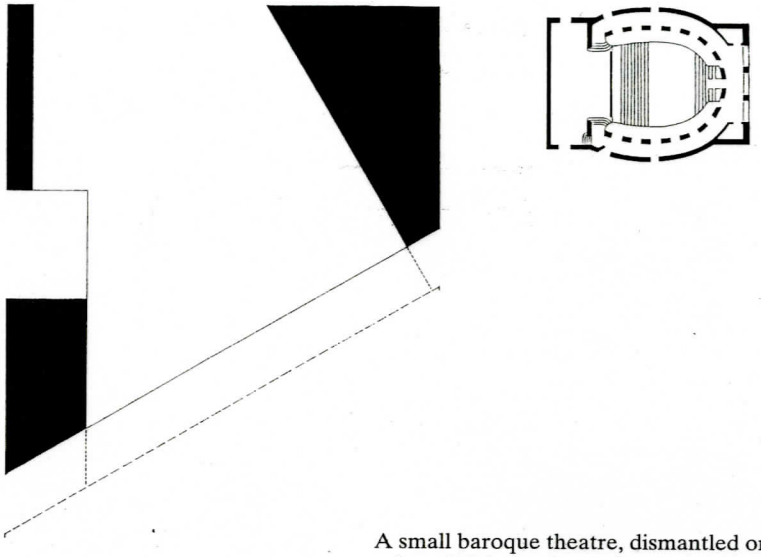
15 Colin Rowe and Fred Koetter, Collage City, in Architectural Review, August 1975, p. 89.

16 ibid., p. 83.

Transparency – Instrument of Design

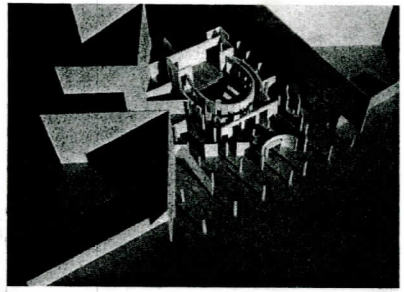
Urban repair, Spalenvorstadt, Basel, Switzerland. A gap in the wall of the street had to be closed. The idea was to not only "fill" the gap but to unify the entire heterogenous row A and at the same time unite houses 9, 11 and 13 to terminate it. Elements of texture from row A are used in a transparent organization to weave across the gap.*

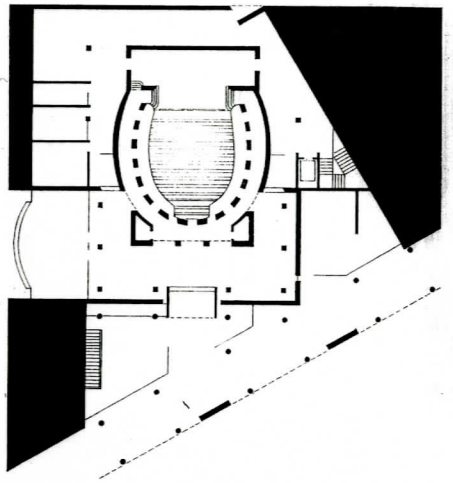
*Competition entry by Hoesli, Jansen, Lucek, architects, Zürich, 1981.

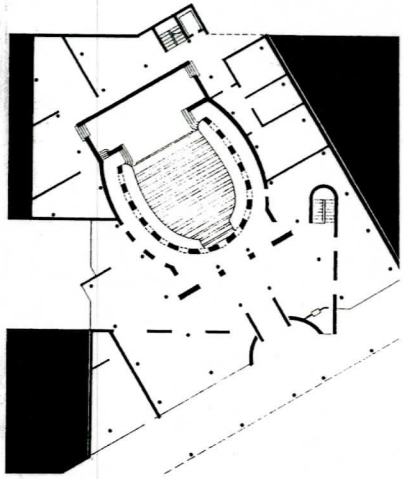


A small baroque theatre, dismantled on a demolition site, has to be established on a new site with an arcaded frontage along a major artery, an alley in the back and small square to the left.*

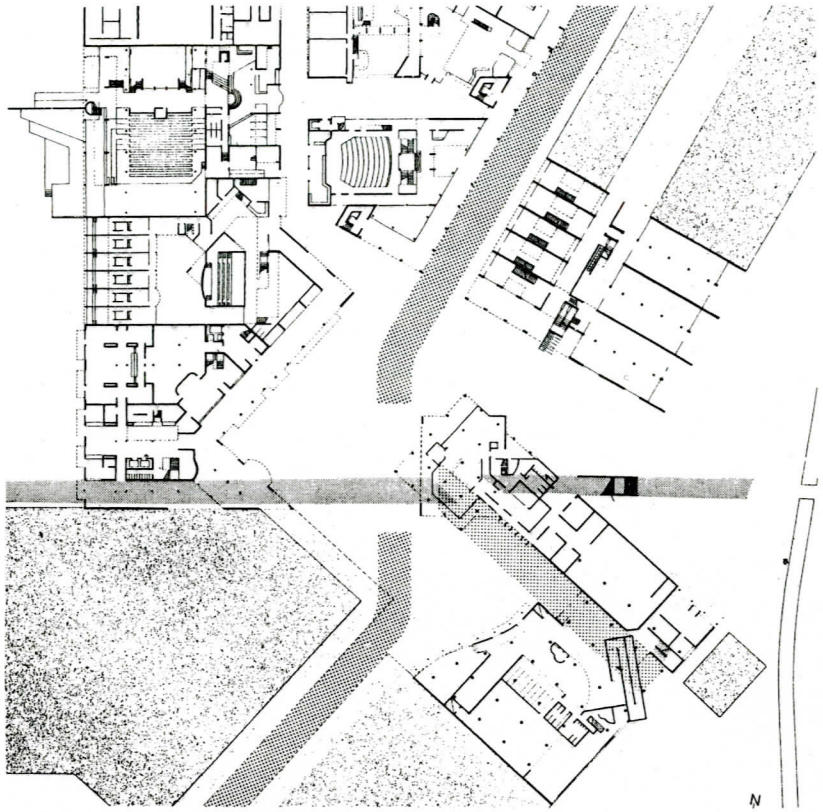
* Student seminar work conducted under Professor B. Hoesli, Swiss Federal Institute of Technology, Zürich, 1979–80.

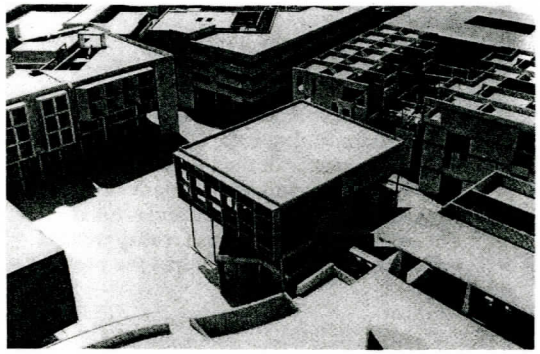






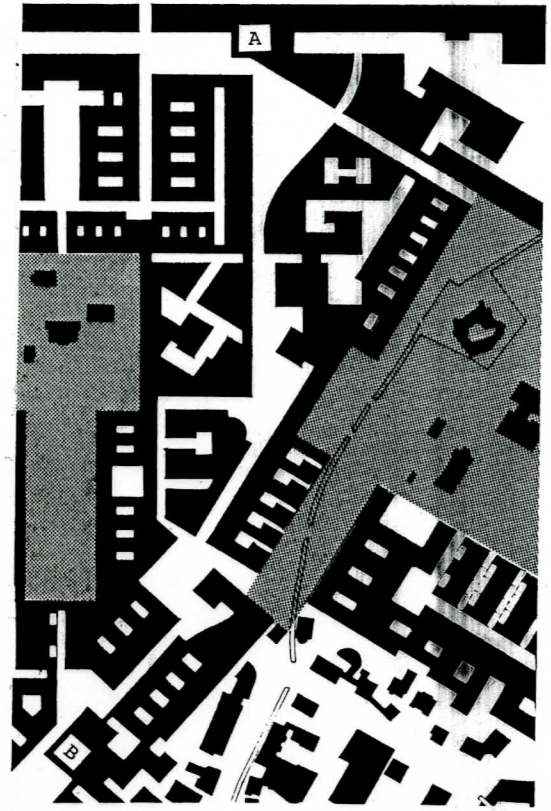
To posit the theatre with its main axis at an angle to the frontage accommodates the inner lobby-space in a transparent position as prelude to the theatre and extension of the square. Adaptation of the axial sequence of spaces to the direction of the street however is awkward and reduces the outer lobby-area to residual spaces that must act as poché.
The main axis of the theatre put squarely perpendicular to the frontage raises the difficulty of how to relate to the square on the left. By means of a transparent orga zation the lobby-area becomes a rich fabric of spaces in which the two direc- tions are accommodated and conflated. Cloak-room, sitting area, bar and kiosk well as the spaces of the lobby act local as spatial poche and as a whole with alternate readings as figure and ground This seems, with the help of transparen a more successful solution than the pre ous one.

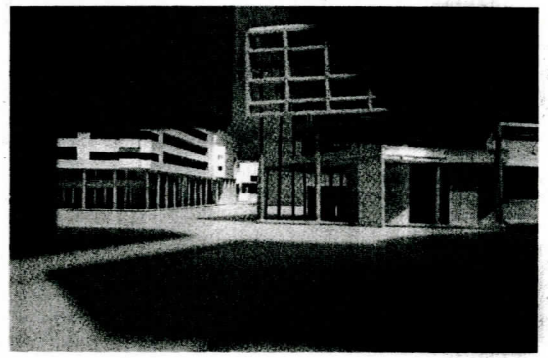




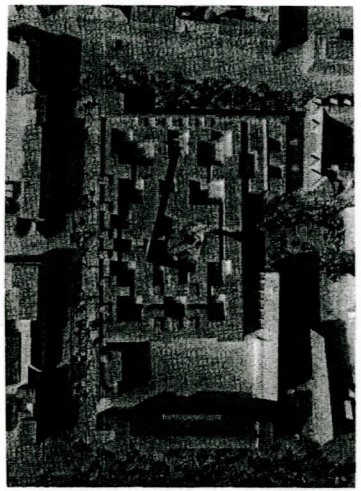
Transparency as expression of the impact of the outside forces on the object within the urban context.*

*Student work conducted under Professor B. Hoesli, Swiss Federal Institute of Technology, Zürich, 1979. Author:. Hans Frei.



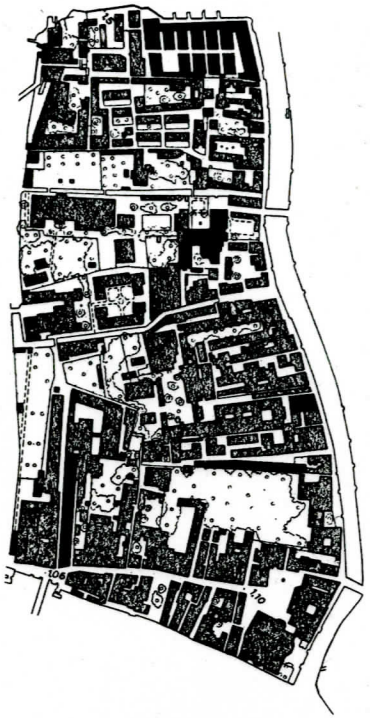


The building's position in the urban fabric: part of the connection between trainstation A and administrative centre B.



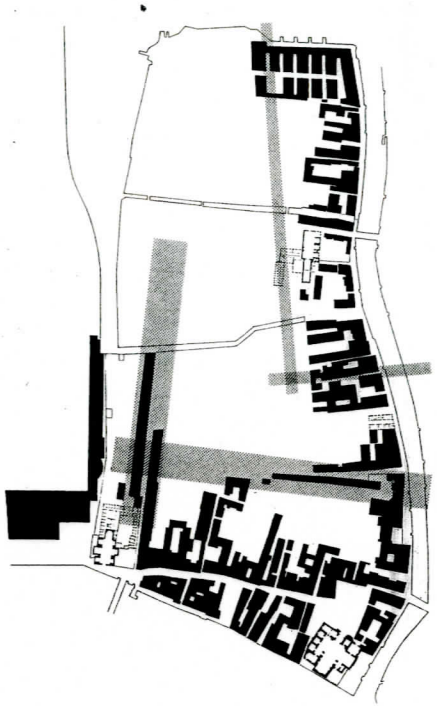
Basel, Switzerland: urban housing on former barracks grounds at the juncture of the medieval part of Kleinbasel and its 19th century extension.*
Transparent organization used as device for meshing urban tissues. By the presence of the two directional systems two persistent epochs of Basel's past are united and made present in the 20th century graft. Perhaps just a bit too intellectually precious and selfconscious; acceptable more in principle than in detail.

*Diploma project conducted under Professor B. Hoesli, Swiss Federal Institute of Technology, Zürich, 1981–82. Author: Willy Kladler.

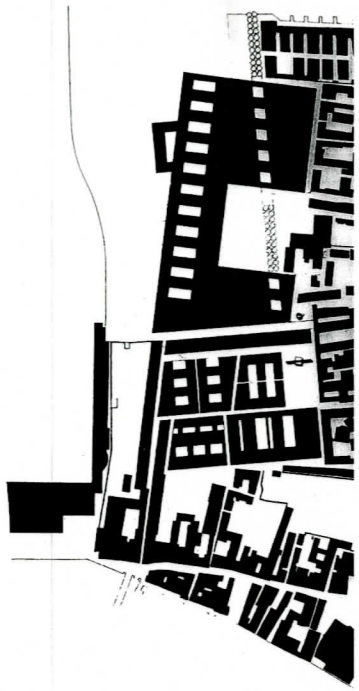


Venice, Italy: proposal for urban redevelopment, fair grounds and exhibition area, 1978.* The special elements: two fine residential blocks, a palazzo, the church of San Giobbe, the old slaughter house.

*Exhibition "Dieci Immagini per Venezia", 1980. Entry by Bernhard Hoesli and Assistants, Swiss Federal Institute of Technology, Zürich.



Existing housing that must be preserved. Two directions that might become starting point for the organization in terms of geometry.
A transparent organization provides the



geometric system that can absorb th
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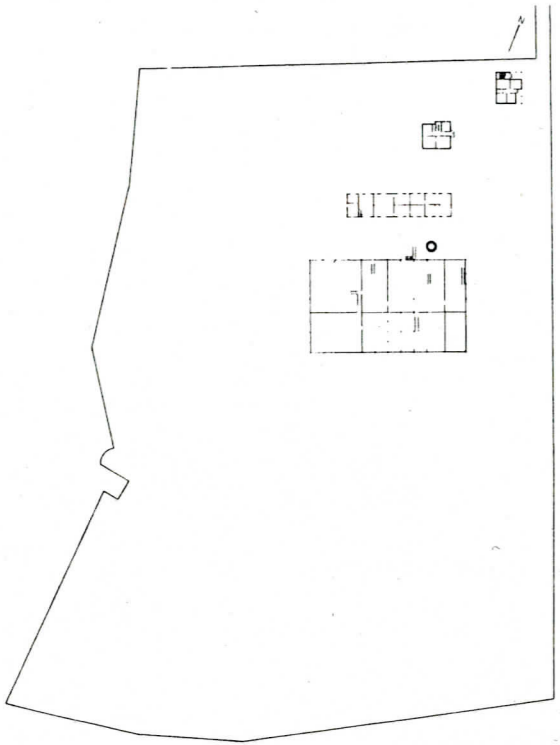
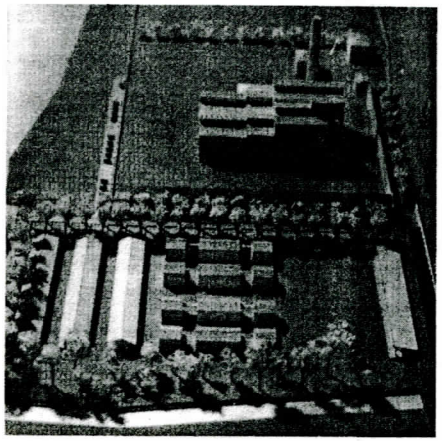
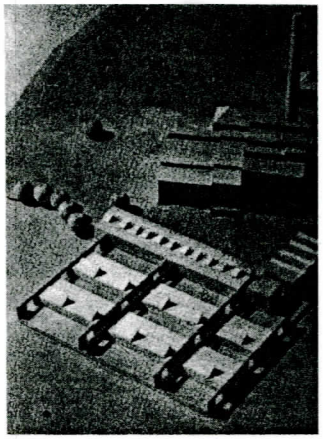


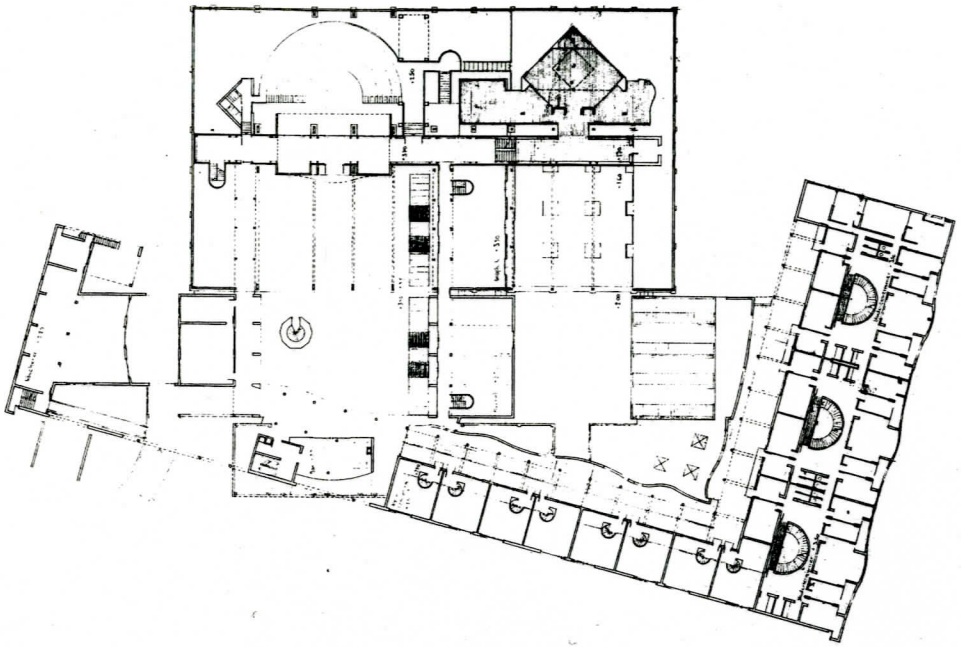
The existing structure of a former tannery must be preserved as landmark and historical monument but adapted to be used as part of a cultural meeting centre with housing and studios for resident artists and visitors, workshops, conference rooms, meeting halls.*
The architect has to deal with the theme of public versus private, to express himself on how he sees the relation of individual and collective life; and his design must demonstrate the proposed relation in terms of mass and space.
In these two proposals the spaces for collective use – the workshops, conference rooms and meeting halls – are arranged in the old structure, whereas the individual rooms for the artists were grouped together with the studios, set apart and arranged in housing units quite like a residential area.

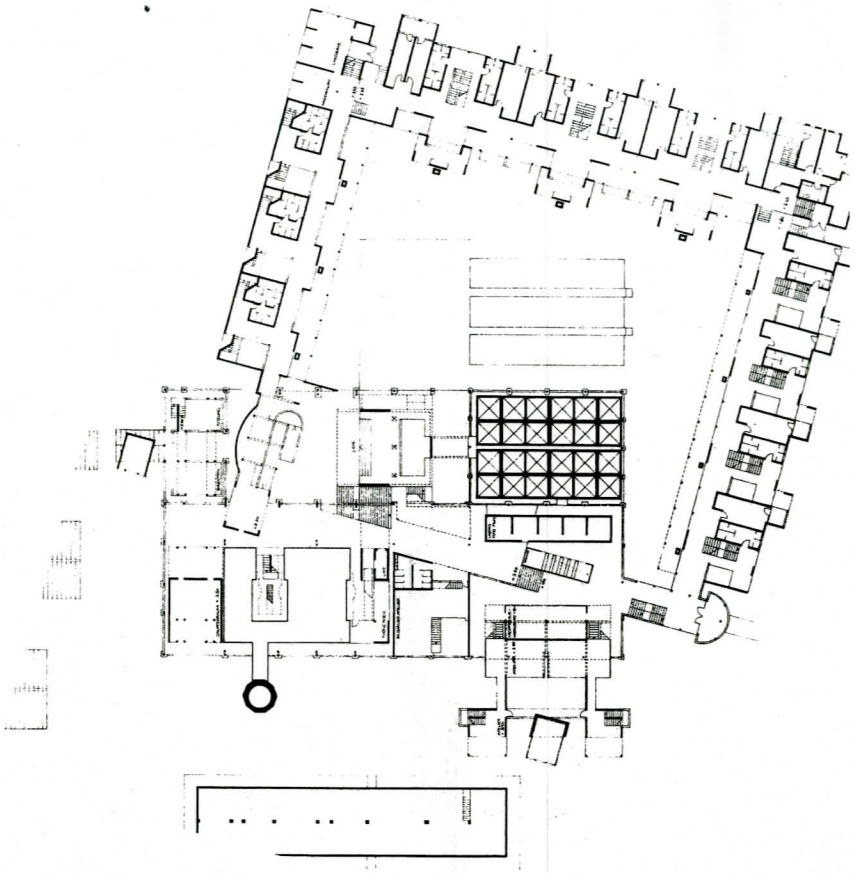
*Diploma project conducted under Professor Dolf Schnebli, Swiss Federal Institute of Technology, Zürich, 1979–80. Authors: Marcel Meili and Fabrizio Gellera.





This is a perfectly valid solution to the problem; it juxtaposes the two parts of the programme like workers housing and factory. But if we assume that it is possible to have another vision of the relation of individual and collective life – not a separation like downtown for work and suburb for living – one might think of a Carthusian monastery or a small town as model.
If we suppose that this design follows such a model there arises the question the kinds of spaces, public and pr collective and individual use can into conjunction yet be differenti at the same time the old and the parts of the whole must be distin

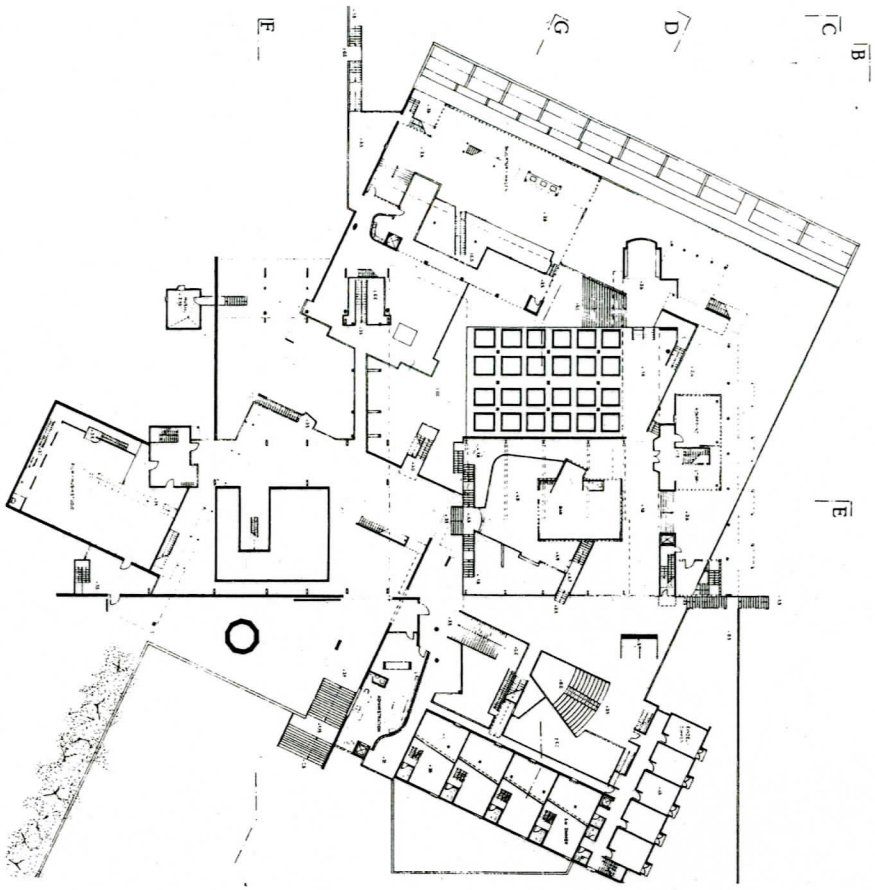


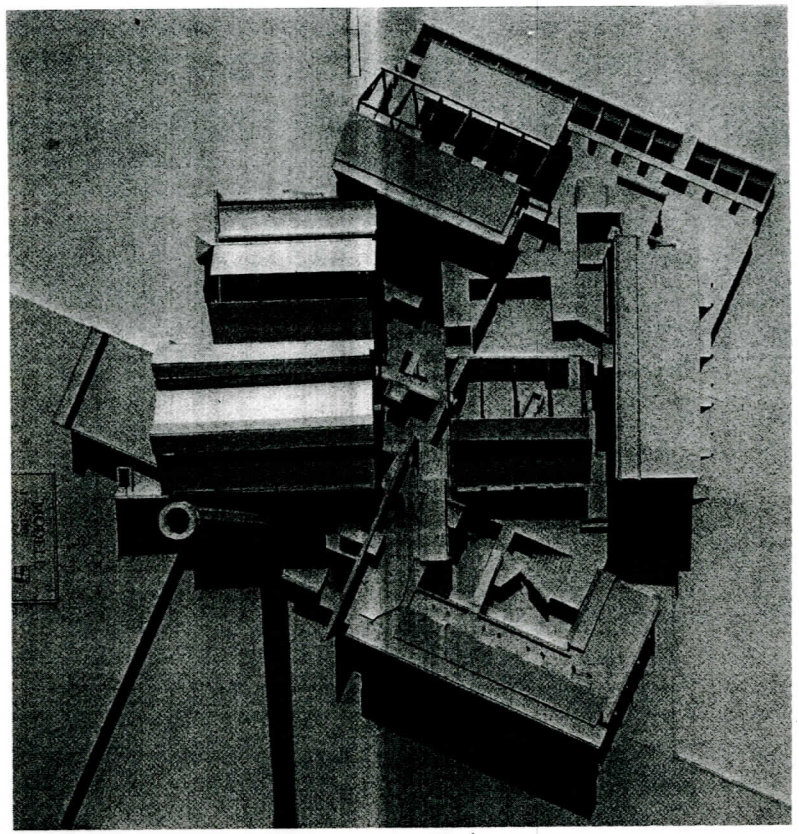


Here the theme of individual and collective life is interpreted as a monastery-like island, introverted, with a hard contour.* The spaces for collective use are assigned to the volume of the old factory, the rooms and the studios for individual use are grouped together. Roughly a rectangle and an L-shape are joined at an angle, the two directions of its sides generate two orthogonal grids that correspond to the two kinds of spaces, the more public and the private as well as to the two components old and new of the whole. The joint is a filler and only in the pivotal area of the entrance court are there traces of a possible transparent organization. Thus the whole is very much still the sum of its two parts, a compact constellation of its two main elements.

In this proposal the whole is interpreted as something akin to a monastery, a closed world in which individual living, individual and collective work are separate yet together. There is the U-shape of the individual residential units and the studios turned at an angle to the main extension of the old factory which contains the spaces for collective use. Old and new, public and private, are assigned to two directional systems that are fused in the volume of the factor the union of the two kinds of spaces becomes palpably real in the multipl readings of the transparent spatial o tion.

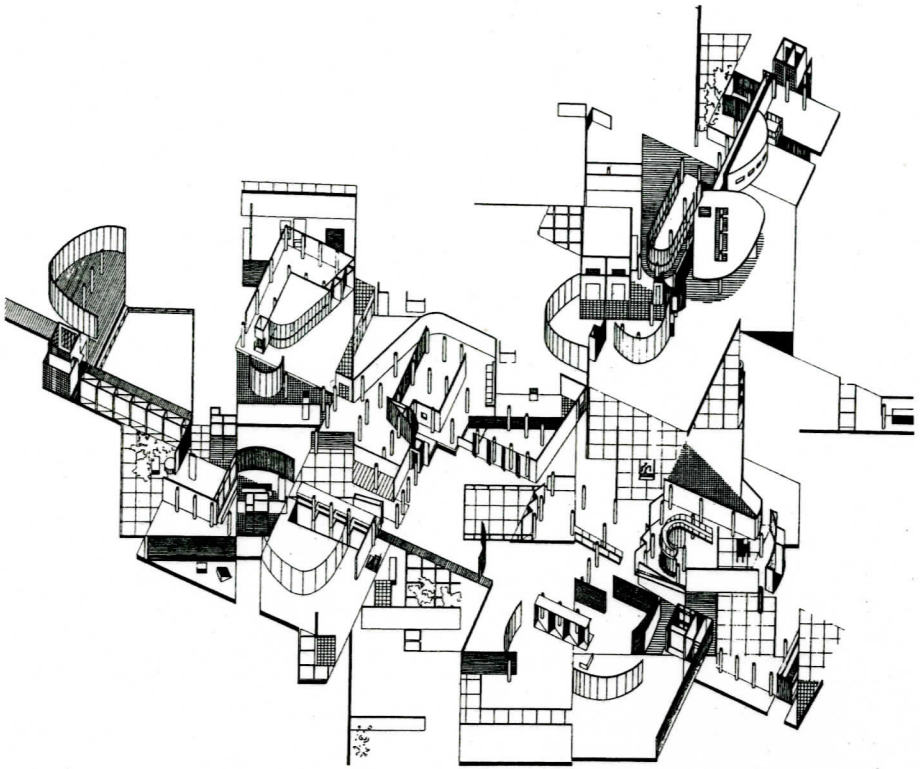
*Diploma project conducted under Profes: Hoesli, Swiss Federal Institute of Technolc Zürich, 1979–80. Authors: R. Brunschoten St. Lucek.



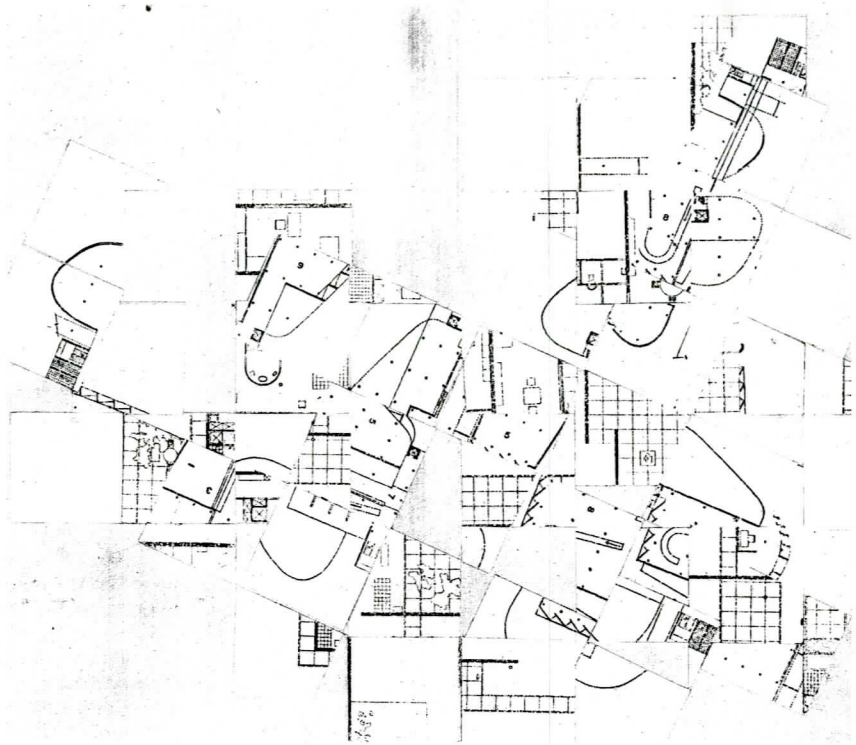


In this third case the cultural center is interpreted as a piece of urban fabric or a small town in which living and working, public and private, are mixed.* The transparent organization is complete: old and new, public and private areas, collective and individual use, are inseparably interwoven in a many facetted, rich, texture – and all meanings mentioned above are stated in terms of the geometric property of belonging to the one or the other orthogonal system of directions that generate the plan. There is identity of meaning and geometry. The sequence of the plans indicates progressively how transparent form-c tion can be used to unify and diffe within a complex yet clear organiz how meaning is present in terms c

*Diploma project conducted under Pro Hoesli, Swiss Federal Institute of Techn Zürich, 1979–80. Author: M. Jarzombek

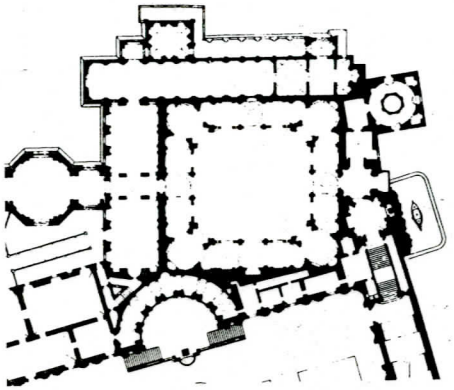


Axonometric drawing.



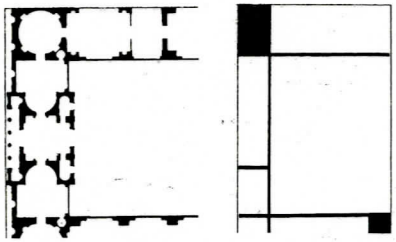
This drawing, called collage*, might be seen as the synthetic prototype of plan 5 produced in the laboratory condition of a form-exercise. It demonstrates the virtues of a transparent form-organization: multiple readings, complexity in unity, ambiguity and clarity, involvement of the user who choses and connects through participation, tangible meaning in terms of geometry.

*Education of an Architect, Exhibition catalogue, The Cooper Union School of Architecture, New York , 1971, p. 290.

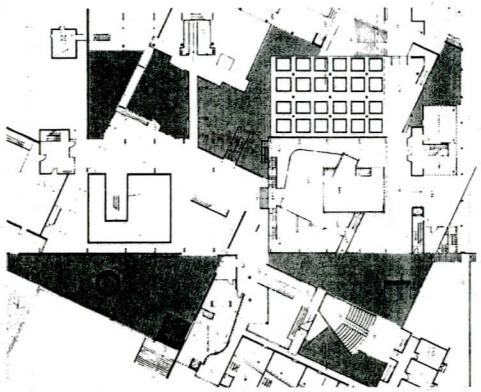


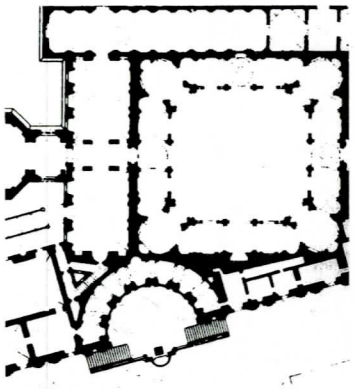
A note on *poché*.

Poché, literally: blackened; parts of plan or section filled with black to indicate the parts of a structure that are cut, as could be done by stippling. We may get closer to the usefulness of that resurrected term if we think of "l'oeuf poché", the poached egg. For if we connect the verb "pocher" with "la poche", the pocket, then "pocher" can become "mettre en poche" and the past participle "poché" could be said to signify pocketed or "bagged", put into a bag, German: eingesackt. So, then "poché" would be an ideal shape put into a bag, surrounded with tissue. And that precisely seems to have happened with square, semicircle and other ideal shapes at the bottom of the Vatican Gardens.



And if we consider the imprint of structure on the plan as ground that acts to disengage the figures of the enclosed spaces – very similar to the "black lines" in a Mondrian that are perhaps all that's left from a black field after white and color rectangles have been placed on it – one may say that the procedure here presupposes apparently a primary interest in the object-figure and that one is intent on preserving its ideal form. One can then experience each individual space one at the time and one after the other. Poché is like the mortar joints between the individual stones and blocks of a rubble-wall. Attention is reserved for the part and there is, perhaps, less a comprehensive feel for the whole.





The whole very often remains but the sum of its parts or at least attention to the individual part enjoys supremacy over attention to the whole which is rather object than field. On one hand a consciousness of parts, on the other an intuition of the whole. Poché as "joint" or transition taken as figure, obviously refers as an "inbetween" to the adjoining spaces that act against it – just as a locus in space in a transparent position that "can be referred to two or several systems". Aside from possible differences in scale *one is acting in terms of mass, the other in terms of space*; we recognize the joint as mass or as space, as solid or as void.

It would then appear that transparenc
poche are related by inversion: in a tra
parent form-organization there are spa
that refer to two or several systems jus
poché does as "solid" mass in a compl
whole consisting of several discrete sp
In terms of the whole their roles are e
lent, just as solid and void are in terms
continuous space. Poché is present as
rial, transparency as space – both are,
though inverted and opposing as exist
equal as performance.