



"The hedgehog in his house", Manne Lodmark.

Dealing with Space: Tales and Scales in Architectural Design

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Stanislas Fiszer

Every project, every design, entails many scale adjustments. The most currently accepted meaning of scale adjustment is that of increasing precision obtained through the calculation of a form, of the drawing of a form using a given cartographic scale:

The scale adjustment can... be related to adjustment of measurements and to the exact dimensions of the different parts of a plan that is still in outline form. Subsequently, it can also relate to the sketched representation when the architect gives measurements to the constituent elements of that sketch.¹

In the language of architecture, this scale adjustment corresponds to the transition from a form that one could qualify as imprecise to a form that is more articulated. Drawing at a given cartographic scale (1:500, 1:100, etc.) requires a certain number of adjustments to the entire entity as drawn, to the parts, as well as to the relation of the parts among themselves.

Thus one can move from one formulation at a cartographic scale X (1:500, 1:100, 1:10, etc.) successively to

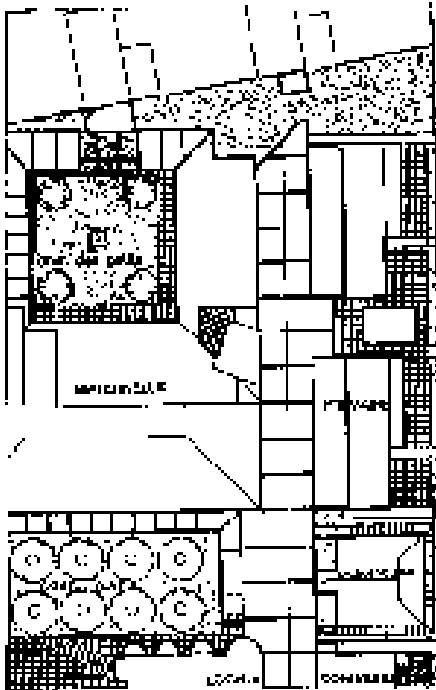
full size (scale 1:1) through a series of decisions dependent on the realities of construction; that is, on the need to give a nominal dimension to each part of the building:

The nominal dimensioning of each part is based on a complete image of the building. The latter constitutes a precise dimensional response to the problems raised by the programme. The dimensional values are selected and co-ordinated between each other.²

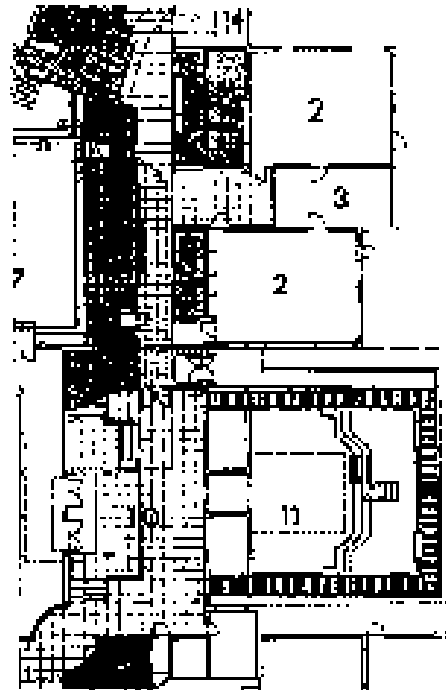
But how is this sequence, this progression toward precision carried out? Is it just a simple technique proper to the architect? Is there a specific order from the imprecise to the precise bringing into play closer and closer cartographic scales which are nearer and nearer to 1:1, or is this cartographic logic merely factitious?

The increasing precision due to a change of cartographic scale, in fact, transmits information leading to the ultimate construction of the building:

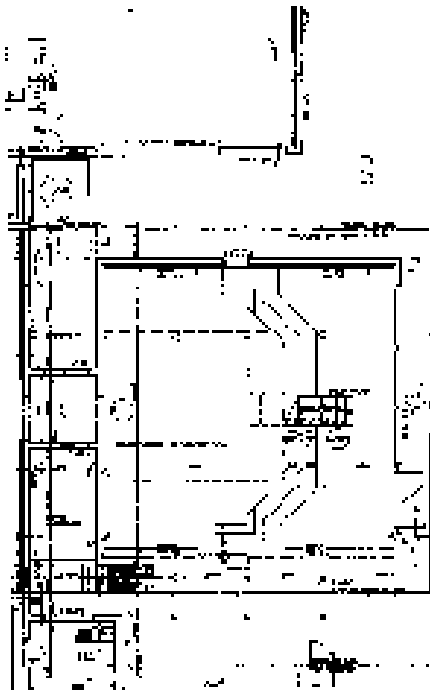
The system of nominal dimensions will provide the referential grid for the entire operation involved in the construction per se... Without this system each local re-evaluation would throw into imbalance the whole set



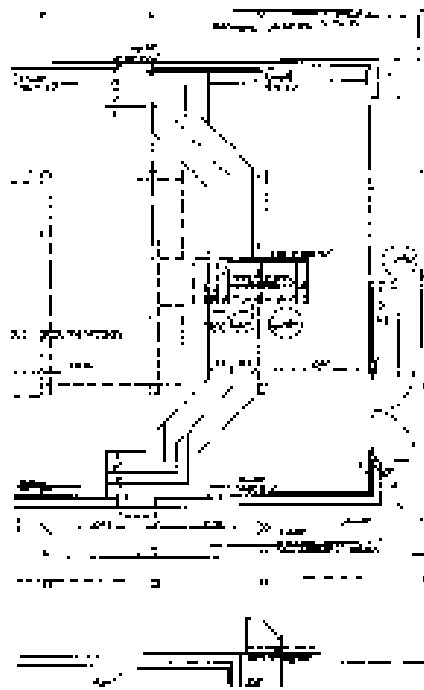
1



2



3



4

Fig. 1

of dimensions... Such precision is more indispensable to the referential role of the nominal dimension than to the elements to be dimensioned themselves.³

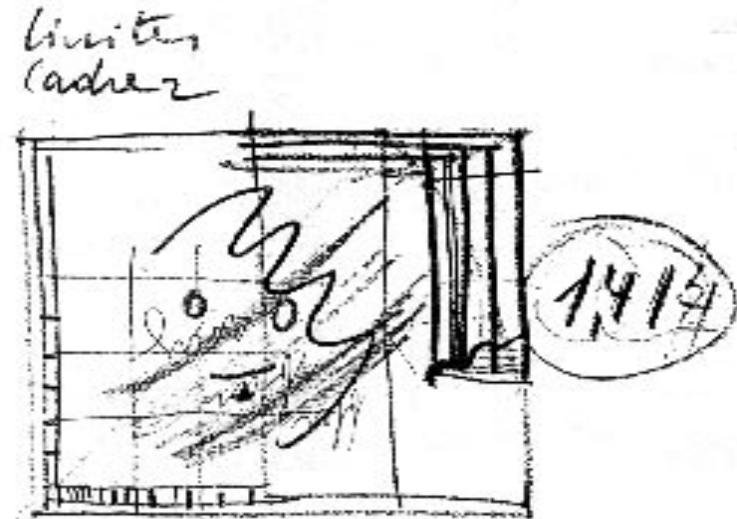
Yet what really counts is the designer's choice to work at this or that cartographic scale; working at 1:100 may be relevant for a given objective whereas working at 1:20 would not be. Every architect also knows that to attain the precision of scale X, work will have to be done concurrently with smaller and larger cartographic scales. The precision offered by 1:100 implies, for example, work done simultaneously at 1:500, or at 1:50, unless it is at 1:10...(Fig. 1)

This simultaneous use of several scales exists throughout all the stages of the project definition regardless of its imprecision. What is more, the architect will insist on elaborating certain parts in a precise manner; others, although a part of the same drawing, will be left in greater imprecision (fig. 2). The sketch for the Kimball Museum by Louis Kahn shows on the same board both the overall organisation of the museum and the lighting detail for the vaulted roofs of the exhibition rooms; the latter are defined in plan only through their location and by their method of lighting. At this stage of drawing, these exhibition rooms have not been conceived in further detail.

And there are some architects who do not even attempt to elaborate any part of their project. For those unconsidered parts they rely on preexisting details which they may have developed for a former project or that other architects have used in other projects. In such a case we speak of reusing (or repeating) a model.

It can be understood then that the cartographic scale is characterized by discontinuity both as applied to the architect's drawing and to his universe of conception. This undermines – with respect to the work of conception – the idea of a linear progression from the imprecise to the precise. We stress this point all the more because whenever there is a reference to a building to be designed in relation to the initial problem raised, and which has to be solved, it is generally accepted that there will be a step by step transfer from one scale to another.⁴

But such a phenomenon hides the qualitative and



quantitative ruptures, the scale changes that are necessary to the work of conception. We leave then the single cartographic scale to see other scales in operation and how they can alter the linear vision of the process of conception in architecture. And in doing so, we also enter into the interplay of scale model which consists of alternation and repetition.

Stanislas Fiszler's projects can be classified as engaging the complexity mentioned above consisting of surges, breaks, and repetitions. The overall intention formulated for a school project in Marne-la-Vallée is that of a simple, compact form, as represented by the idea of a parallelepiped, or of a square in plan. In contrast to this simple convention, we see the necessity of a separation: several floor levels engaging the site and a number of different arrangements both differing with respect to use and form. Each of these requirements offers a possibility for having recourse to former models developed for other projects. So, locally, a given classroom or library space can be recalled and adapted so as to fit within the initial overall form.

From the outset, certain elements will refer back to the holistic view that will have to be articulated progressively and concurrently with local factors that will be determined either in situ with precision or reused from former projects. In this first representation of conception the first activity involves enumerating all those

elements which vary and differ in both nature and in terms of levels.

In the projects described⁵ here we shall concentrate on the actual operations of conception undertaken by Stanislas Fiszer, as opposed to those elements – or their inventory – which have been incorporated from the details of the building programmes on which he has worked.

The conditions and the manner in which those operations of conception were put into practice will not be reconstituted chronologically for each of the projects we have chosen. We shall instead emphasize those instances of conception those operations which appear again and again throughout successive projects and which are indicative of a process of architectural design. Distinct yet connected, autonomous but complementary from one project to another, these instances and operations are interwoven and are part of a more holistic joint process of conception and production.⁶

Scale and scale-adjustments

The operation of scale-adjustment supposes two spaces, two objects, two entities, that are made congruent with each other by a designer, irrespective of their nature:

The scale adjustment is the common adjustment among the different parts of architectural space. It can be carried out from several points of view. In roofing, for example, it can involve technical adjustments to two spaces as well as aesthetic considerations applicable to a given facade as it relates to neighbouring facades with which it is associated.⁷

From out of these two spaces, or objects, or entities, one (or each) can be considered, to a certain extent, as the instrument of measurement for the other whose measurement one is taking. This initial and necessary duality provokes an alteration between the elements instead of a rote repetition between them.

Measurement

The school at Marne-la-Vallée generally imposes itself as a compact form resulting from the measurement

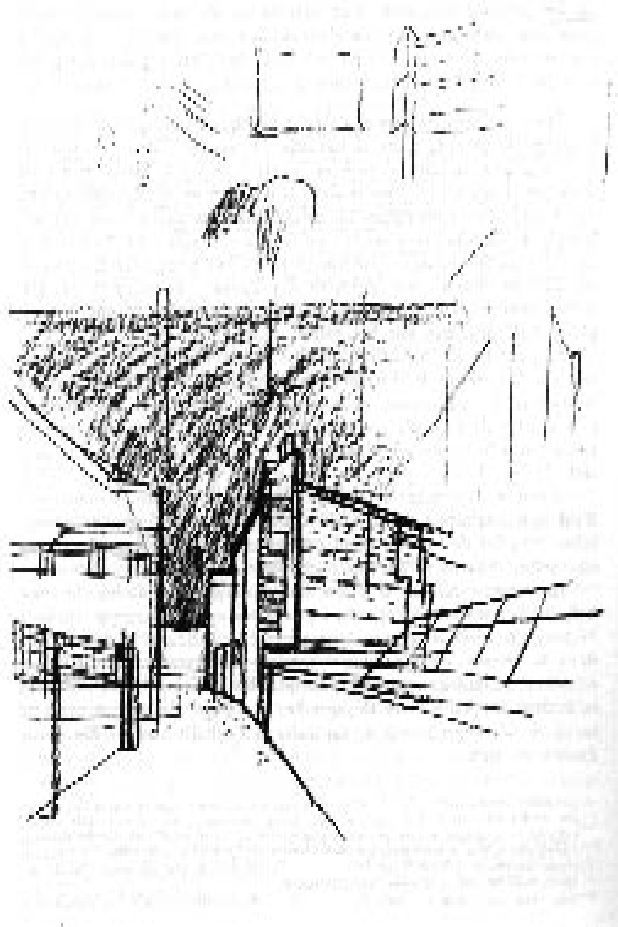
given by the architect to the surrounding chaos in which it is inscribed. Elsewhere, when faced with an urban environment that he deems to be less incongruous, Stanislas Fiszer breaks into fragments another project by adapting its constitutive parts to those that are more in keeping with their urban context.⁸

In the numerous schools designed by this architect, the measurement and the arrangement of the classrooms takes on its full meaning as the chronological sequence of the project advances. The organization of the classrooms for the nursery and primary schools, thoroughly worked out and developed in the first school, is taken up again in subsequent projects and distorted each time to accommodate the demands of the site.

The initial set of measurement operations consisted of readjusting the classroom distribution schema in an almost abstract manner – abstract because it is foreign to any contextual reality – on the basis of technical, functional, geographic, economic, and other relevances.⁹

In addition, this arrangement will also serve, to a certain extent, as an instrument for giving measurements to the site which, of course, already has precise dimension to it. The dimensional value accorded the site will make sense only if it has functional relevance in conception; that is, as the architect proceeds in testing the possibilities of its functional value. A given parcel never has a dimension that has a priori meaning. But through its dimension and its form, the site will, in turn, allow for the re-drawing of the abstract schema for the classroom configuration. A given element will change its location, another will be narrowed, and still another will be superimposed with respect to the arrangement originally drawn at the same plan level.

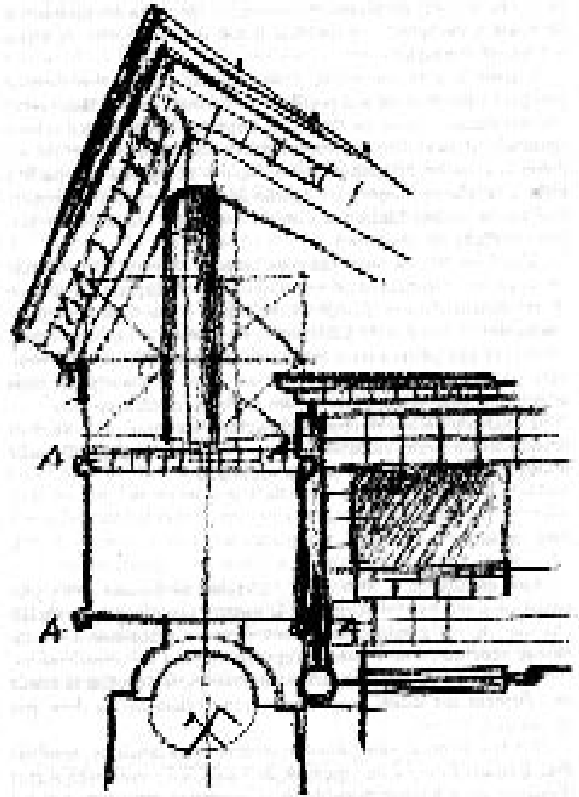
The parcel is thus both a bearer and a provider of measurement; it is measured and it measures. Measured, since the classroom distribution schema permits the attribution of its dimensions. It measures, in so far as the parcel modifies the above-mentioned distribution. A parcel-scale effect takes place due to this encounter between parcel and architectural object. The latter attributes value-as-parcel to what was previous-



ly but a tract of land.¹⁰

Serving as an instrument of measurement is not a natural property of an object, a space, or an entity; instead, it is a function that it can assume, at times, depending upon the approach of the architect. Objects can be «measuring» among themselves depending on how the above intentions evolve in the work of conception.

In other words, an initial meaning for the idea of scale adjustment comes to the fore: to scale-adjust means, here, to fit something to the scale of something else. A first difficulty that arises is that these two things fit themselves to scale mutually. The belfries in town halls provide us with a typical example since the sound of the belfry is on a scale with the town, and the town-hall building with that of the adjacent



square; the latter is scaled out with the scale of the city and of the town hall.

It can be understood, then, that an entity, an object, a given space can serve as a basis for several measurements – for several scale-adjustments – and that as a result of that combination it can serve as a common measurement for multiple scale adjustments.

For example, the corner of a building (figures 3 and 4) can be drawn (designed) with respect to its profile or its contour against a background, according to a relevance that pertains to elements of an optical nature (in which case we speak of optical scale); the corner can also be designed from the point of view of the materials used or in relation to the adjacent facades (we shall then refer to technical scale and neighbouring

scale, respectively). Or else, the corner can be drawn as a limit in relation to a distant view (we shall speak of visibility scale).

The architect can also design this corner of the building (in addition to, or alternatively) in the context of his own overall experience in treating such a problem. He can either draw on his personal knowledge of building corners as they relate to a former experience (we speak here of scale of model), or he can examine the corner in relation to other objects being designed for the same project (this is the scale of levels of conception).

The building corner, an architectural object or entity isolated from the totality of the project as a whole, becomes thus a common measurement for multiple scale adjustments. Here, we shall speak of overdetermination.

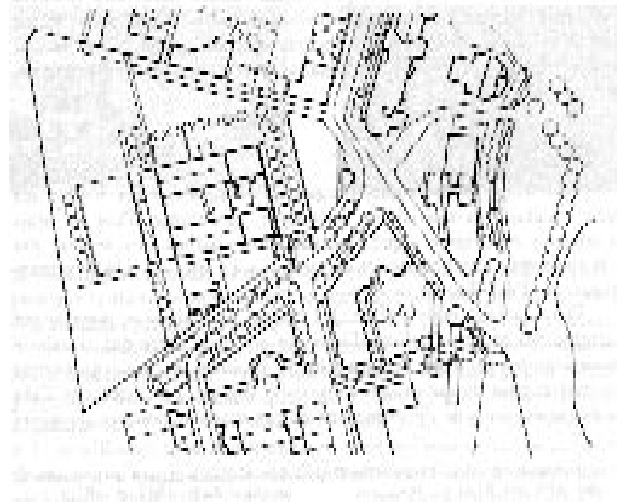
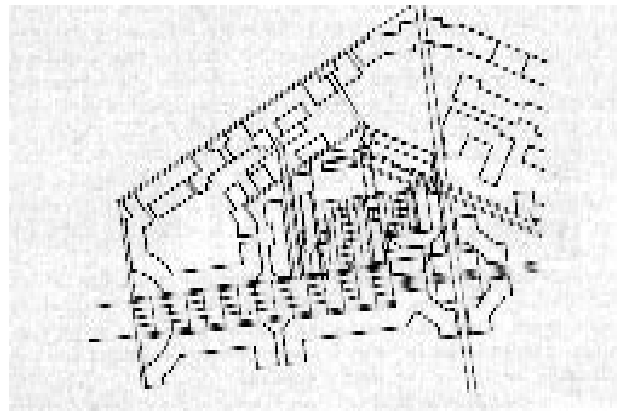
Taking measurements

Who measures; and with what? The architect gives measures according to several relevances and must find a common measurement which satisfies each of these relevances – individually or collectively –; or else, that measurement which, as a designer, he chooses to work with.

Each of these measurements, whether taken or given, affects the value of the element under scrutiny: the element per se therefore does not carry a measurement.

Over and beyond this overlapping of measured and measuring, Stanislas Fiszer has had to confront an entire already-given which constitutes an equivalent number of spaces of reference available on his way through conception; the architect has to take full measure of the dimension of such factors as the client's programme, the site, the socio-political context, etc., not to mention his own already-given made up of his actual professional experience and of his envisaged programme for the future building.

Although those already-givens may have measurements,¹¹ they do not have a measurement within the project unless they are utilized as active operators in conception. An architect might be called upon to articulate them verbally or graphically: let us think, in this



respect, of Alexander's «pattern language».¹²

With respect to the school in Marne-la-Vallée, the neighbouring housing and other buildings constitute a built already-given (fig. 5, bottom); we have said above how the architect takes measure of the heterogeneity by pushing his intentions as regards form and siting to the limit. Since the site is sloped, the school as a single, unifying form can be situated at the highest so as to organize the context through its position of dominance.

On another site, at La Frescoule (fig. 5, above) Fiszer decides to occupy the periphery of the site with the hope that his work will bear influence on future buildings, to the extent that the latter would take measurement of his.

That which in La Frescoule appears as a distinct – if not reverse – operation, compared with the one at Marne-la-Vallée, is however of the same nature, because the taking of measurements of the nearby context through scale-adjustment operations leads Fiszer to segment the site. Thus, it is possible for him to articulate the school project through the creation of public areas such as a narrow street to the north and the opening for a promenade to the east.

This is why, both at Marne-la-Vallée and at La Frescoule, we find the same operation of measurement-taking. Since the operation is applied to different given conditions it leads to different results, to buildings in their appearance. The resulting diversity of architectural objects¹³ would then depend more on the selection of elements than on the operations applied to the elements chosen. With S. Fiszer, the selectivity in measurement-taking suggests an idea of the discontinuity of architectural space in the design process. Such an idea stands in contrast to the apparent continuity that is attributed to architecture when perceived. One that is expressed either through the objects created or through the medium in which these objects are represented: the architect's drawings.

Generating contiguity

We have seen that in both schools, at Marne-la-Vallée and at La Frescoule, the taking of measurements finds a particular relevance in the immediate surroundings. However, choosing such a relevance is not self-evident.

In a different field from architecture, Donald Judd, a visual artist, explains that contiguity and proximity can prove to be not relevant:

When you see a colour at the bottom, it is not necessarily related to the colours at the top; they are not related, in any case, in the process of making a piece.¹⁴

The respective design of two adjacent elements does not mean that they are linked to each other in spite of their contiguous presence. Would this imply that the placing of two independently conceived contiguous elements becomes a specific operation of design? Such is the case of Stanislas Fiszer who goes so far as converting

this operation into a model for use in his own approach to conception.

At Marne-la-Vallée the nursery and primary school classrooms are designed independently of each other.¹⁵ They are placed in vertical contiguity motivated by the geographic scale (slope of the site) and by a functional scale (separating the very young and the young). The superimposition creates new difficulties, related for example, to technical compatibilities and the superimposition of differing modules and grids. Created by the architect for himself he must then find a solution for them.

When dealing with the same nursery and primary school rooms in the case of the school project for Régalles, the architect opts for the use of a level contiguity which gives rise to the gallery as intermediate element. Added to the programme, this element allows for the difference between the two classrooms to be accommodated.¹⁶

So while contiguity may proceed from a neighbouring scale it can also correspond to other relevances and refer back, in the realm of conception of the architect, to decisions which are separate from those which contribute to the design of elements that have to be contiguous.

This de facto contiguity – present either in the real space or in the drawn representation of the project – can make necessary other scale adjustments (between a minimum of two elements being considered) and even become one of the means used in the heuristics of the project. In the preceding example for Régalles the creation of the gallery represents such a case.

The interplay model / scale

The very last school involved a general organization based on a spatial metaphor: a village, a farm. Both «village» and «farm», as well as the underlying spatial organization participated as relevances in the project. Thus, we shall speak of semantic scale and of scale of model.

In the actual layout of the school, the primary level classrooms are juxtaposed as houses along a street

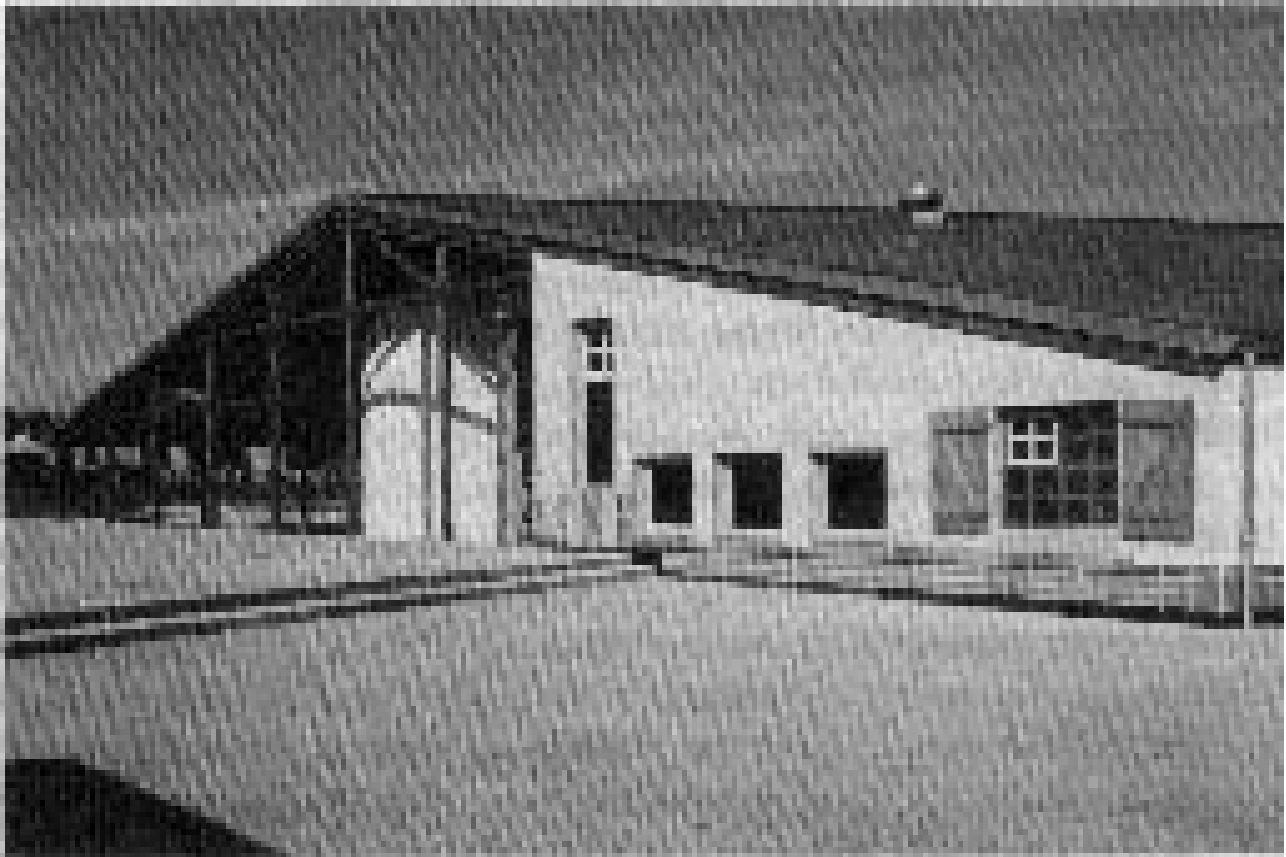


Fig. 6

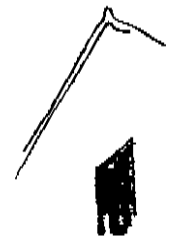
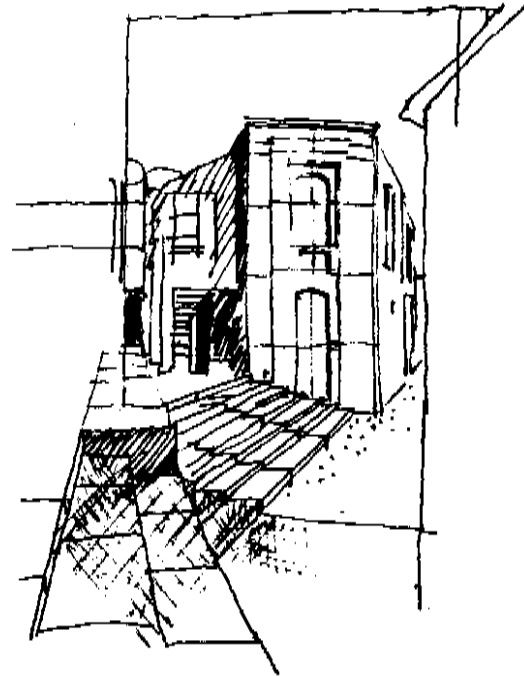
which corresponds precisely to the gallery mentioned above. Drawing on from his preceding nursery and primary school models (fig. 6) Fiszer undertakes a number of operations that distort the models and that are possible due to scale adjustments of a different nature. Here the scale adjustment is no longer applied to the spatial dimensions (cartographic scale) but rather to the spatial organization (semantic and model scales previously mentioned).

The scale adjustment operation involves a complex interplay between model and scale within which the notion of scale takes on value as a general relevance whatever the effect may be: dimensional, organizational, etc. In this manner, a scale adjustment can correspond to the reuse of models, making it necessary to discover new arrangements and variations appropriate to the changed context of the new project. The interplay model/scale can account for a number of diversified operations. For example, although the organization of the nursery and primary classrooms at Régalles arises – inter alia – from the semantic scale and the scale of model, the size of the classrooms is generally determined by the Ministry of National Education (socio-cultural scale). Whereas the windows of the classrooms, through their unique dimensions and composition, have been designed to provide a contrast to the banality of the neighbouring residential patterns. This is why the dimensional symbolic scale will stand out as a noteworthy relevance.

In fact, numerous scales take part in the interplay model/scale. The interplay itself is carried out in various cartographic scales, but through a process which is, as we have explained, not linear. We shall take note here of both the complexity involved in the operations of conception and the need to connect the appreciation of buildings with their design. For buildings do not come to be what they are merely through some kind of natural process.

Model

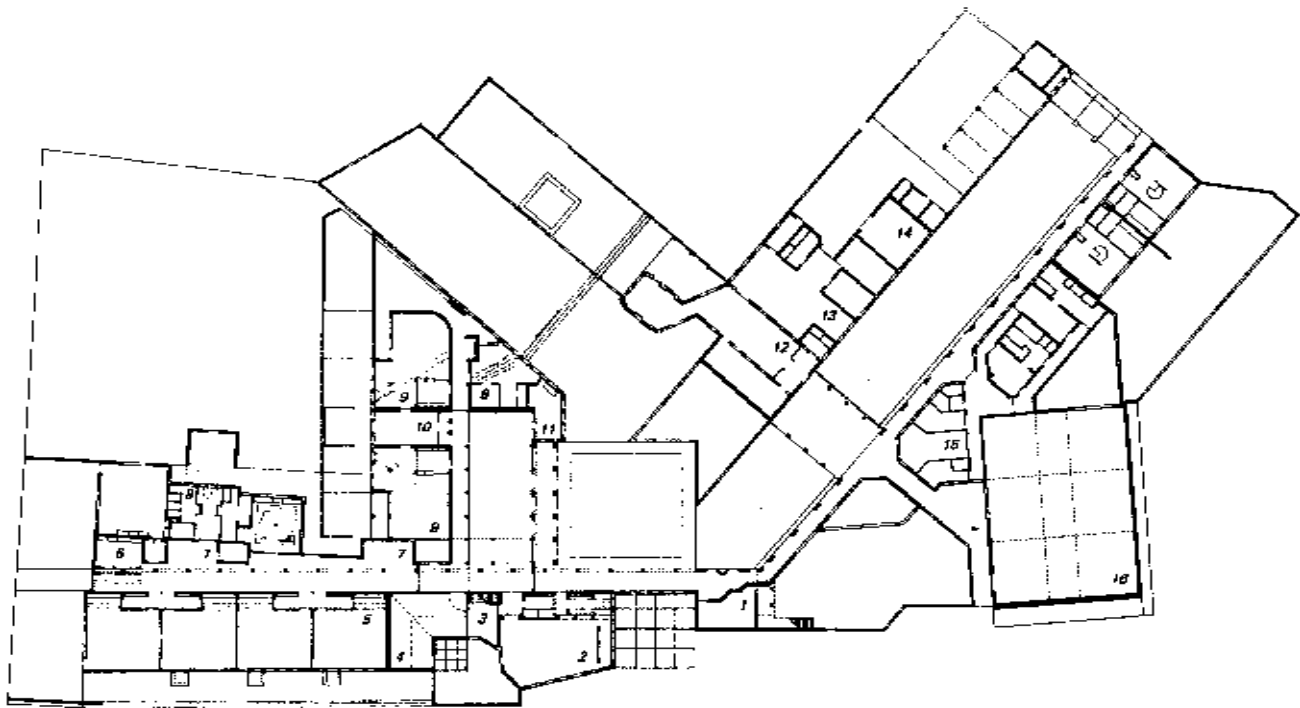
The architectural project implies a great variety of scale adjustments, but it involves also, as we have just seen, the partial reuse of models. In fact, it is in the operation of repetition that the model takes on



its meaning. What matters, in other words, is not so much the type of model but rather knowing what will be the support for the operation of repetition. Stanislas Fiszer's school projects permit us to single out five supports for such an operation: the dimensions, the figures, the objects, the operations, and the overall process.

Dimensional model

In his schools, Fiszer repeats most of the values from one project to the next either because they are imposed by the national education guidelines or because he decides that the reuse is appropriate for the arrange-



ment of the premises.

The school system guidelines stipulate that primary classrooms must have a surface area of 50 sq. meters and mention a preference for a grid module of 1.40 m. From the architect's point of view, a dimension of 7 m becomes interesting because it corresponds to 5 times the 1.40 m grid and leads to a square of 49 sq. meters. The dimensional value is also economical as the span for a wooden frame.¹⁷ In principle, then, all schools have classrooms of the same dimension and form, with the exception of a particular site. In La Frescoule, near Marseille, demands of sun protection results in longer and narrower classrooms equivalent to two and a half grids. The addition of an element (the awning) – due to the orientation of the premises – modifies the dimensional model for the class.

The above example shows how a geographic scale can alter the repetition of the model; in another case, it is the economic scale that will be involved. Any open-

ing in a school building requires the utilisation of safety glass up to a height of 1m70 from the interior floor. Any design for a window or glass-door that is higher has to either, a) include a horizontal mullion at 1m70 from the floor – this allows for the used at a lower cost of normal glass for the higher part of the opening – or, b) have 30% more safety glass in order to abide by the Modulor proportion involved in the higher opening. S. Fiszer gives priority to the economic relevance which results in a horizontal line 1m 70. The presence of the line is visually strong both inside and outside the building. Moreover, the architect takes advantage of this horizontal line by organising the design of the facades around it.

One might tend to think that the repetition of a dimensional model would involve only a mere reuse of the model's dimension, but one will realize that the actual application of such an operation is more

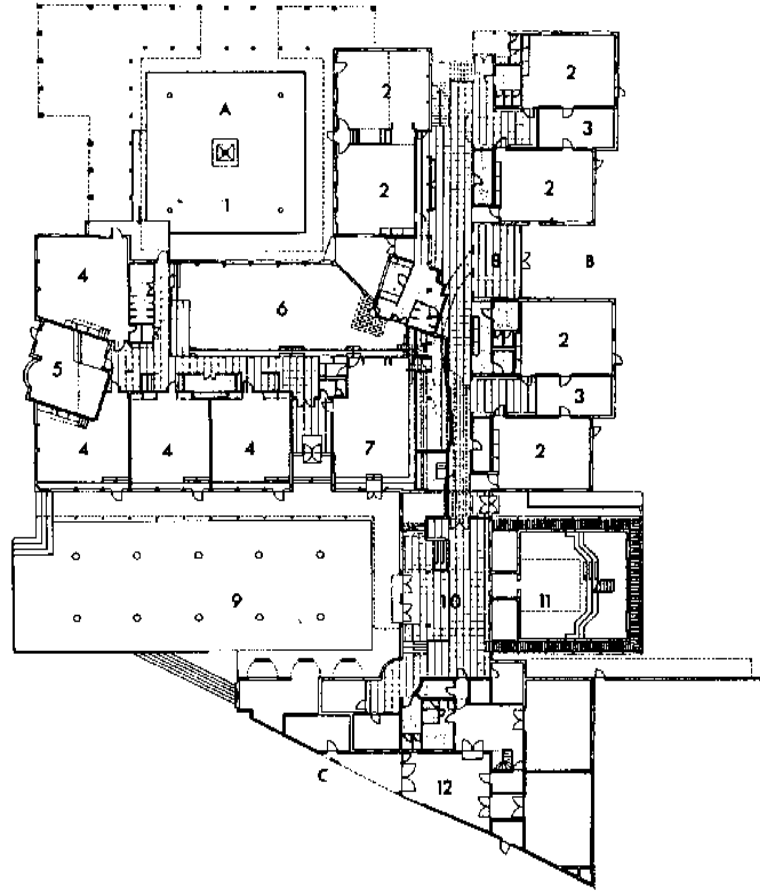
complex. Although it is repeated, the model can be altered by another scale, and then readjusted to the new parameters. Or, the repeated model can also introduce a scale adjustment for other elements in the project (the case of the facades determined by the 1m 70 line). Therefore, the value, the dimension, is both model and... scale.¹⁸

Object model

Sooner or later, every architect finds it necessary to repeat all or part of objects previously designed for projects or buildings actually built by him or by another architect. In his projects, Stanislas Fiszer defends his desire to quote purely and simply, elements from existing buildings.¹⁹ This desire is related, according to him, to the technique of production associated with the spare part: at a particular phase in the project, a part of the space is reserved for the insertion of an element – object – that is borrowed, repeated, quoted, in the manner of Duchamp vis-à-vis the ready-made. But how is this operation carried out? For the term wish does not suffice to unveil the precise procedures. In the Régalles school, the architect decides to reuse a concrete formwork designed by another architect – Ricardo Boffil – for a housing development (fig. 7). Is it the site condition which gives rise to the architect's desire to reuse the formwork? Or is it, instead, the desire to quote the formwork which brings about the organisation of the site?

Originally, the conditions which created the formwork were in a vernacular house type setting. As a point of perspective from the street, a frontal gable served as a frame for a conventional reference point, such as a fountain. The idea of taking up again another architect's formwork seemed technically interesting, so why not quote one from a well designed work by R. Boffil.

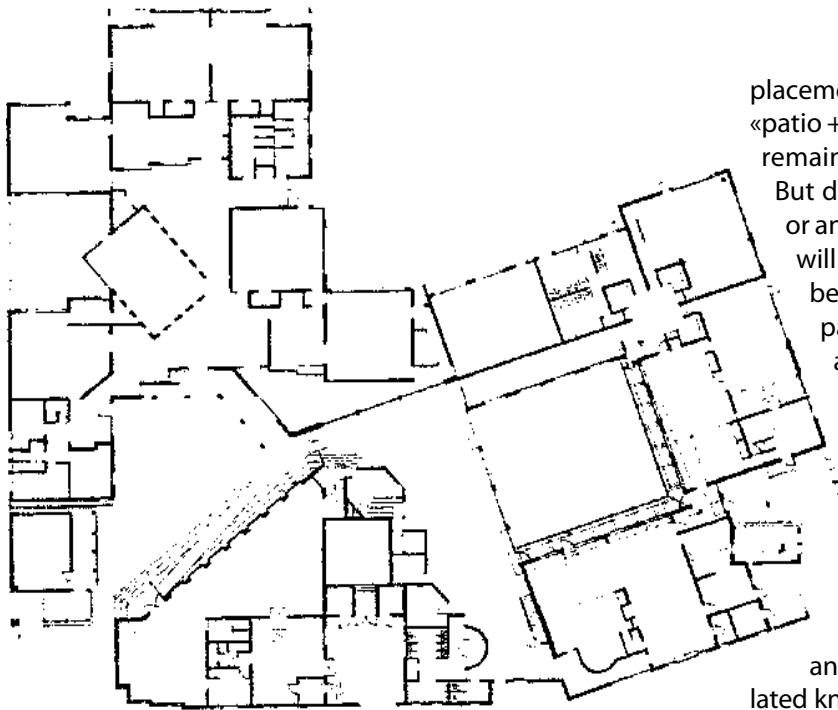
Several measurement operations are at play here: on the one hand, measurement through the visibility scale of the siting (reference point, crossroad); on the other, measurement of the place through a scale of model with its reference to a fountain and more particularly to that of the Parisian type which are placed against a gabled corner at the crossroad. This last reference



introduces the idea of the gable itself but the choice concerning an existing model is related to an economic scale both in terms of conception (you save time on design and on the financial side; the measurement operation through the scale of model cannot be limited to this single scale only. Taking up again an existing gable is both more simple and more economical.

The manufacturer and the previous architect reject however the borrowing of the concrete formwork. Consequently, S. Fiszer finds himself forced to re-design a gable in the manner of R. Boffil, so an apparently simple quotation of an object thereby becomes a more complicated operation.²⁰

Figure model



placement given the particular site. In the drawing «patio + classroom» the dimension of each classroom remains necessarily the same, as we have seen above. But depending on the site, the parcel, the context, or any other decision by the architect, the variation will affect the specific details of the connections between the classrooms, their relation to the patio, and the design of the patio itself – for example, a central space which can be open or closed. A given figure model can be utilized and scale-adjusted in the manner which we have described in the preceding section.

- Operation model

As he moves from one project to another, the architect acquires an experience that allows him to know where and how a given problem will arise. This accumulated knowing enables the architect to save time as it pertains to savings and an increased efficiency in his work of conception.²¹ Fragments from this process are available for consideration and, if repeated, will contribute to a reduction in the time of conception.

Irrespective of the project involved it is necessary to solve problems such as the connection between two construction systems, the section of a building in space, or the angle formed by two facades, etc. These operations do not necessarily refer back to a particular architectural object, or to an identifiable or nominal figure. They are particular points of a design process and are often conceived with relative autonomy vis-à-vis the rest of the project, although they remain bound by it.

S. Fiszer calls these operations snapshots; compiled from his experience he can identify their occurrence in each project. The snapshots correspond to collections of objects, units which can be isolated through their identity (facade, floor, foundation, etc.) and through their situation (mostly between two previously installed systems: floor to wall, wall to ceiling, two facades, etc.).

For each project, a notebook will list all the windows that will be needed. Then, consideration will be given – in a process that takes place in parallel to the overall

Beyond the dimensions and the object, the architect can choose as model, configurations, arrangements, patterns, any combination of things that we shall call figures. These figures, however, refer back in the architect's mind to dimensions and objects which have been determined in terms of the whole. This is so because the figure, as a combination of dimensioned elements does not correspond to a specific dimension or element but rather to their combination given an overall view. The figure can thus be understood in terms of level of conception.

S. Fiszer's nursery school provides us with an example of the above model where the classrooms are brought together around a patio. The features of the model allow for its being rigorously implanted within the parameters of any site. All facades, with the exception of one, can be dividing walls. This system has enabled the architect to establish a kind of catalogue of models for the layout of the classrooms: models for corner classrooms, narrow ones, double-exposure ones, etc.

All the nursery schoolrooms will be organized around a patio which will vary in form, dimension, and

project – to their assembled diversity and how to reduce it. The windows are incorporated into the facades of the project's preliminary drawings, then they are selected from the scrapbook and transformed dimensionally in relation to an economic scale; for example, (simplifying the variety), or in terms of the memory of former projects.²²

Throughout this repetition of operations, the work of conception is directed to the degree of coherence between parts of the project and its variable sets – as defined by the architect. There is no standardized relationship between any of the given elements since the variety of linkages allows all types of scale adjustments. This interplay and flexibility provides the impetus for the heuristics of the project.

Process comprehensive model (editing)

There is one ultimate model that evolves in order to join the other different models we have seen: dimensional, object, figure, and of operation. It involves a comprehensive model that is concerned with the inclusion of the preceding, fragmented models into a spatial continuum. S. Fiszler expresses it through a reference to editing in cinematography. Beyond the metaphor – which is reflected in the architect's use of terms such as «synopsis», «still frame», «framing», «field», «close-up», «off screen», etc., to illustrate different operations involved in the conception of a project – the cinematographic reference connects with an authentic organisational model of the comprehensive process of conception: script of the project, focusing of pre-determined elements assembly and precision, ruptures and mixes.²³

As opposed to a collage or a simple juxtaposition of models such as the ones mentioned above, editing implies an idea of a general synthesis; this is not to say a totalizing system since the models are actually finalized – selected and refined – with respect to the overall idea of the project.²⁴ The Fiszlerian architectural synopsis corresponds to the a priori singling out of models – regardless of their nature, although they tend to be primarily visual or spatial the editing work consists in fact of including those elements in the continuity of space.

So the Régalles gallery was originally just a cross-section. By adding a dolly to the cross-section the architect transforms it into a gallery. The oriental character and atmosphere of the library are described in a project synopsis before any drawing work takes place. The work of conception involves a change in levels whereby one object (the library) is worked out within another object (the school), and will be qualified as a «stillshot».

Lastly, if we consider the nursery and primary schoolrooms in Régalles again as the pre-designed elements that they are, editing them in the context of the site and of their environment clarifies the ultimate idea of the project in its totality that which corresponds to the overall idea of the school.²⁵

Segmentation

S. Fiszler has at his disposal and can use, in this reference to editing, a comprehensive model of the conception process. Its effectiveness is based on the scale adjustment operation applied to models obtained through the segmentation of the project. The term segmentation is very much a part of the architect's vocabulary. He considers it a necessary operation in every act of conception. That is moreover the initial meaning of scale: what portion of space is to be taken into consideration?

As opposed to decomposition, which implies a hierarchy of levels the idea of segmentation corresponds to the enumeration of parts having equal value. If we were to refer to the models previously analysed we could call the process a «letting-free of models».²⁶ They correspond to individual parts being singled out from the site, from the project, or from the operations or objects which the architect then intends to work out.

The parcellar segmentation refers to an a priori filling up of the parcel. It serves to efficiently use the site so as not to leave any «orphans». The segmentation of the parcel does not lead immediately to the occupation of the site. It simply permits one to have full control over and to measure the dimensions and form of the site. Furthermore, certain parts and spaces assigned at the beginning may disappear in the course of conception or of editing.²⁷

This segmentation serves, de facto, to constitute conception units, the testing and then results which come from the fragmentation of elements and which act as a springboard for the subsequent work of conception.

Units of conception

A diverse number of relevances govern the segmentation into units of conception. As part of an overall process of editing this approach permits a freeing of units of conception each serving as a potential model – in the sense previously studied for S. Fiszler's idea of model. The units of conception will originate from an analysis of the programme: primary and nursery schools, the court-yard, shared premises, circulations, etc. These different units do not necessarily have the same size or the same dimensions. On the other hand, they do have the same value in the space of conception, that is, they are a part of the same measurement and scale adjustment operations. Their layout in the general project drawing is worked out with as much care as are the individual units of conception... with due consideration given to their relative autonomy and their specific size.²⁸

The work then is not carried out on a continuous basis within the context of the total project. However, the segmentation into units of conception does allow for more control over the totality of the programme as well as the configuration of these units disconnected from the process of conception and from their reciprocal scale adjustments.

Insistency

The above units of conception should theoretically be subject to work of equivalent quality and intensity. We know, however, that such is not the case.

At a recent conference Peter Rice explained how the density of conception was not the same throughout the entire project. For the Lloyd's project in London which he designed, the precision of conception and the advanced technology requirements centered around on the problem of the intersection of post and beam. In other words, he was expressing the idea that it is necessary to renounce conceiving if you want to

design everything.

This differing degree of insistence throughout the work of conception is obviously present in Stanislas Fiszler's work. The first school to be designed permitted that very thorough work be devoted to the classrooms. The architect decided to test out, in a systematic fashion, certain arrangements and dimensions outside any context whatsoever. Such an operation, which he calls «overinvestment», enables him, for example, to convert into a personalized model parts of the project which can then be suitable for repetition in other projects.

In spite of the spatial continuity that characterizes all projects certain parts are worked out more thoroughly as compared to others that receive less care... The designer determines on what his work will primarily focus and that choice is a segmentation of a different nature from the one affecting the units of conception.²⁹

Adaptation

The choice of such insistencies and the segmentation into units of conception lead – within the context of the project – to enhancing the value of the elements in a differentiated manner.³⁰ Certain parts, depending on their co-existence with other parts or on how they are inserted into the general organisation of the project, can be considered to be stable: they have been worked on or repeated in their entirety. Other parts will play a central role for notable adaptations. In his own vocabulary S. Fiszler calls these parts which are likely to undergo major adaptations «bellows». They correspond to conditions in the project with a great capacity for variation, as compared to other parts which are much more rigid.

As we have seen, the classrooms are defined dimensionally and formally. Adjusting them in a determined context for a particular project can reveal certain incompatibilities. Some of the rooms, such as the workshops provide a certain margin, can serve as «bellows»; their formal and dimensional flexibility provides for a smooth integration of the classrooms' rigidity. Such a role is illustrated by the Régalles gallery which is the link between the primary and nursery schools as constitu-

ted ensembles.

This is why instead of existing as fixed entities for a given level of conception, some of the project elements function only through relations linking them to other elements; furthermore, those relations are continuously subject to re-evaluation. All parts of a project do not carry the same value.³¹

Twenty architectural scales

The scale corresponds to a particular point of view that, in the realm of conception, effects a segmentation of the architectural space. The polysemy of the notion³² introduces a type of segmentation that is different from the preceding ones.

Using as a starting point the list of twenty scales identified by P. Boudon, S. Fiszer develops new project segmentations. For example, the visibility scale segments the space into as many perspectives as are required for looking at a given part of a building – indeed, this is so even though the perception of a building is, to a certain extent, valuable at every point of the so-called real space. The economic scale will distinguish for the overall context of the project the inexpensive parts from those classified as more expensive and requiring financial effort. Or, the geographic scale will privilege a southern orientation for the classrooms rooms with a consequential impact on those rooms described as north annexes. Thus all building depths will be divided by an abstract line into spaces separating north and

support. This is how perspective drawing allows the asking of questions more effectively on the visibility of space – on the way to perceive it. Insofar as the plan is concerned, for example, it allows better resolution of circulation problems.³³ A dialectic effect is most likely at play involving the manner of measuring, the mode of measurement, the point of view adopted, and the basis for the measurement.

All of these segmentations and measurement supports co-exist in the architect's universe of conception and structure it in multifarious ways. They induce the versatility of elements as they are taken into account at

south.

A new segmentation (new segmentations) proceeding directly from the scales will be elaborated by the architect and used for two different purposes. On the one hand, he segments and prioritizes the architectural space generating arrangements which had not yet emerged during the work of conception. Thus, a given scale's point of view permits relating elements from the project which had no such connection, for example, under another segmentation which had come out of the programme.

Then, the point of view of the symbolic scale will place at the same level of conception spatial particularities which are different from each other and distinctively stand out. The latter point of view leads to a segmentation that comes close to the one arising from the economic scale – expensive vs. inexpensive parts – while not overlapping it.

On the other hand, the new segmentation lets the architect evaluate his own project during conception. Used as reminders, the twenty scales facilitate the process of remembering qualitative viewpoints in the organisation of space. Then it will be up to the architect to decide on the priorities or hierarchies chosen in the context of a specific project.

Levels of conception

Using the perspective of scales as a starting point forces the architect to associate elements which under another segmentation are not connected. In addition, the scales define a modelisation of the measurement

a given moment of conception. And more precisely if we are to admit both the multifariousness and overlapping of these elements in space as well as their relative autonomy in the process of conception, we are tempted to define them as level of conception: that which a scale generates as segmented parts in space.

In all of S. Fiszer's schools the visibility scale and the symbolic (formal) scale contribute to conferring on the roofing a particular level of conception. Borrowing their form from different models – the farm for Régalles, the small hut for La Frescoule – the levels

act in each case as the basis for a measurement operation that establishes the school as a landmark (visibility scale) and as a singular building in the neighbourhood (symbolic scale). Through their roof, the schools are scale adjusted to the surrounding area, even if it is through a contrasting effect as in Marne-la-Vallée.

The preceding definition of parts originates above all from a certain number of decisive scales which permit their identification and their definition at separate phases of conception. Each part, thus set aside, will be measured in fact for itself.

The exterior spaces in the La Frescoules school in Vitrolles are divided into four parts³⁴: the nursery schoolyard, the primary school yard, a promenade connecting the school exterior to the rooms used in common, and a part «off-programme», connecting and separating the promenade from the other classrooms.

The nursery school courtyard is subjected to the human scale: it involves giving priority to dimensional elements and tactile aspects through the materials used, which will make learning by contact and body easier for the infants.

The primary school courtyard gives rise to a geometric scale: the regular pattern of the ground permits closing off the adjacent construction.

The promenade proceeds from a scale of model, a reference to the idea of promenades in cities and towns in the south of France. The part «off-programme» – as with the Régalles school gallery – is an additional space created by the architect which allows for the differentiation – and therefore the interconnection – among the three preceding parts. This part is also determined principally by a functional scale (opening onto the promenade and enclosure for the playground) and a visibility scale (allows showcase effect for additional facilities such as the game room or the cafeteria).

Each of the scales (or sets of scales) singles out elements of the project and defines them as autonomous levels of conception. These levels of conception belong to different «wholes» with variable degrees of independence. Their articulation is governed by a kind of «Brownian» movement: the levels of conception are extremely labile and this lability serves as one of the basis for the dynamics of the project.³⁵

The fact that the elements belong to very different orders means that the project's work passes through successive totalities as opposed to a linear progression of approximations. It is in this manner in any case that Stanislas Fiszer's process of conception can be understood.

The articulation of all these totalities is not necessarily based either on a dimensional progression (from small to large) or on factors of contiguity (lining up closer and closer). A considerable amount of freedom is evident in the process of the project. The choice of a reference to editing is a personal one for the architect as is the repetition of parts from one project to another. The latter introduces a duality between continuity and rupture.³⁶ Nevertheless, it is scale and model which remain as the two constant modalities of measurement, whether it applies to the succession of projects or to the levels of conception within the same project.

Notes

1. P. Boudon, *Richelieu, ville nouvelle, essai d'architecturologie*, Paris, Dunod, 1978, p. 25.
2. A. Dupire, B. Hamburger, J.-C. Paul, J.-M. Savignat, A. Thiebaut, *Deux essais sur la construction*, Bruxelles, Mardaga, 1981, p. 91.
3. *Ibid*, p. 133.
4. This approach is responsible for numerous attempts at modeling or at «rationalizing» the activities of architectural design. The anglo-saxon expression GPS (General Problem Solving) represents the scientific paradigm for it. This same GPS is becoming more complex today since it refers also to General Problem Setting: how to formulate the problem before you solve it?
5. All of these projects were made possible thanks to valuable contributions at different stages and in varying capacities by: M.-J. Canonica, A. Cartignies, P. Guyard, G. Janiak, C. Schwinn.
6. This raises a question that will not be discussed here but which we should mention: what is the measure that will determine to what extent the holistic process described here can – or cannot – be attached to a common denominator, bringing together the projects, namely, the architect Stanislas Fiszer? On this subject, cf. P. Boudon et al., *Architecture et Architecturologie, l'idée de l'architecture*, Recherche SRA-CEMPA, Nancy, s.d., p. 97.
7. P. Boudon, *Richelieu, ville nouvelle*, op. cit., p. 24.
8. The CARAN (National Archives Information and Research

- Centre) in Paris was designed in this in this manner. Although it led to substantially different architectural forms, this building results from measurement operations which were identical to those applied to the Marne-la-Vallée school.
9. The Ministry of Education guidelines stipulate that the primary classroom grid module must be 7 meters. This dimension is utilised because it corresponds to an economic use of lumber. The placement and lighting of the classrooms takes into account a north/south orientation (no classrooms face north). A unit roof structure differentiates the school – due to its size – from the neighbouring building fabric (residential housing).
 10. This type of operation is rejected in the case of the so-called «proliferating» buildings.
 11. But does such a thing as an objective measurement exist? A measurement instrument combined with the purpose of the measurement operation determines the limits of such an «objectivity». Expressing the square meters of surface area for a site will not carry the same meaning depending on whether you want to build a dog-house or a high school there... The «already-there» has also its own multiple measurements.
 12. Christopher Alexander et al., *A Pattern Language which Generates Multi-service Centers*, Berkeley, California, Center for Environmental Structure, 1968.
 13. For us, each architect has his own pathways during design, his own strategy. We might advance the hypothesis that there exists a scale system for each of his projects. The organisation of those scales will depend on the repetition of models at one level and on specific arrangements at the other. For example, as we shall see later on, the relations to the context will concern neighbouring scales and scales of model (repetition) but their specific functioning will depend on the project (arrangement).
 14. In an interview with Catherine Millet, «La petite logique de Donald Judd», in *Art Press*, N° 119, Novembre 1987, p. 7.
 15. The dimensions (values) for the nursery, primary school classrooms do not involve the same National Education guidelines since the teaching exercised in each is not similar. This variation has to be reflected upon since the two systems are superimposed at the site.
 16. Cf. Philippe Boudon, Philippe Deshayes, *Etude architecturologique sur la manière de bien bâtir par Pierre Le Muet*, Recherche SRA-AREA, Paris, 1984, p. 123.
 17. There may be other factors than those imposed by the client which may lead the architect to choose a given dimension. Then, we shall speak of overdetermination... unless the client's constraints lead to choices discovered by the architect in the course of his work of conception.
 18. Cf. P. Boudon, P. Deshayes, op. cit., p. 37 and 84.
 19. «A project is more or less the re-saying of an (of several) element(s) called model(s) of all the projects or buildings actually produced and whose examples are available.» (in Etienne Falk, *La citation, éléments pour une esthétique théorique de la représentation*, Ecole d'Architecture de Nancy, 1980, p. 84.
 20. For the details of a project «in the manner of», cf. P. Boudon, P. Deshayes, *A la manière de*, vol. I and II, recherche SRA-AREA, Paris, 1981 and 1982.
 21. Cf. P. Boudon, P. Deshayes, *Etude architecturologique...*, op. cit., p. 117.
 22. This operation which consists of looking for a given unity in windows does not refer back to clearly identifiable elements from the architectural space, whether of a morphological or semantic order. The windows on a street as a whole do not bear a particular name. But if an architect has to design a street he will devote some conception time however to studying this problem. Cf. P. Boudon, *Richelieu, ville nouvelle...*, op. cit., p. 85.
 23. The cinematographic reference could suggest that perception is one of the principal engines of conception – if not the only one. The following quotation of Pascal Bonitzer illustrates the role played by the cinematographic metaphor for Stanislas Fiszer and bears witness to the relative distance vis-à-vis perception: «A "shot" is not a perception (even if it functions as "perception-image"). It involves an arrangement of volumes, masses, forms, movements. The frame is not the vague limits of the visual field. Instead, it is a segmentation of the space which creates the articulation, the disjunction of a field or of an off-screen shot (the off-screen itself as we know is separated from its adjacency to the space of the field or from its configuration in another dimension, in another realm that is absolute.» (In Pascal Bonitzer, *Peinture/Cinéma, Décadrages*, Paris, Ed. de l'Etoile, 1985, p. 21.
 24. «The pre-formed elements...assume an arrangement in a spatial context which in the aftermath of the successive modifications to those elements proven to be unadaptable, transforms itself into an entity... It is the dynamics of this editing that provides the basis for idea of unity viewed as the joining together of the formal configuration of the elements. But the editing does not prejudice either the homogeneity or heterogeneity that will come into place either at the beginning or at the end» (Author's italics) (in Etienne Falk, op. cit., p. 148, 149).
 25. In Régalles, the architect is also responsible for the district's development plan, which he designs with regard to the school's, and vice versa. The connections between the two operate locally thanks to, for example, a scale of visibility (the gable of a house is sectioned as background to the gallery), or a geometric scale (parallelism and frontality of the primary school buildings with

- the peripheral road), or, still, the scale of model (image of the Brie region farm), etc.
26. Cf. P. Boudon, P. Deshayes, *Expérience de l'architecture et de l'expérience*, Recherche SRA-AREA, Paris, 1984, chapt. 2, p. 20.
 27. In Régailles an object had been planned for the intersection of two directions designed to organize the placement of elements in the programme. It disappeared during the contextualisation of the project for lack of space.
 28. Since the list of units of conception through their links are connected with the programme, the architect's dimensional models, his «desires», the conformation of the site, etc. resembles a list of animals in a Chinese encyclopedia referred to by Michel Foucault in the preface to *Les Mots et les Choses* – a list which itself was quoted from a Borges text! – Both lists, devoid of any hierarchy, can be classified as a form of enumeration.
 29. The «density» of conception mentioned by Peter Rice and the «overinvestment» of Stanislas Fiszer are not quite identical. Whereas the «density» would correspond to a desired non-repetition of models, the «overinvestment» is an integral part of the establishment of an internal catalogue, personal for the architect... The latter also refers to the details concerning the management of the construction of the building. All sq. meters in a building do not have the same price. The time/money ratio assumes here its full meaning, cf. *infra*.
 30. In addition to the consequential constitution of an internal catalogue.
 31. Thus, scale adjustments can take place through modification (in the configuration plan) or they can arise from elements which the architect has decided can accommodate the rigidity of neighbouring elements.
 32. Cf. P. Boudon, *Richelieu, ville nouvelle...*, op. cit.
 33. Some points of view, used in perspective, will be judged as «realist», although it should be noted that such perspectives may prove to be, in fact, an illusion, cf. P. Boudon, F. Pousin, *Figures de la conception architecturale, manuel de figuration graphique*, Paris, Dunod, coll. «Les pratiques de l'espace», 1988, specially p. 17 and sq. In order to remove all ambiguity concerning the term «point of view», we shall say, for example, that it does not concern only the single point of «view» of a perspective. It also involves the other view, more «mental», of a position, an attitude toward, a way of taking into consideration. Moreover, although the perspective supposes a point of view that is necessary for the construction of the image, it does not assign a unique observer's position to the spectator of the image. This is why it is necessary to speak of a visibility scale instead of an optical scale.
 34. The word «part» may appear to come from a programmed or formal segmentation alone, but such is not the case.
 35. On one side it seems that a certain relational steadiness exists – as exemplified by Alvar Aalto's well-known statement: «In architecture, all is related.» But this apparent fixity stands in fact in opposition to a consistent vagueness: «The limits (the wholes) of buildings are strongly subject to the fluctuations that accompany their conception» (in P. Boudon et al, «Architecture et Architecturologie. analyses et éléments de théorie», vol. III. Recherche DGRST-AREA, Paris, 1975, p. 20). It is in fact the architect – the designer – who decides in the last resort to ascribe to a fixity (conventional?) or to allow himself to be led into a deeper momentum.
 36. With S. Fiszer, there is continuity through the repetition of the programme and the work on the models (a dream school?) and there is rupture through the linkage with the different contexts into which these models are introduced. As a whole, the architect knows in which space of conception the response is to be found but he ignores the details relative to the precise point where it will be situated; the scale adjustment here is of another type and it, too, relates to the process of conception. In this repetition of schools there is one question that comes to mind: How do we know whether these different scale adjustments to be relegated to a «bottomless adjustment» of the very process of conception – since every scale effect becomes a model, which in turn, calls for a further scale adjustment.