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The Ecole des Beaux-Arts: Modes and Manners

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THE ECOLE DES BEAUX-ARTS: MODES AND MANNERS

The Spirit of the Ecole: Freedom, Competition, Variety

As originally conceived, initially developed, constantly improved, and finally refined, the spirit of the Ecole relied on the appropriate blending and careful dosing of two basic tenets, freedom and competition, united by the notion that, in order to be successful, the preparation towards, and the exercise of, the profession of Architecture was to be a joyful experience.

Freedom: Since the concept of freedom can only be conceived in contrast to the strictest of regulations, the Ecole was to develop the most precise and rigid approach of any system of architectural education ever conceived, not only in terms of its very structure, but in the selection and tenure of its teachers, the type and content of its courses, the number and kind of exercises and their sequence, not to mention the quality and size of its student body.

By contrast, the Ecole's students enjoyed the greatest freedom ever granted to any student of his kind. In terms of eligibility there were no academic prerequisites; in terms of age, nationality or race, there were no restrictions. On his way to the diploma certifying the successful completion of his studies, he could take as much time as he saw fit. He was free to select his design teacher, to pick, within certain limits, the order, sequence and tempo of his courses, for a tuition which was virtually cost free. Once admitted, all he had to do, to remain a student in good standing, was to sign up for a course or a design problem once a year: an imposition on his time never exceeding one hour at the most. It was enough for forty or so young or not so young men and women to get together and select an architect as their teacher, for the latter to be accepted as a full-fledged member of the teaching body, and eventually of that crucially important ruling body, the architectural jury, which made all decisions on a student's progress as a designer.

Competition: Recognizing the fact that success, not only in life in general, but in architectural practice in particular (especially in France), was attained through competition, the development of a com-

petitive spirit became a basic goal of the Ecole. Far from merely recognizing it as a regrettable and inevitable evil of civilization, the Ecole endeavoured assiduously to present it as an exciting and rewarding pursuit in itself. Admission (ie, registration) was regulated by a bi-annual competition which selected the forty or so best candidates. Once admitted, the student was offered, in the design field, a series of enormously varied and frequent exercises, carefully devised, appropriately weighted, fully advertised and aimed not only at demonstrating his natural gifts and testing his acquired skills, but at revealing his potential talent, always in competition with his fellow students, on identical terms and with complete anonymity.

Variety in Assignments: In its actively pursued determination to develop and improve students' morale, by not only relieving boredom but assuaging frustration, the Ecole devised a carefully orchestrated series of checks and balances aimed at maintaining interest and producing excitement. The rigidity and anonymity of Ecole-sponsored courses was relieved by the casualness and intimacy of atelier life. Technical courses were intermingled with studio exercises. Architectural projects of long duration were interrupted by quick sketch problems. Design challenges requiring exacting logical thinking were opposed to others calling for the free display of artistic talent. Examination periods and design deadlines were not only scheduled in accordance with stringent calendar requirements but dovetailed in such a way as not only to allow, but to encourage, mutual assistance between candidates for admission and registered students, lower and upper classmen, those in a hurry to complete their studies and those seeking the Prix de Rome.

Variety in Atelier and Ecole: In the atelier, students received advice and encouragement from elders in return for help in menial tasks. While the *patron* or studio-master in his weekly sporadic two-hour visits gave the tone to the problem at hand, defined its general goals, and provided the expected leadership, it was up to the senior students (the *anciens*) to translate such ideals into more pragmatic

JEAN PAUL CARLHIAN, FAIA, attended the Ecole des Beaux-Arts in Marseille and Paris as an "aspirant," student and graduate in training for the Grand Prix de Rome over a decade, interrupted by a two year stint at Harvard to earn a Master's degree in City Planning. His remarks, it should be noted, are based on personal reminiscences and should be understood as essentially pertaining to the school's curriculum after World War I. But this curriculum did not depart significantly from that of the turn of the century: the era of the school's true greatness. The illustrations are part of a set to accompany his forthcoming book on the influence of the Ecole des Beaux-Arts upon American architects and architecture, written with the assistance of a grant from the National Endowment of the Arts.

terms for the benefit of all. Each atelier, grouping 50 to 100 students aged from 15 to 30 and coming from all kinds of cultural, economic or political backgrounds, was a tightly knit body, jealous of its independence, proud of its achievements, and openly scornful (while, at times, secretly envious) of other ateliers.

The Ecole and its classroom courses offered the opportunity to meet and compete with other members of the student body. Attendance at lectures was optional. Professors were accustomed to giving out grades purely on the basis of the papers submitted or the validity of answers given at oral examination. Rightly or wrongly, they were reconciled to the fact that absenteeism was usually caused by the lure of travel, the fatigue of completing a design project on time, or the necessities of making a living by working as a draftsman, rather than by lack of interest.

The Curriculum

Choosing an Atelier: The first thing anyone intending to study architecture at the Ecole des Beaux Arts had to do was to join an atelier. How his choice was made between the dozen or so ateliers in operation depended upon a series of circumstances. An architect's son would listen to his father's advice following the latter's personal inclination, inquiries or past loyalties. A candidate aiming for the Grand Prix de Rome would choose an atelier headed by a member of the Institut, the organization in charge of running this prestigious competition. One might be lured into joining a certain atelier on account of its acquired reputation, whether justified or not: one being good at planning, another specially versed in decorative exercises, this one featuring a small enrollment and greater personal attention from its teacher, the other counting amongst its members the greatest number of medal winners, some featuring foreigners, others women, etc. Many a time choices were dependent upon the vagaries of personal acquaintances. Those resulting from inquiries made at the School were likely to lead the candidates towards the so-called *ateliers interieurs*, that is those run by the School and located within its confines, rather than towards any *atelier exterieur*, which due to its

independent position offered greater freedom of operation. While residents of outlying regions tended to gravitate towards the *écoles régionales* established in such cities as Lille, Rouen, Lyon, Aix-Marseille, Nice, Toulouse, Bordeaux, foreigners for obvious reasons patronized the Paris ateliers.

Changing atelier in the course of one's studies, was not only universally frowned upon and actively discouraged, but made very difficult, if not practically impossible due to the total severance of personal friendships already established. Its effect was a general ostracization from the student body at large leading towards the psychological traumas caused by the damage inflicted upon the individual's prestige and reputation and the resulting time lost in regaining one's position in the newly chosen atelier—the considerable afferent increase in the degree of hazing notwithstanding.

The atelier was to provide the home base for the student for the whole duration of his life at the Ecole. The atelier was where all the design exercises, the core of the Ecole's educational system, took place. It was there that one prepared for the entrance competition (*concours d'admission*), and it was there that one recruited help from which to complete his Thesis (Diplôme). It was there that all design instruction took place, whether from older students (*anciens*) which were the greater source of such help, or from the *patron*, the nominal head of the atelier, whose reputation, prestige, busy schedule and adherence to traditional teaching methods prevented him from providing any form of individual attention to the hundred or so bodies which constituted his atelier.

Preparing for the Entrance Competition:

The aspiring student's next step was to prepare for the entrance competition, which consisted of several problems or hurdles to be negotiated, one at a time, with a rate of attrition accordingly growing with the survivors being ranked in order of points accrued and the forty best being the only ones admitted to the Ecole at any one session. The first problem consisted of a 12 hour architectural design, simple in nature, requiring the use of classical motifs, expressed in plan, section and elevation and rendered with appropriate shadows. Such an exercise, therefore, required from its author not only an understanding of classical proportions, a familiarity with the orders, a knowledge of simple geometry in order to establish the proper correspondence between different projected views of the building, and to represent accurately the meeting of complex forms such as vaults as well as the correct way of casting shadows created by an imaginary sun, traditionally shining down at a 45° angle from the upper left corner of the drawing. Pencil was the favored medium, enhanced with washes of diluted Chinese ink. Problems consisted of small free-

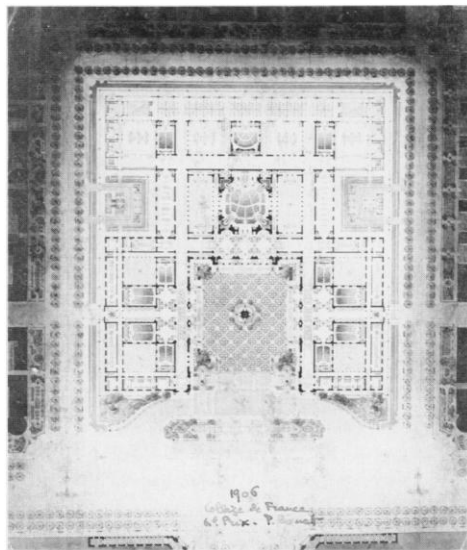
standing pavilions or simple facade motifs usually built out of stone and featuring the use of a classical order, whether Doric, Ionic or Corinthian.

The second step, a double hurdle, called for the execution of a drawing of a decorative element, antique or classical, offered in the form of a plaster cast to be represented as accurately as possible in 8 hours, and the completion of a soft clay reproduction of a low-relief ornament also selected from antique or renaissance examples.

The third step consisted of a set of examinations in the scientific fields, the most difficult one being a two hour exercise in descriptive geometry such as, for instance, an accurate graphic representation of an intersection of vaults with the development of a selected component through appropriate projections.

In view of the fact that, upon enlisting into an atelier, most of the aspiring students had had no other training than purely academic pursuits dispensed by the typical French educational system, they had to learn such technical skills from scratch. While the atelier provided the necessary training in architectural drawing and outside academies took care of freehand drawing, the required specialized scientific knowledge had to be acquired from self-sprouting one-man institutions entirely devoted to such pursuits.

Student of the School: Once admitted to the school, the student could vaunt his new title of *Elève de l'Ecole des Beaux-Arts*, a



Plan for Un College de France by Patrice Bounet, Grand Prix de Rome 1906. The programme is closely related to that of the Esquisse de 24 Heures on the same subject (discussed elsewhere in this issue by Professor Anderson) for the Grand Prix Competition of 1878. It embodies all the qualities praised by Gromort, in his discussion of this competition, who thought the disposition of the four classrooms on either side of the main open court worthy of an illustration in his "Essai sur la Theorie de l'Architecture," pl 70. The parti adopted is a perfect interpretation of the classic double T-disposition so dear to the Ecole's students as to have, in later years, become a true plan cliché into which many a program was ruthlessly squeezed. Here, indeed, les blancs file et les gris se retournent.

condition which many Americans considered as constituting a proof of their capability and of a testimonial for home consumption of their having "attended the Ecole des Beaux-Arts," even if it was for no longer than a month!

On his way to the degree of *Architecte Diplômé par le Gouvernement*, sanctioning the completion of his studies, the student had, in a sequential order, to successfully fulfill the requirements of the second class, then those of the first class, before being declared eligible (following proof of outside practice) to tackle the last step: the preparation and presentation of his thesis or *Diplôme*.

The second class, like the *concours d'admission*, was equally devoted to exercises pertaining more or less to two disciplines: architectural design on the one hand, and a set of scientific and construction courses involving lectures delivered within the confines of the Ecole itself and sanctioned by written and oral examinations, on the other.

The initial design problems, called *analytiques*, consisted of the organization of elements definitely borrowed from the classics into simple structures, a repetition in kind of the *esquisse d'admission* (the very first step of the entrance competition described above) but at a larger scale and in much greater detail. The student was obligated to obtain a passing grade upon at least three of such exercises before being allowed to undertake architectural projects dealing with contemporary problems.

The importance of such a step and of the administration's insistence that it be mastered first cannot be overestimated. While a superficial appraisal of its merits might condemn it as useless or, even worse, an inducement towards copy, its basic value, and one essential to the student's whole future attitude towards historical matters, rested upon the fact that by forcing him to actually make use of past historical elements as basic components of his own composition, it developed in the student not only a familiarity with, but an attitude towards history which was going to stay with him for life. Historic elements, far from being merely illustrations in a book, or a slide projected on a screen, became his own to use, manipulate, distort or rearrange. Should he or she one day decide to discard them deliberately, it would be *en connaissance de cause* and not through sheer ignorance.

Following the successful completion of three of such *analytiques*, of which six were offered each year, the student would have now to meet the requirements of the architectural problem per se, an exercise involving the production of an individual *esquisse*, prepared *in camera (en loge)* at the Ecole, to be developed and enlarged, with outside help, at the atelier, into a *projet rendu*, a process of considerable importance and vital consequence whose implications will be examined at length further on. Six such exercises were offered annually. Suc-

cess in at least five instances was required for promotion to first class.

In addition, another form of design exercise, the *esquisse-esquisse* of which six were also issued each year, was offered to the students, with success in at least two also required.

As mentioned before, concurrent with these efforts in the design field, the student had to satisfy the requirements of a series of scientific endeavors which consisted basically of a trilogy featuring a course in Statics and Strength of Materials, one in Descriptive Geometry and one in Stereotomy (the art or technique of cutting solids). Another course dealt with the study of Perspective. The manner in which this course was taught, through blackboard classroom exercises, with only one hardline constructed perspective drawing required as a final submission, may serve as a significant indication of the degree of importance the Ecole sought to give to perspective drawing. That no such mode of representation was ever part of any project, be it in second or first class, is symptomatic. The 1863 Grand Prix de Rome competition (not in itself part of the Ecole's curriculum it should be noted) was not only a rare exception to the general set of required drawings but possibly the only such example.

The most difficult course, for which the above triad was a prerequisite, and which was most feared by the students, was the course in construction. Yearly given, it consisted of a strenuous series of lectures culminating in lengthy oral examination accompanied by the presentation of an elaborate construction project featuring structural drawings, working-drawing type details, accurate dimensioning and appropriate computations presented on several panels, as contrasted to the usual single one.

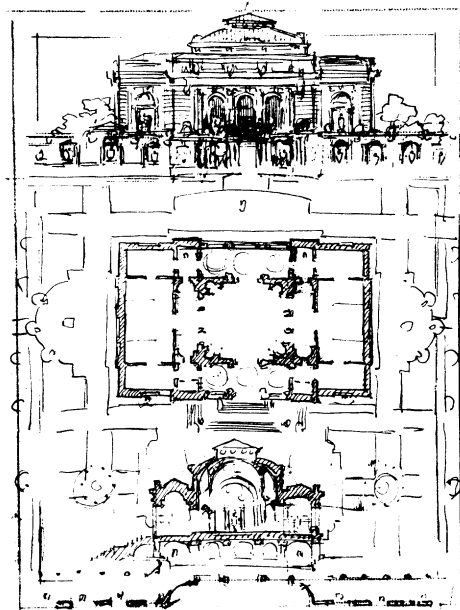
Rounding up the second class requisites, besides the course in History of Architecture described further, were the "*Trois Arts*," exercises paralleling those of the entrance competition, consisting of the freehand drawing of an ornament, that of a figure and the recurrent, and hated by all, clay modeling of a decorative ornament.

Having successfully fulfilled all the above mentioned requirements, the student was promoted to first class, his student life's aspiration, where he could indulge full time in his true passion, architectural design, to which he could now turn his undivided attention (save for a repeat of the above trilogy, a course in physics and professional practice, and the aforementioned history course).

The Ecole saw to it that he was given ample opportunity to demonstrate his ability to exercise judgment when tackling, on his own, design assignments within the Ecole's premises as well as to perfect his skill in developing a basic idea (or *parti*) and ultimate presentation at the atelier. During the course of any one academic year, he was offered eighteen such oppor-

tunities:

- 1) Six projects (calling for preliminary *esquisses* produced *en loge* to be further developed at the atelier) ranging in span from five weeks to three months an involving normal presentations of plan, section and elevation (with one such *projet*, however, placing a special emphasis upon a large-scale section).
- 2) Six *esquisses-esquisses*, executed at the Ecole during a single twelve hour session consisting of either a complete exercise in plan or a skillful perspective representation of a given structure.
- 3) Six *concours* or exercises, each devoted to a specific aspect of architectural education in that one of them, the Concours Rougevin, consisted essentially of a rendering (which, in order to assure the originality of the finished product, was to be executed over a four-day span within the confines of the Ecole); another of them, the Concours Godeboeuf, was dedicated to the study and representation of a given material, the use of which was therefore a mandatory requirement of the program; another of them, the Concours Delaon, addressed itself to problems of landscape architecture; another of them was a three-day venture dealing with planning or urban design issues; another emphasized large scale concepts (whether



Esquisse for a Projet by Julia Morgan, who was admitted to the Ecole in 1898; the first woman to have achieved such distinction, and one year later than Paul Cret. The program being, possibly, Un Musee pour un Chef-lieu d'Arrondissement, for which Paul Cret earned a medaille (Guerinet pl 101), the facade of which presents interesting similarities with his entry in the Pan-American Union Competition which he won in 1907. This esquisse is a good example of the kind of indication expected, at the time, from a Second Classe student at the end of eight hours spent en loge. It features, as usual, a plan, section and elevation. Julia Morgan's indications of entourages are noteworthy. The original of this esquisse, a rarity, is in the Library of the School of Architecture in Berkeley, California.

plan or elevations); and lastly, there was an exercise whose program was aimed at developing futuristic, utopian or visionary ideas.

The institution of these last two concours was due to the generosity of Americans motivated partly by a desire to mollify the criticism leveled against them from winning so many of the prizes endowed by French citizens with French funds, and to express their recognition for the free education the Ecole had provided them.

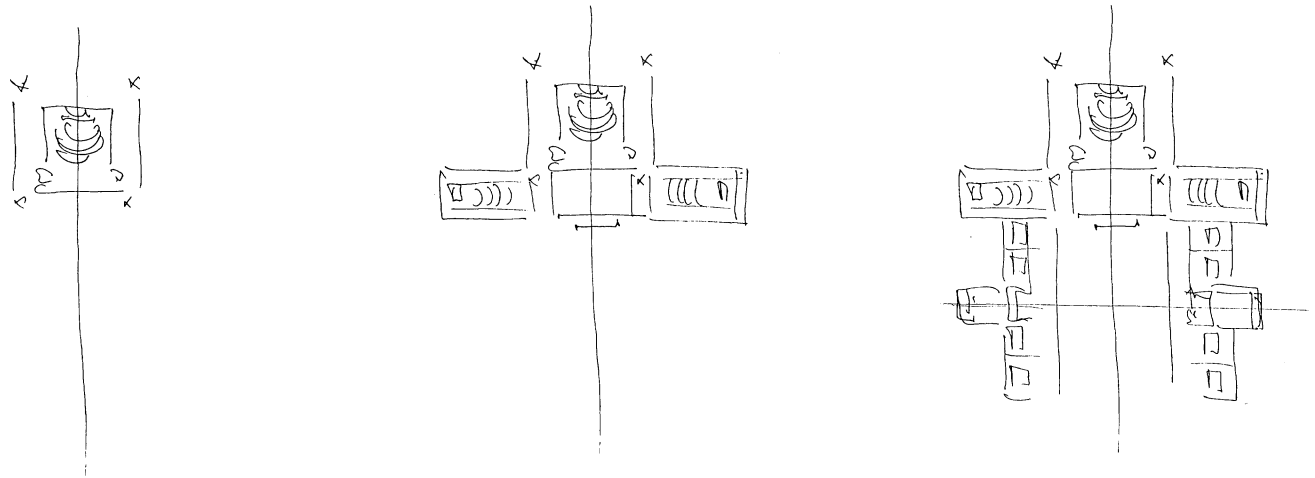
Since success in a minimum of six out of these eighteen exercises (in addition to the Ecole's courses mentioned above) were all that was required to be declared eligible for the final thesis preparation, it might appear that such an achievement was within easy reach. That it was not so is attributable to the fact that the timetable, due to the multiplicity of exercises taking place in a span of nine months, involved much overlapping, which prevented a candidate from partaking in all the exercises offered, and also to the fierceness of the competition offered by the cumulative presence of eager and talented first class students extending their stay at the Ecole in a frantic pursuit of those special qualifying awards for the Grand Prix de Rome competition. Not only were the problems more complex, and more difficult to solve but the presentation requirements more demanding, and the quality of the overall submissions of a much higher order.

In fact, unless his slowness in acquiring the necessary points in the Ecole's scientific courses allowed him to develop his proficiency in design to a higher level than Second Class expectations, rare was the student who, upon promotion to First Class, would start earning passing grades in Design Problems right off the bat.

To some, the Diplôme or Thesis exercise was just a formality to get over with, to others a chore to be painfully performed in order to obtain a coveted piece of parchment, and to most the opportunity offered by the freedom of choice of the program submitted for approval a first step of a carefully planned career, already mapped according to a definite orientation. The most talented, seeking the Grand Prix Award, striving to win this prestigious award, would in fact keep postponing the obligation of fulfilling the Diplôme formalities in the hope that they might avoid its requirements—which, in their rapidly developing pride and conceit, had grown to seem demeaning if not outright offensive.

A final prerequisite to the undertaking of one's thesis was furnishing proof of one's having been involved in the actual practice of architecture by having served as an apprentice in a recognized architectural office for a period of at least one year.

Such a requirement was often circumvented by the issuance of complacent certificates by *patrons* overeager to overlook the lack of such training on the part of their best students, all Grand Prix de Rome candidates, kept too busy with the exacting



This set of six sketches by the author represents an attempt at recreating the almost instinctive notation method used by the Ecole's en loge students upon reading a hierarchically organized program in the process of ordering its main elements towards the goal of producing within an eight-hour period, an esquisse for a projet to be further developed at the atelier within a span of six weeks or so. It shows how a set of elements, quite different from those enumerated in the College de France, can in fact be assembled in a double T-configuration.

and time-consuming demands of the preparation of this important competition.

The Thesis consisted of a lengthy oral examination by a prominent jury accompanying the complete presentation of a selected building including all necessary plans, sections and elevations, duly dimensioned and indicated in the manner of working drawings featuring construction details, structural diagrams and computations, as well as outline specifications and cost estimate.

The degree subsequently issued of Architecte DPLG, it should be noted, gave the graduate the right to call himself an architect and to build anything in France without any further examination at any point during his lifetime.

The Design Process

Conception—The Esquisse: 12 hours exercise *en loge* at the Ecole. Each of the yearly architectural problems offered the students consisted of an initial sketch (the famous *esquisse*) and a carefully drawn project (or *projet rendu*). The *esquisse* was a sketch produced within a maximum of 12 hours, by each student, isolated within the confines of the Ecole in a private alcove or *loge*. It embodied his interpretation of a program sprung upon him on a given morning, and constituted a record of his very own concept of the plan, section and elevation of the building (or group of buildings) required to fulfill its requirements. Keeping a copy of his *esquisse*, the student returned to his *atelier* when he was given six weeks or so to develop further his original idea, with any help or assistance of his choosing, and to present it on a given date, in an enlarged version, according to a set of predetermined rigid specifications. A jury assembled three days later assessed all the projects submitted.

The importance of this procedure cannot be over-stressed. The production of the *esquisse* was the student's own creative act; and the resulting document was to constitute a guarantee of the originality

and genuineness of his idea against any outside influence, whether it be criticism from a strong-willed *patron* or sarcasm from fellow students. Furthermore, the Ecole itself, holding the ever-present menace and threat of an *Hors de Concours* ruling, became the very guarantor of the genuineness of the document and of the concept it represented. In requiring the preparation of an *esquisse* for all architectural projects, the Ecole, while exercising the student's selective ability, was, at the same time, taking all necessary precautions to arm him against any outside intervention by others: *patron*, *anciens* or fellow students.

It is in this vital, and crucial, instance that the Ecole shone as unique. Remove the necessity for the student to choose alone, attenuate the agony of such decision-making, reduce the number of such opportunities given him, or, at worst, eliminate such an exercise entirely, and you, by eliminating his only defense against his teachers, not only effectively eradicate the main precept of artistic freedom upon which the Ecole was built, but you also effectively deprive the student of his only chance to practice, as an act of free will, the exercise of judgment.

Here were the steps involved:

A) Reading the Program: An adequately trained student was expected to be able to grasp the main elements of any program at first glance. Subsequent reading enabled him to single out their relative importance. Other readings would be devoted to the search for clues leading to their proper hierarchic organization as well as to the confirmation of the amount of trivia to be overlooked, ignored and eventually discarded.

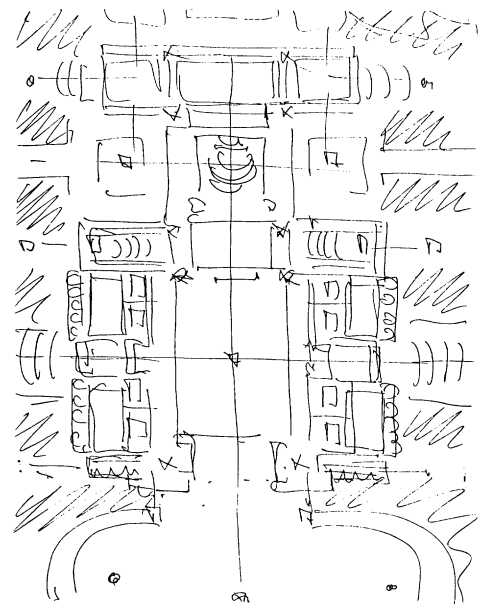
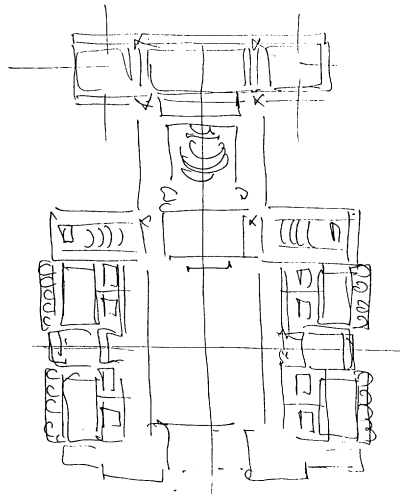
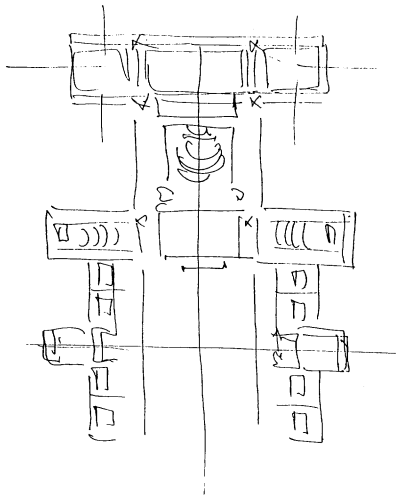
The overall important title of the program itself, gave an indisputable clue as to the appropriate way of approaching its planning. A program involving the army implied that great emphasis should be given to parade grounds, the hierarchic disposition of elements, and the judicious location of such symbolic features as the flagpole. A program of a religious nature

called for inward-looking cloister-like enclosures, imbued with mystery, and an appropriately significant placing of the chapel or church regardless of size. Projects involving security problems such as museums, libraries or prisons obviously commanded a single-entry solution. Railroad stations, theatres, and other programs requiring the handling of large crowds called for precisely the opposite.

B) Arriving at a Solution in Plan: The *Parti* (*Parti* /'l n-s (F fr MF, match, party, decision); the basic general scheme of an architectural design. [Webster's Third New International Dictionary, 1971]). The main element of the program, when properly identified, was put down first. In view of the ingrained Western habit of reading from top to bottom, of the traditional importance given the title appearing on any printed page, and of the recognized prominence given to its position at top center, it should be a surprise to no one to find the expression of the primary element of the program, and as such always stated first, to be laid down in precisely such a location.

Should secondary elements turn out to be even in number, their symmetrical organization, on either side of an imaginary axis, was not only intellectually logical but explainable by the law of minimal effort. The elements in the question also took less room on the sheet. Should they be uneven in number, trouble was in the offing.

As to the location of the leftover odd one, placing it in the middle, below the main element would not only give it an undeserved prominence by comparison with the others of identical importance, but would also entail unwieldy difficulties of access to the main element of the plan, as well as an unsightly facade. Three methods of approach remained open: the suppression of one of the elements by relegating it to the next hierarchic level (a risky proposition); the addition of an element by elevating one from the next lower echelon (another chancy move); or, in certain cases, and only in such cases, its assignment to a unique and special location, still on axis, but above the main element, not unlike the



position of the author's name in the title page of a book. A more radical solution, however, remained still available: the adoption of a non-symmetrical *parti*. The student was, at this very point, facing a choice. Strictly alone with his thoughts, he had to decide one way or the other. He was, at this point, exercising judgment; that very activity which was to punctuate his professional activity during his whole lifetime as an architect.

The correct handling of an asymmetrical *parti* called for certain rules to be followed. The format had now become horizontal, whereby the main element, while still occupying a top-of-the-sheet position, could remain prominent. Turning the sheet on its side allowed a large area to be devoted to the disposition of all other and equal in importance secondary elements. These were commonly deployed to the right, as reading goes traditionally from left to right. There arose, now, the unique opportunity to dispose the one odd element to the left of the approach to the main element, yet on the very same hierarchic level as the remaining even number of equally important elements. Such a solution enabled the main element to retain its own symmetry: (an admitted attribute of any such element) and gave the odd element the prominence it deserves. It also often proves to be a good answer to those tricky programs calling for two almost equally important elements.

If the symmetrical option had been chosen, all that remained to be done was the arrangement of the third ranking elements. These could be disposed, laterally, beyond the secondary ones, or upon a third tier. The basic tenet of always leaving the view of the main element unobstructed was thus faithfully observed.

C) In Section: The section came next. Always taken perpendicularly to the anticipated main facade, it offered the opportunity to find a possible location at an upper level for any off-center, and therefore otherwise bothersome secondary element. Such an opportunity postponed effectively until later any definite commitment in the intricate (and at this point, too-detailed) handling of the tertiary ele-

ments.

D) In Elevation: The handling of the elevation had, to a certain extent, been somewhat committed to in the section, and therefore posed few difficulties for an able student. In the front row, one found the tertiary elements. Then came the secondary elements, read clearly above them. The main element, conventionally and rationally the highest of all, remained free to offer all its glory to the viewer, at the end of an unobstructed vista carefully kept open for such a purpose from the very beginning of the exercise.

E) Horizontal or Vertical Presentation. The Final Presentation Sheet being always rectangular in shape, the student was, in each instance, given the freedom to choose in which direction it was to be presented. Everyone knew that a horizontal presentation, taking more room on the exhibition wall, was the more favorable, since a greater number of jury members could crowd in front of it. However, the required scale of the final drawings had to be carefully taken into consideration when making the initial *esquisse*, since a decision to orient the plan with its greatest dimension lengthwise might (depending on the given dimensions of the site) lead to the impossibility of actually fitting on the sheet an elevation ultimately required to be drawn at twice the scale of the plan. It may be seen, therefore, how, in certain cases, not only the format of the sheet but presentation goals could influence the composition of the plan from the very beginning. With such considerations in mind, the student remained free, circumstances permitting, to play the well-known trick of placing his building diagonally across the site (always described in rectangular or square terms) in order to gain those precious extra centimeters of elevation which, he believed, would help him beat his rivals.

Development: The Project at the Atelier: Students were repeatedly advised of the importance of the title of the program. They were instructed to ponder upon it at length, read it over and over again in order to grasp the meaning of each and every one of its words. "Un Hotel de Voyageurs"

might be one thing (a place for travellers to spend a few nights). How different from "Un Hotel de Villegiature!" (a holiday hotel - an obvious allusion to the importance to be given to views: single-loaded corridor in the offing) or just simply "Un Grand Hotel" (prestige, splendid receptions, snobbish pride in being included among its guests, etc: The Ritz, in other words). All three programs might end up requiring the identical number of rooms, similar facilities and hence the same basic approach to the disposition and planning of the main elements: entrance lobby, salons, dining rooms, kitchen, etc. Yet, the implied "character" alluded to in one crucial word of the title would have to be imparted to the project by the student if he intended to achieve a successful result. No *medaille* to him who developed a plan for a resort hotel which worked like a charm but had half the rooms facing away from the sea! And let us not forget: a plain *hotel* differed from *une auberge* (a simple inn), *une hostellerie* (a hostelry), *un caravanserail* (a caravansary, that is an inn in Eastern countries where caravans rest at night), *un relais touristique* (an inn in a choice, out-of-the-way location to be patronized by automobilists with time to spare).

In the title *Un établissement de Bain Publics* the adjective "Publics" conveys to it a definite character: more rugged and simpler than a mere *Etablissement de Bains* which might be private and, therefore, more elaborate. While both would imply an urban location, *Un Etablissement Thermal* is quite another proposition. A rural, open site in a mountainous setting comes to light, accompanied by all the appropriate trimmings: porticos, colonnades, patios, gardens, fountains, reflecting pools and the like; in other words a spa where patrons "took the waters."

On the other hand, the title *Un Institut de Thalassotherapie*, obviously the wording of a somewhat eccentric program-writer, should fool nobody; a seaside location and southern orientation with ample terraces for sunbathing is all it implies.

Little was ever said about the environment. While, at times, allusions were made to the general climatic or circumstantial

conditions (“a Mediterranean site,” “a view of the sea,” “commanding a panorama of mountains”), seldom, if ever, were the physical conditions of the immediate surroundings mentioned. It is interesting to note, in this respect, that, while every French student knew that his destiny, in all probability, would be to build within the existing environment of cities saddled with sentimental as well as stylistic traditions, he was never subjected to such constraints while at the Ecole.

Similar considerations applied to the orientation, topography, and configuration of the site itself. Allusions to orientation were often completely omitted. It was up to the student being given a problem requiring north light conditions (such as an art school) to display his acumen by devising his own compass rose. As for topography, the sites given were, in most cases, generally flat. If in some instances, a slope was mentioned it was inevitably of an even and gentle nature. Contours were never given. It is easy to see how the absence of such topographic features could play its own part in the development of an axial *parti* which, lacking the challenge of having to cope with bothersome topographic features, could spread its logical simplicity across the countryside.

The site itself was described either as an “area not exceeding ‘x’ number of meters in one direction” (which inevitably implied, in the mind of a student, always intent upon giving his project the greatest possible scope, a square of “x” dimensions) or a rectangle of x times y meters. Save for a few well-known Grand Prix competitions, (one on a triangular site *Un College*, 1780) and another on an oddly shaped real city lot (*Un Hotel à Paris pour un Riche Banquier*, 1866), sites were always assumed to be, or turned out to be, square or rectangular in shape. This in a country, France, whose cities were rarely laid out on a rectangular grid.

While the French student was considering an assignment such as the completion of the Louvre and the solution to its bent axis as the greatest honor, challenge or responsibility which could be bestowed upon him (as the climax of a career as the No 1 architect of his homeland), his American counterpart, unencumbered with such historic precedents and awkward, if not embarrassing, conditions, would be destined to unwrap, over the new checker-boarded cities of the great American plains, the results of precepts hurriedly acquired from a foreign school on foreign soil.

The greatest amount of the student’s effort was devoted to the plan. Deemed the most important element of the plan-section-elevation trilogy, it was always tackled first. We have examined how, in his *esquisse*, the student had already committed himself to the basic disposition of the elements of his composition. The task at hand, now, was how best to tie all these elements together in a rational, clear, har-

moniously satisfying and practically convincing manner. Two basic considerations, at this point, came into play: the handling of natural light and provisions for the shedding of rain water.

Artificial light was never recognized as an acceptable solution justifying the assignment of windowless spaces to human use. It was deemed acceptable only for storage areas, library stacks, or the like; never for people.

In spite of such precedents as the “Printemps” or “Bon Marché” department stores, zenithal light was not only frowned upon (with obvious exceptions deemed acceptable because of their special nature such as railroad stations, Les Halles, the Grand Palais or the Galerie des Machines) but generally ostracized. If and when permissible, top light had to be incorporated into a system of pitched roofs. No large areas of basically flat glazed areas were ever tolerated. Saw-toothed sheds or clerestories surmounting large work spaces, for instance, were, however, acceptable, and accepted, devices for introducing natural light into large areas otherwise surrounded by subsidiary, lower-roofed elements.

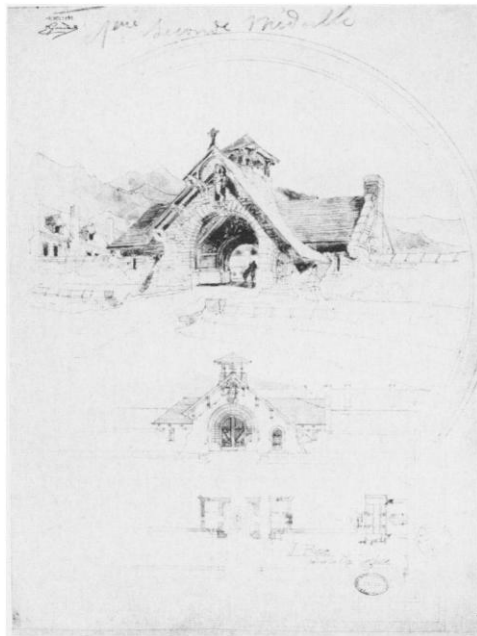
The resulting necessity of never allowing the disposition of more than three elements side by side thus becomes readily apparent.

Most of the pragmatic requirements dealing with structure open to the public, and the necessity of allowing access to certain elements of the composition without going through others, caused the development of the by-passing corridor (or *circulation*) as a basic element of plan organization. Such passageways, being used by the public, had to be adequately bathed with natural light. This explains all the fuss about light wells, atria, courtyards, extensively dwelt upon by Guadet, Gromort and

others. The corridor, as serving space, along with the elements it served, formed an inextricably knitted whole, subject to endless variations and articulations, all governed by the mandatory requirement for the provision of natural light. The problem became much more difficult to handle when it was not possible to avoid grouping three elements side by side, while still meeting the above mentioned criteria. It became further compounded by the traditional necessity, insisted upon by the Ecole, of shedding rainwater by safe and rational experience-tested methods.

France, it should be remembered, has a rainy climate. It is not surprising therefore, to find all design-teaching at the Ecole dominated by such a consideration. While terraces, (or for that matter flat roofs), were deemed acceptable in Italy, Greece or Egypt, they were branded as impractical in Northern Countries; and it was emphasized that they usually leaked. The pitched roof, therefore, became the only acceptable method of covering whole buildings or their elements. Roof pitches have always had their own requirements, dictated by materials available at the time, such as slate or tile; and the very size of the area to be roofed has a direct bearing on the roof height. Large areas might well lead to unsightly high roofs out of proportion with the facade, or, at very least, to a waste of interior space difficult to justify. One can, therefore, readily understand the tendency towards the breaking up of large and complex elements of the plan into smaller units, each one becoming easier to roof individually.

The only drafting exercise repeatedly prescribed by the *patron*, although never actually required by the Ecole as a part of the student’s submission, was a roof plan study (*Le plan des toitures*). A significant example of such a preoccupation might be illustrated by Labrousse’s most unusual, if not unheard of, inclusion of a roof plan in his 1824 Tribunal de Cassation Grand Prix submission. Valleys devoid of any outlet beyond the ashlar line were absolutely condemned as risky, if not outwardly unsafe. Roof conductors, if and when required, had to be positioned externally to avoid leaks caused by clogging, France being a country noted for its poor heating systems and lack of maintenance of its buildings. The shedding of water from high double pitched roofs onto lower shed ones was however deemed an acceptable solution. Thus, the elaboration of intricate roof plans became part of the student’s study routine. It should be noted that in order to safeguard the precious precept of unity, all roofs on any one building were assigned identical pitches: an eminently rational solution, after all, as directly related to the selection of the roofing material. The resulting tendency was to dispose building elements perpendicularly to each other, as their roof intersections turned out invariably at 45°. Such was another instance favoring, if not resulting from, the



“A Gateway to a Convent”—A twelve hour *esquisse-esquisse* indicating that the use of classical orders was no dictate—John Russell Pope, architect of the National Gallery in Washington.

use of the 45° triangle as a drawing instrument. It is easy to see how such an approach to the problem of shedding water, and the afferent sketching exercise, further influenced hierarchic organization of various elements in the composition of a plan.

The plan remained to the very end the horizontal expression of a load-bearing wall structure. The importance of such a consideration in the face of the structural feats of Bélanger, Hittorff, Horeau, Labrousse or Baltard, or later-on of Auguste Perret, cannot be overstressed. Great attention was given to wall thicknesses which were manipulated at will. Through exaggeration of their horizontal dimensions, the addition of pilasters and detached columns, they were meant to convey a feeling of the relative heights of the volumes arising from them.

When desired, they were thinned out by carved niches. The aim of such efforts, all resulting in the *poché*, ("the black portion of an architectural plan representing solids such as walls and columns) was not restricted to the expression of volumes; it offered also an opportunity for the expression of character: industrial plants, studios, military barracks rated only straight unadorned walls, while theatres, spas and other programs dedicated to recreation called for a profusion of niches, pilasters, columns and the like.

The *poché*, finding its inspiration in 18th century precedents, such as the engravings in Mariette's *Architecture Française* was also used as a means of conveying a pulsating feeling to the expression of the plan; the squeezing of corridors and the opening up of vestibules were underlined by the additional pinching of crucial junction points. Intersections of galleries received special attention and elaborate treatment. The *poché* began to "sing its own song": a consideration far removed, and sometimes totally divorced, from the realities of 20th century construction!

To the rich array of vestibules, lobbies, corridors, galleries, halls, passages was bestowed the mission of tying all the elements together in a clear and readily grasped ensemble which could, ideally, be taken in its entirety and therefore "read" at a glance.

Upon such a skeleton, a body, delineated by the *poché*, had to be constructed: such was the role assigned to the *mosaïque*. Tracing its origins to 18th century plans with their simple indication of cornice lines, followed later on by more elaborate examples displaying complete reflected ceiling plans, (such as those of d'Espouy), and finding inspiration in the elaborate indication of marble floor patterns (as in J H Mansard's plan for the Eglise des Invalides), this process consisted of covering certain areas of the plan with such suggestive patterns deemed susceptible of attracting attention to its main features. At other times, on the contrary, trivial elements were drowned in a general grey tone, intended to make them disappear

and, therefore, emphasize the clarity of the circulation network, treated, in such cases, in light values. Recourse to such devices soon lost touch with reality. The plan ended literally painted, in the same manner as a facade would receive its array of trees, bushes, and other devices bent upon hiding its defects or bringing out salient features. The whole process was summed up in such expressions as *les blancs filent et les gris se retournent* (the whites speed through [the plan] while the grays turn the corners).

With a well-organized plan with its main features properly stacked in hierarchic order, its various elements correctly articulated in accordance with a working roof plan, a well-modulated *poche* figuratively expressive of the relative compressive forces generated by various spans or heights, the section was a cinch. When it did not happen to turn out that way, and it often did not, modifications had to be brought upon the plan. So much effort had been devoted to the plan, however, and so little time was left, that it was with great reluctance that such a course was adopted. As a result, most often it was the section which was made to bear the consequences.

As mentioned already, in certain cases, as when an important element of the plan could not find an appropriate place in the overall composition without creating serious difficulty, it was relegated to a second floor location. Hence, the section was the only opportunity offered the student to illustrate this decision. As previously mentioned, the section was essentially an exercise in asymmetrical organization. With the section usually located at the top of the page, the western tradition of reading from left to right resulted in sections which usually featured their highest elevation towards the right. Responding to such a progressively rising silhouette, slight changes in floor elevations were often introduced

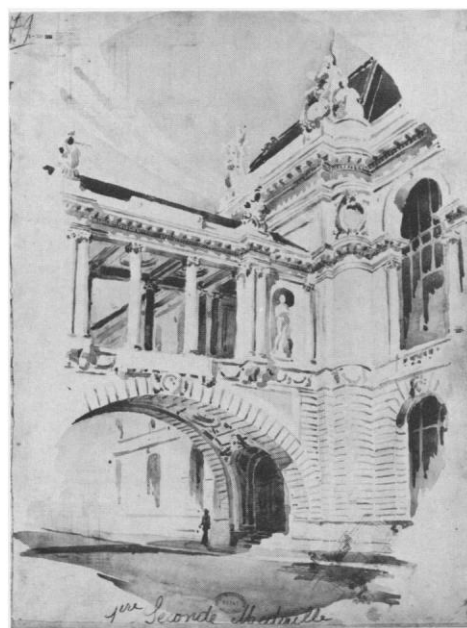
as contrapuntal features. Of course, there were instances when programs emphasized the section and recognized its importance by requiring a presentation at a larger than usual scale. Examples of this were buildings depending on the proper handling of site lines for their success: theatres, stadiums, and the like.

The study of the elevation came last. Crucial decisions already made at the inception of the plan, inevitably echoed and sometimes reinforced in section, had their direct effect on the general massing and overall organization of the elevation.

The exceptional role given to the elevation was the opportunity offered the author to endow his project with a specific character. A program for an ecclesiastical building might call for a Romanesque or Gothic coating. Projects dealing essentially with exacting circulation demands, such as railroad stations, might receive relatively straightforward treatment, while those of a contemplative or recreational nature, such as spas, would be handled with a profusion of decorative elements. Justice called for the Tuscan or Doric order; a small pavilion in a park usually favored the Ionic; and a large art museum the Corinthian, accompanied by a generous use of niches punctuating otherwise windowless and, therefore, blank facades. Judicious organization of the elements in the plan having already, with appropriate anticipation, disposed of the problem of visibility, by the hierarchic disposition of elements, the only problem left was to determine the most appropriate coating of the resulting pyramidal organization. In any event, there was very little time left in the overall schedule for a more elaborate elevation study.

The elevation completed, and its basic shadows applied, the last step was to present the design to the jury in the best possible light. Clouds were drawn in to fill the spaces above the elevation; trees and shrubs were handy for hiding defects; statues and vases and other decorative elements were sprinkled around, and figures were introduced for scale.

The rendering, this very minor element of the student's total effort, has been given a totally unwarranted importance by the uninitiated. In the first place, the amount of time devoted to this exercise (and exercise is what the students thought it was) never exceeded a few hours—four or five at most—the last moments before the submission was due. Secondly, the author, having most probably stayed up all of the preceding night, was in no shape to handle the brush with the delicate touch or the necessary boldness that was required. Such tasks were often entrusted to a fresh crew of specialists in the atelier, who went from project to project practicing their skills at the expense of the author (if they were inexperienced) or showing off their talents (if they were experts). Renderings in fact were seldom the work of the authors of the project they adorned.



"A Bridge Between Two Buildings"—A twelve hour esquisse-esquisse demonstrating the full use of classical motifs—Klaber.

Assessment: The Jury

Architectural design projects were judged "pass", "fail" or "HC" (*Hors de Concours*), the latter (equivalent to a fail) being reserved either for projects which, upon being further developed at the atelier and finally presented to the Jury, departed substantially from the original "esquisse", or for those projects which violated some basic rules, such as: exceeding the size of the site, lacking coordination between plan section and elevation, submitting drawings at the wrong scale, or tampering with the surface of the paper in any way. While the ratio of pass to fail was about equal, two to five percent of the projects were singled out for special honors, such as prizes or medals. A basic criterion of selection for such honors was the degree of conformity between the *esquisse* and the final project. Not only was conformity between these two stages of the design process mandatory, but the *esquisse* itself had to display a sufficiently marked degree of intention (a quality which well-seasoned but untalented students soon learned to skirt in order to avoid having to abandon the project, due to a faulty *esquisse* with the resulting waste of time) to reassure the jury that any generating idea deserving special recognition was the student's own, rather than the product of a good atelier. Incidentally, an insufficiently developed or too ambiguously expressed *esquisse* would entail its author an HC grade, making his six week atelier work a total waste.

Special honors conferred upon the students presented a dual advantage. Firstly, they counted as double credits (or sometimes even more) and hence could halve the time the student had to spend in the Ecole accumulating the required number

of credits to graduate; and secondly they were the only basis upon which was drawn the famous list of the 40 best French students of the Ecole who were dispensed from the first of the hurdles that spotted the arduous course of the "Grand Prix de Rome," the annual competition which outdid all other competitions, and assured a successful lifetime's career for the winner. To have one's name not only placed on this list, but seeing to it that it stayed there in spite of the vagaries of awards to others, became the prime goal of all ambitious students, in the pursuit of which many malpractices were, alas, committed.

The Esquisse-Esquisse: A Special Exercise

The *esquisse-esquisse*, not to be confounded with the *esquisse*, required as the first step of a *projet rendu*, was a special kind of exercise. Designed to develop individual talent, stimulate imagination and reward rendering skill, it generally consisted of a perspective illustration of an individual solution, arrived at in isolation during a twelve hour stretch, of a relatively simple problem. While a small-scale plan and section were usually required, often the *esquisse-esquisse* would consist essentially of a plan with the section and elevation being downgraded in importance. Considerable latitude was given the student as to the choice of media, the manner of the representation, or the arrangement within the sheet of the paper of the design solution called for.

What should be remembered is that the product was a true original produced by

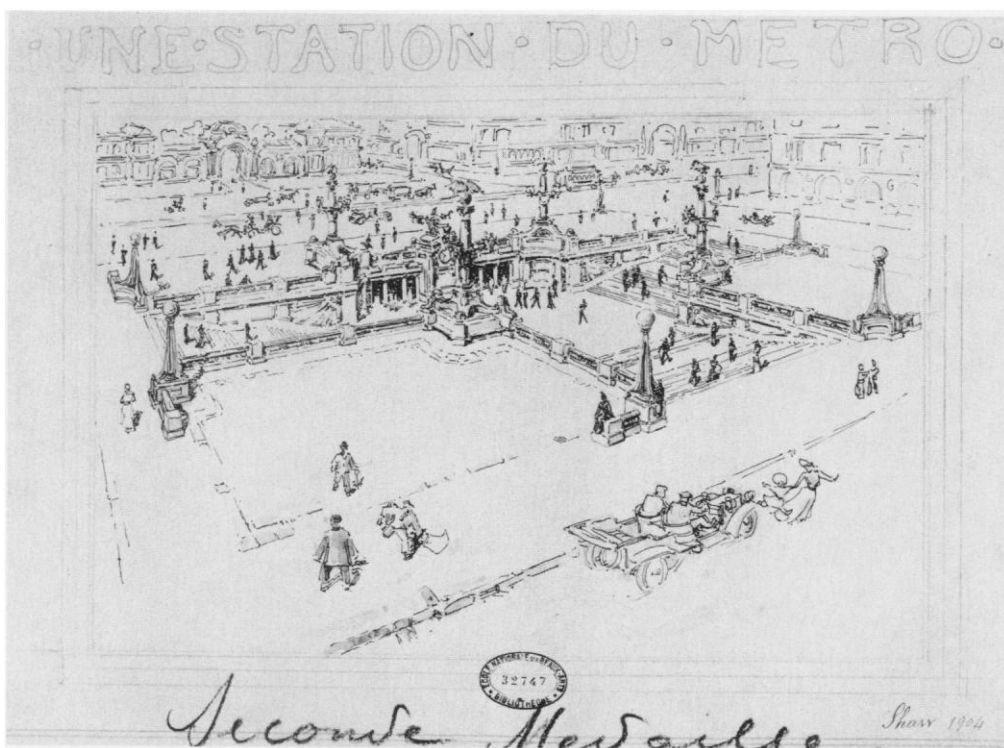
the student himself without the benefit of outside help. That the pickings were meager (few rewards being given) was of little importance when one considers the amount of time and effort involved. Some of the rare first mentions in second class and medals in first class awarded by the jury in this kind of exercise, remaining the property of the Ecole are kept in its archives; as such they provide a testimony of the winner's personal skill, a consideration of no little significance, especially in the case of Americans, often accused of owing their successes to outside French help, whether subsidized or not.

Exhibition

The jury proceedings were followed by an exhibition of all projects submitted: sometimes up to three hundred or so solutions to a simple problem were thus hung together side by side under one roof in one large room, each submission accompanied by the *en loge* *esquisse* nailed to it. With the author's name now revealed and the jury's decision affixed to each project, it was possible to gather a general feeling of what the jury had agreed to be the salient features of the exercise, to see how superior certain schemes and other poor ones in fact were, to compare *esquisses* to *rendus*, to discover the causes of HC decisions, etc. The few first-mentions or medals were removed from the crowd and hung separately with plenty of room from which a good vantage could be gained, often confirming the fact that a strong idea clearly stated, simply presented and well indicated, a solution which was easy to read, in other words, provided the firm basis upon which a jury's support could be built.

The projects remained on display for two whole days. Attendance consisted of students on lonely quests for tips or formulas leading to success, to groups or teams representing ateliers' allegiances and led by prominent *anciens*. Occasionally, a *patron* would be seen conducting a group of his own students and commenting upon the jury's overall approach. In every instance, comments, instead of being directed at a given piece of work or at a given student's project, remained general, theoretical and philosophical in nature. Program, *parti*, character, expression of convictions, clarity of indication, simplicity of statement were the nature of the points examined and discussed.

The very fact that all submissions, due to the drastic nature of the requirements, the strictly enforced presentation limitations, the paring down of the issue to a one-page program and only three drawings (plan, section and elevation) presented on a prescribed single sheet of paper, were tied by identical constraints provided a vivid example of the kind of assaults rebelling talent and individual ingenuity could wage



against the establishment. The fierceness of the battle was made further evident by the considerable difference in degree of skills which only students of such widely spaced ages, of such diversified experience and of such longevity of presence at the Ecole could display.

There is no doubt that the "Expo", as the students labeled the whole project exhibition experience, was one of the best and, incidentally, the least costly, educational device the administration could have devised: "Let the projects speak for themselves." No more useful exercise has ever been conceived and so overlooked in the recent history of architectural education.

Other Courses

The Cours De Théorie: Made famous by Julien Guadet, who as a practicing architect succeeded Guillaume and held the chair of Professeur de Théorie from 1894 to 1908, it consisted of a series of weekly lectures open to both second and first class. Illustrated by slides, peppered with references to buildings of former eras and from foreign lands, they provided, besides the rare philosophical utterances of individual *patrons* or masters, the only source of theoretical information opened to the students, other than two books, both the works of professors of Theory, one most famous, *Eléments et Théorie de l'Architecture* (1901-04) by J Guadet and the lesser known *Essai sur la Théorie de l'Architecture* (1946) by Georges Gromort.

The prestigious position of "Professeur de Théorie" conferred to the holder of its chair a role of primary if not crucial importance in the development of architectural design education at the Ecole, in that he was responsible for the writing of every design program from that of the entrance competition to that of the most prestigious *concours* (save those entrusted to the Commission des Etudes or, in the case of the Grand Prix, to the Institut), attended all juries as an impartial observer (conflict of interest considerations excluding him from running an atelier), and participated in all judgments. Upon him fell the responsibility of seeing to it that the jurors read and understood the program he had written. He was the one, also, who could guide their interpretation and, thus, influence their judgment. That the Course was very well attended was due not only to the fact that the students wished to ascertain their professor's frame of mind and possibly gather an inkling of what the subject of the next program might be, or that it required no work and was not sanctioned by an examination, but to its contents and subject matter in both of which they were vitally interested.

This is where one learned the difference between step, stoop, stair, staircase, stairway, stairwell, (*marche, perron, gradin, escalier, emmanchement* or the like) or between *un peristyle, un hall, un vestibule, une*

entrée, un degagement, une galerie, une circulation. It was indeed extremely important to understand the professor's way of thinking, as one was called upon repeatedly to cope with the necessity of reading between the lines of the austere text of his programs.

The Ecole's Approach to the Teaching of History of Architecture: While indeed History of Architecture was the subject of a well attended lecture course at the Ecole, the influence upon the students and their work reached far beyond the confines of the Ecole's auditorium to invade the atelier's precinct. History was in fact part and parcel of their daily life. The course in Theory was actually based on historic precedents and made free-use of past examples to not only illustrate but prove its points. Historic references were a frequent feature of the introductory paragraphs of programs. Each atelier was equipped with a sizeable library: books were constantly brought out to be used in discussion and serve as examples to learn from. Students' travels were directed towards the lands of the past featuring the greatest examples of long dead masters' accomplishments. *Patrons* and *anciens*, the design course true teaching team, backed their criticisms with historic examples. Students, sensitive to responding to the signals given by the administration, whether it be from the very first entrance-competition exercises, to the analytical problems being selected as the kick-off exercises of the design course, took possession of history. To be cast as an ignorant in this field was considered an opprobrium. All of which explains the high level of attendance to the History lectures,

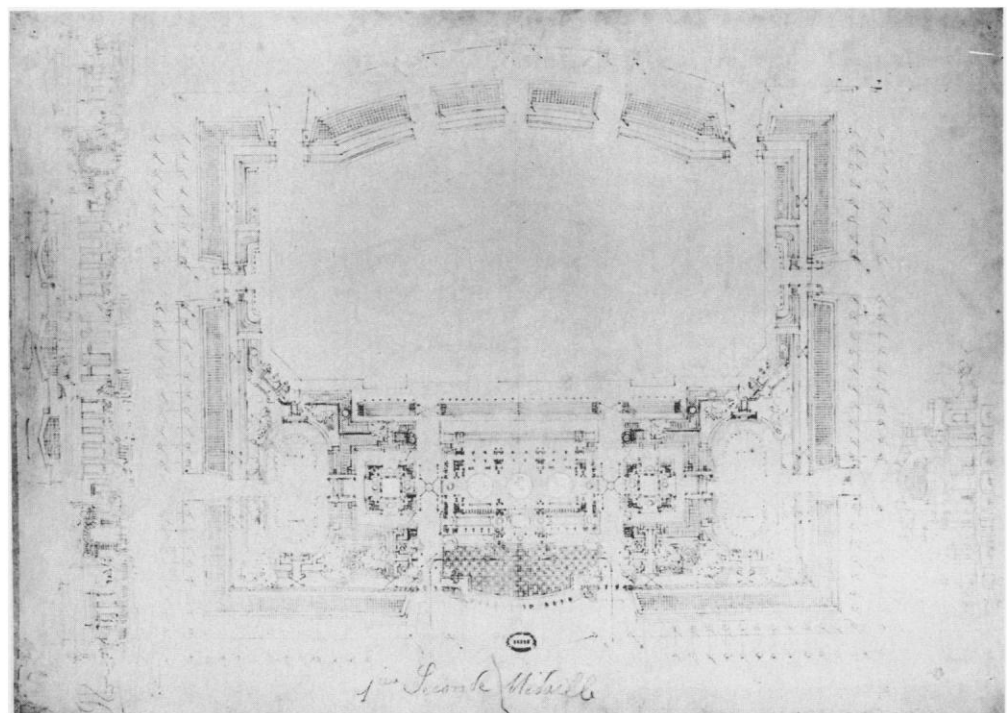
often in spite of the professor's shortcomings as a lecturer. It was not only that they provided pretty pictures to look at (this at a time when lantern slides were still a rarity), but that they provided wonderful subjects of debate. Was Ange-Jacques Gabriel indeed right in his selection of a colossal order for the central pavilion of his Ecole Militaire? Was it correct to run such Corinthian majestic shafts right down to the ground? Wouldn't a pedestal be more appropriate? Why wasn't a base level similar to Perrault's Colonnade or Mansart's Place Vendome used . . . etc? Such were the nature of the discussions taking place right along with an appraisal of the League of Nations' various *partis* and whether they should have been symmetrical or not.

The course was sanctioned by an oral examination accompanied by the presentation of a portfolio of drawings of historical subjects selected by the student to illustrate significant aspects of the course according to a list of suggestions furnished by the teacher. The degree of quality imparted to the presentation of these portfolios varied greatly from student to student from mere tracings of examples collected out of various books to original and sometimes beautifully drawn interpretations of the models selected.

It also should be noted, as a further demonstration of the importance which the Ecole attached to the study of history that it was the only non-design requisite common to both second and first class.

Sketching and Shadow Casting

Freehand Sketching at the Ecole: Al-



"Athletic Center"—A twelve hour *esquisse-esquisse* with emphasis on the plan demonstrating the student's grasp of the proper importance to be given to open areas—Van Alen, architect of the Chrysler Building, NY.

though all students, throughout their years in the atelier, were encouraged to “get out and sketch” they were never obliged to submit freehand perspective sketches. To be precise, during the preliminary studies and subsequent developments of a *projet*, neither the *patron* nor the *anciens* ever found it necessary to rely on a three-dimensional sketch to illustrate their comments on a student’s work. If freehand sketching ability was held in high esteem (and it was, in fact, greatly admired) it was revered only as a skill to be acquired mainly for the specific purpose of recording visual aspects of existing buildings (at a time when the camera had yet to be developed as a handy instrument readily available to students) or for the enhancement of renderings. Beyond that, freehand sketching ability was considered a talent, a gift, which could, and should be developed by those born with it, rather than a skill to be acquired and perfected. Critical evaluation of such talent being severe, the struggling newcomers remained timid about their efforts. Those albums of sketches, records of travels, which were passed around the atelier were opened to critical eyes only by those who had already managed to attain the degree of assurance required, and who, by the sale of their sketches on the side, often managed to defray the cost of their studies. Therefore, however strange as it may appear nowadays, such freehand sketching was an endeavour standing on its own merits (as portrait painting, for instance, might have been) and, consequently, divorced from the study of architecture at the Ecole during the students’ formative years.

The sketches of the *anciens* and *patrons* on those rare occasions when they were deemed necessary, as illustrations of their criticisms, were, invariably, directly related to the mandatory drawing requirements of the projects being developed; so, when they did sketch, they drew plans, sections, and elevations, not perspectives.

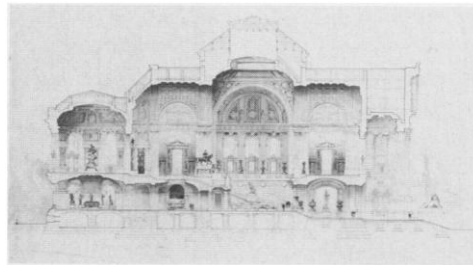
The far-reaching implications of such educational policies and methods cannot be overstressed. To the Ecole-trained architect, the creation of three-dimensional space; rather than being the translation, in convenient signs and symbols (such as perspective sketches) of a spatial concept, was to be considered as the direct, and almost inevitable, result of a series of logical decisions carried out consecutively rather than simultaneously with respect to problems posed first in the plan, then in the partially resulting section, and ultimately in the consequential elevation.

Shadow Casting: Shadow casting was part and parcel of the Ecole’s student design endeavours from the rendered elevations and sections of the entrance competition’s very first exercise to the elaborate presentation drawings of his thesis. While Pierre Esquie’s *Traité élémentaire d’Architecture*, the bible of any aspiring candidate, devoted 9 of its 76 plates to shadow casting,

the Second Class courses in Descriptive Geometry and Stereotomy developed the student’s proficiency in the area of geometric projection upon which the art of shadow casting is actually based. As in so many other aspects of the Ecole’s educational philosophy, shadow casting was conceived as a pure exercise, the object of which was to make presentation drawings more readily legible rather than an attempt at simulating reality. That shadows, whether applied to plans, sections or elevation drawings, were inevitably cast at a 45° angle from the upper left corner can be traced to the fact that France was a country which refused to acknowledge the existence of left-handedness. The only drafting tools normally available to a student consisted basically of a plain T-square and a simple 45° triangle, supplemented at times by a rarely used 30°/60° triangle. For exclusively right-handed students the correct, because rational, downstroke of pencil (or pen) was thus initiated at the origin of the shadow. The selection of this seemingly arbitrary angle of 45° gave a consistent relationship between plan, section and elevation, and was not affected by any other considerations such as the orientation of the plan, the latitude in which the project was located, the hour of the day, etc. Its persistence can be traced to the predominance of a historically traditional basic tool and the right-hander’s familiarity with its potential uses.

Schedules and Instruments

Distribution of Time and Organization of Work: On a typical six-week *projet*, the first one or two weeks were spent catching up with studies sacrificed to bringing the preceding project to fruition, to earning a living, or to just mulling over the problem itself. Two or three weeks were then spent developing the original idea conveyed in the “*esquisse*.” One more week was spent on the preparation of scale drawings on tracing paper. Problems were always due for submission on Fridays at noon. Few students, if any, ever started on their final presentation before the preceding Tuesday. All the work up to this time had been personal, sketches and drawings being prepared by the author himself. The arrival



“A Museum Vestibule and Stairway”—A six week *projet* calling for the study of an interior featuring the presentation of large scale sections—Raymond Hood, Rockefeller Center architect.

in the atelier of the final presentation sheet of the prescribed size stretched on a plywood panel mounted on a wood frame (*chassis*) signaled the beginning of the preassembled team’s participation. Helping hands transferred the drawings onto the final sheet by rubbings from the already prepared pencil drawings on tracing paper, and took over the task of inking them in and casting shadows with 6H or 7H pencils (in order to engrave the paper sufficiently to stop the ink washes crisply when subsequently applied, usually at the last moment). The *chassis* was propped up upon trestles so several hands approaching from different sides could work simultaneously. Such a procedure reinforced the hierarchic organization of the drawings on the sheet: one helper working on the elevation at the bottom, two others on either side inking the plan, and the fourth developing the section from an upside-down position. The rubbing process encouraged, in no uncertain ways, the use of symmetry.

First, the transfer of the drawings from tracing paper by rubbing made it mandatory for the drawing on tracing paper to be drawn in reverse. The choice of a symmetrical solution would obviously eliminate such a problem. Second, the method of transfer by rubbings permitted, in the case of symmetrical *parti*, the preparation of only one half of the drawing; this half being first rubbed on another sheet and then rubbed directly on the final sheet, the other rubbing itself being then, in turn, rubbed in the final sheet also. Differences in tone or value which might thus develop were of no importance since all drawings were subsequently gone over in ink. It should be noted, however, that while the procedure worked just as well for elevations as for plans, it could not be applied to sections which, being required to be taken perpendicularly to the elevation, were inevitably asymmetrical (except, of course, in the case of compositions square, triangular or circular in plan).

Friday mornings were devoted to rendering. Speed being essential, the *chassis* was sloped to enable Chinese ink washes to flow evenly down to the engraved penciled lines while fires were kept going under the panel to dry such washes as fast as possible. Then came the water colorists, the masters of the last minute ambiance-giving clouds, trees, bushes, people, and cars which were quickly sketched in, conveying to the project a tropical or snow-covered look, in a day or night setting. To preserve the freshness of such deft last-minute touches, it was necessary to protect as much as possible the surface of the paper against damages caused by hard erasing or blemishes resulting from dirty drawing instruments or grimey hands. The unevenness of the edges of the *chassis* discouraged any attempt to draw with precision directly on the sheet itself. Only main axes were applied directly on the final sheet as guidelines for the application of rubbings. These, incidentally, had been prepared by

means of the same technique of flipping over dividers, a technique which, in itself, encouraged the use of equalities in the juxtaposition of elements in plan. Crowded working conditions on the final drawing might explain why the adjustable triangle was not developed in France as a drafting tool (inking being done by two triangles working against each other). Drafting tape not having been invented, students had to depend upon hole-making thumbtacks, a problem which had to await the invention of the three-pronged Swiss thumbtack to be dealt with satisfactorily. Rubbings, therefore, were more often than not hand-held, contributing further to the lack of precision of drawings.

It should be remembered that any addition in any form to the surface of the paper was strictly forbidden. No photographs, obviously. No collages, of course. But also no glued-on paper repairs were allowed. If disaster struck (such as the spilling of a bottle of ink, a hole created by an overeager eraser, a tear or a burn resulting from too strenuous a wetting or drying process), there was no recourse but to start all over again. It was still possible, with appropriate help, to complete a new presentation in twenty-four hours, provided the originals of the rubbings had been preserved: another significant trade-off of the rubbing method.

Instruments: As strange as it may appear, in a country entirely committed to the metric system, a system it was so proud of having invented and imposed so successfully, it believed, upon all ways of life in its entire world of influence, the relatively secondary role played by the calibrated scale as a drafting instrument remains a puzzling fact, especially in an activity so intimately related to dimensioning as the field of architecture. That beyond the pencil (and the pen), the one instrument sharing the lime light, with the T-square and 45° triangle, was to be a pair of dividers is not surprising when one considers the basic shortcoming of the decimal system, that is, its inability to respond to the requirement of tripartite division, a basic

tenet of a system of architectural composition based on the axis and its corollary: bilateral symmetry.

It should also be remembered that no Ecole's program, beyond merely stating the maximum overall dimensions of the project at hand and the scale at which it was to be presented, cared to even give exact desirable sizes pertaining to the functions of elements to be accommodated. The governing factors, in a plan arrangement exercise, was the determination of what relative importance was to be given to the program's enumerated parts, and, in elevation studies, to the overall proportions given to its various parts.

Exact sizes were never a consideration. In fact, save for the construction problem and the diplôme, no dimensions were ever indicated upon the drawings. It was, therefore, deemed to be of no importance whether a bay size was to be of an even amount of rounded meters, or centimeters for that matter. After all, weren't all the great examples of past, whether Greek, Egyptian, Gothic or Renaissance, or Italian or even French, dimensioned in feet of one kind or another, bearing therefore very little, if not all, relation to meter measurements? One can readily understand why, under such circumstances, dividers were preferred to a drafting scale when divisions in equal parts or incremental additions were called for.

T-squares and triangles being hand-manufactured and made of wood, thus susceptible to warping and denting (in spite of being sometimes bound in ebony as an extra precaution), differed from one another. Using opposite faces of a triangle would bring different results. The unevenness of drafting board edges and sides of stretchers were other sources of frustration to those seeking precision in their drafting. Whereas adjustable T-squares made corrections possible, they offered at the same time another chance of error.

The 45° triangle was not only useful; it was vital, in not only facilitating 90° rela-

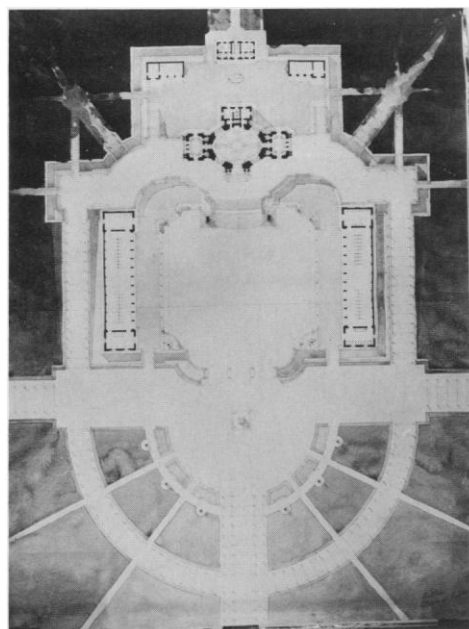
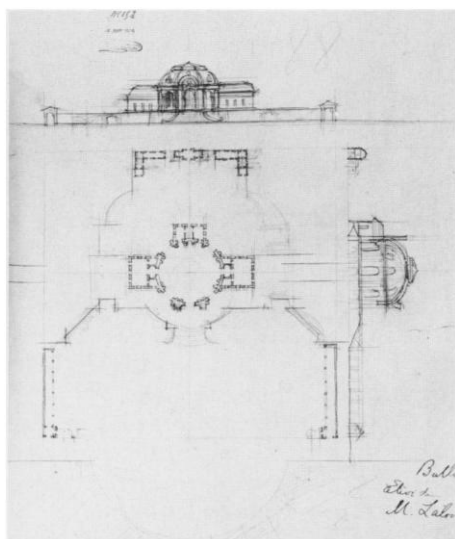
tionships but also providing an easy way of determining center lines, maintaining identical relationships when turning 90° corners in a classical fashion and, of course, casting shadows in accordance with the prescribed 45° angle. That the 30°/60° triangle, while indeed in existence and part of the students' instrument panoply, was not much used can be demonstrated by the quasi-total lack of evidence of any influence such a tool might have had on the students' design solutions. The adjustable triangle, it should be remembered, made its belated appearance upon the Ecole's scene only after World War II.

An array of ruling pens of different degrees of thinness and compasses completed the assortment of precision instruments available. Among these, the most precious in the student's possession if he could afford it, was a pair of proportional dividers, a tool enormously useful in the enlargement of thumbnail sketches to presentation size drawings, especially in the cases when the former had not been drawn exactly to scale. Proportional dividers made it also possible to borrow elements when deemed desirable and applicable from available documents and their transfer, in part or in whole, to the student's own project.

Conclusion

The above description should clearly indicate the Ecole's conception of its role as an educational institution. It never attempted to nor ever had the pretention of teaching architecture: it was not a professional school by any stretch of the imagination. What institution whose curriculum never required more than two exercises requiring the drawing of wall sections would ever aspire to such a reputation? The Ecole, in the mold of many a French institution of higher learning, concerned itself with the shaping and training of minds: it aspired to teach future architects how to think, architecturally; and by introducing them to a carefully devised multiplicity of exercises exposed them, time and again, to the exercise of judgement.

The Ecole sought to *prepare* its students to *become* architects: it knew, only too well, that the only valid environment in which such a proficiency could be achieved was that of an architectural office, and that the only place for them to learn how to put a building together was the construction site.



"A Hunting Lodge"—A complete set of exercises for a projet from the en-loge esquisse to the final presentation displaying the importance of entourages—Butler, a New York architect.