"Educating the Architect", 119-128.

THE ARCHITECTURAL THEORY OF VIOLLET-LE-DUC: Readings and Commentary (1995)

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3 Educating the Architect

Ever since the example of Vitruvius, writing in the late first century BC, the education of the architect has belonged to the realm of architectural theory. According to Vitruvius, the architect should be broadly educated in all the areas of learning that touch upon the natural environment, the social and cultural context, artistic traditions, and building technology. He recommended that the architect be conversant with geometry, arithmetic, optics, history, philosophy, music (for acoustics), medicine, law, and astronomy. In the early Renaissance, Alberti, concerned to promote the architect as a scholar and gentleman distinct from the craftsman-builder, emphasized the importance of cultivating the artistic and theoretical side, such that in the ensuing periods the education of the architect became more that of a humanist-artist than of a builder. By the mid-nineteenth century, the concern for art had virtually excluded other considerations.

Reacting against this prevailing view, Viollet-le-Duc urged an approach that was primarily scientific in outlook, more empirical than dogmatic and more practical than artistic. The rational faculties that were central to his code of architectural principles could be properly cultivated only through an education appropriately devised for that purpose. He stoutly maintained that the formalist training provided by the French state in the Ecole des Beaux-Arts was totally unsuitable and that it not only did not produce good architects but also impeded the development of a modern architecture. His remarks on this subject fall

into two categories, an indictment of the architectural education prevalent in his day and a prescription for a new approach.

First of all, an architect must be trained not through rote exercises, the purposes of which (he maintained) were never explained, but through the cultivation of the powers of reason.

There is an *école d'architecture* in France, but there is no course of architectural lectures delivered in that school; or if by chance such a course is given it limits itself to a few generalities concerning one phase of the art. Respecting the carrying out of architectural works, the organization and administration of labor, the history of civilization in France, the comparison of the various styles or groups of styles of architecture, their relation to civilization, their development or decay, and the causes of such growth or wane; the art of economizing resources by employing the materials peculiar to the various localities, and the judicious application of those materials to the forms they are adapted to receive; the importance to an architect of being ready and able to explain and justify his design by sound reasons in a clear and logical form of expression; and the wide and catholic principles that, when they have free scope, must develop energetic intelligence, and clothe those principles in new forms—not a word is said.

Amateurs can only acquire a sound taste (which in architecture especially is identical with sound reasoning) by contact with artists; but if they would form the taste of influential patrons, architects must be able to explain to them the reasons that lead them to adopt such or such a method; if these conceptions are to be admitted or defended, they must be defensible. *(Discourses,* IX)

In How to Build a House, *Viollet-le-Duc has the tyro Paul ask his architect cousin (significantly named Eugene) how he came to acquire his rational method. The reply is an account of a misspent traditional education corrected through a combination of happy circumstances and self-conscious initiative. The process of correction approximates the combination of practical education and on-the-job training that Viollet-le-Duc espoused.*

"When I left college I was articled to an architect for two years, who set me to copy drawings of buildings, of which I was not told either the age, or the country, or the use; then to lay on tints. During this time, I took lessons in mathematics, geometry, and drawing from models. I was then prepared to enter the Ecole des Beaux-Arts, where not much is taught, but where they compete to obtain medals and the Grand Prix, if you can. I remained there three years, making five in all. Meantime, I was obliged to get my living, for I had no more than enough to pay for my lodging and to buy clothes. I was obliged, therefore, to get into an office—that is to say, to work for so much an hour at an architect's, who was in large practice. There I used to trace plans and nothing else, except now and then to make some detail drawings—heaven knows how, for I had never seen the smallest part of a building executed. But my employer was not exacting, and the master builders supplied by their experience what was wanting in these details. Seeing that all this would not put me in a speedy way to master my profession, and being so fortunate as to have had a few hundred pounds left me, I resolved to travel—to study architecture in actual buildings, and no longer in those shown me on paper. I set myself to observe, to compare, to see practical men at work, to examine buildings that were crumbling to pieces, that I might discover *in anima vili* the causes of their ruin.

"At the end of five more years I was sufficiently acquainted with my profession to be able to practice it. Total—ten years; and I had not built even a dog kennel. One of my patrons introduced me to an agency for government works, where I saw methods employed that scarcely agreed with the observations I had been able to make during my previous architectural studies. If at any time I allowed myself to make remarks on this discrepancy, I found they were not well received. The circumstances, and the fact that a fine opportunity offered itself for making use of what I had learned, occasioned my stay there to be of no long duration.

"A large commercial company was on the point of erecting manufacturing works on an extensive scale. They had engaged an architect who was proposing to erect buildings in the Roman style, which was not exactly what they wanted. They did not think it quite to the purpose to build in the plains of the Loire edifices recalling the splendors of ancient Rome. I was introduced to the directors; they explained to me what they wanted. I listened; I worked indefatigably to acquire what I was ignorant of, in order to satisfy my clients. I visited factories, made the acquaintance of large contractors, studied building materials, and at length furnished the draft of a plan that pleased them, but would scarcely satisfy me now. The work was begun; assiduous study and

constant attendance on the ground enabled me to supply my deficiencies in point of knowledge, so that they were satisfied with my commencement. Most of these gentlemen had town and country houses. I became their architect, and this soon obtained me large practice and more work than I could execute; especially as I have come to the conclusion that it is necessary to be always studying, reasoning, and improving; so that (looking at the matter in this light) the further you advance the more difficulties you have to encounter."

"How, then, should architecture be studied?"

"Why, as I have shown you, by practicing it. In France, at any rate, no other method has been employed hitherto, and perhaps this is the best."

"But how do those learn to build who do not travel, as you did, but simply study in the usual way?"

"They do not learn to build. They only learn to imagine and design impossible structures, under the pretext of preserving the traditions of "high art", and when they are tired of putting these fancies on paper, they have a place as clerk of works given them, where they do what you are going to do; the only difference being that they feel a disgust for the work because they were expecting something very different."

"But, beginning as I am going to begin, shall I be able afterward to study the—what shall I call it?"

"The theory—the art, in short. Certainly, you will be able to study it much more easily; for the modicum of practical knowledge you will have acquired in building a house, or in seeing it built from foundation to roof, will enable you to understand many things that, without practice, are inexplicable in the study of the art. This will give you the habit of reasoning and of satisfying yourself as to the why and wherefore of certain forms and certain arrangements dictated by the necessities of practical building—forms and arrangements that appear simply fanciful in the eyes of those who have no idea of those necessities.

"How are children taught to speak? Is it by explaining to them the rules of grammar when they are only three years old? No; but by speaking to them, and inducing them to speak to express their wishes or necessities. When they have learned to speak nearly as well as you and I do, the mechanism and rules of language are explained to them, and then they can write correctly. But before learning according to what laws words ought to be placed, and how they ought to be written to compose a phrase, they had become acquainted with the signification of each of them.

"If we had not in France the most singular ideas respecting teaching, we should begin with the beginning, not with the end, in the study of architecture. We should impart to students the practical elementary methods of the art of building, before setting them to work to copy the Parthenon or the Thermae of Antoninus Caracalla, which, for want of those first practical notions, are to them mere phantoms; we should thus train their young minds to reason and to become aware of all their deficiencies, instead of exciting their youthful vanity by exercises purely theoretical or artistic at an age when they cannot clearly understand the forms that are given to them as models."

"A house such as we are going to build seems to me a very small affair. Surely such a construction can hardly supply the information necessary for erecting a great edifice."

"Do not imagine that, Paul; construction, apart from certain branches of scientific and practical knowledge, which you will be able to study at leisure, is nothing but a method—a habit of reasoning—a compliance with the rules of common sense. Of course you must possess common sense and consult it. Unfortunately, there is a school of architects that disdains this natural faculty, asserting that it fetters imagination; for we have among us idealists, as there are in literature and among painters or sculptors; though if idealism is permissible among litterateurs and artists—for there it is harmless—in architecture it is quite another thing; it is expensive, and you and I have to pay for it. We have consequently the right to consider it at least out of place. The reasoning faculties and good sense have to be called into exercise quite as much in building a house as in constructing the Louvre, in the same way as you may show tact and intellect in a letter as well as in a large volume.

"The ability of an architect is not determined by the quantity of cubic feet of stone he uses. The size of the building makes no difference."

"You maintain, then, that as much ability is required to build a moderate-sized house as to erect a vast palace?"

"I do not say that; I say that the faculties of the mind, reasoning, accuracy, the exact appreciation of the materials at our disposal, and their proper use, are manifested as well in the construction of the sim-

plest habitation as in the erection of the most magnificent architectural monument."

"I shall then be able to learn much in observing the building of my sister's house?"

"Certainly. First, because one learns much when one has the wish to learn; secondly, because in a house, as in the largest of palaces, the entire architectural staff will have to present themselves before you, from the excavator to the decorative painter. Whether the carpenter makes twenty doors or two hundred, if you can get a clear notion of how a door is made, hinged, and hung, one alone is quite enough; you have no need to see a thousand."

"But here we shall not be making doors (for example) such as those of royal apartments?"

"No; but the principles on which they are, or ought to be, made are the same for both; and it is by departing from these principles that we fall into mere whims and follies. When you know how a wooden door is made you will see that the structure is adapted to the nature of the material employed, viz., wood, and to the purpose it has to serve. This knowledge acquired, you will be able to study how clever men have made use of these elements, and how (without departing from fundamental principles) they have produced simple or splendid works; you will be able to do as they have done, if you have talent, and to seek new applications of principles. But you must, in the first place, know how a door is made, and not imitate at hazard, while destitute of this preliminary practical knowledge, the various forms that have been adopted, be they good or bad." *(How to Build a House,* pp. 82–87)

Viollet-le-Duc maintained that one of the greatest evils that had crept into the practice of architecture was the rupture between engineering and artistic creativity. The result had been to reduce the quality of work on both sides of the division, especially impoverishing the artistic branch of building.

"What is the difference, then, between an architect and an engineer?" Paul ventured to ask.

"Upon my word, that is a question not easy to answer—I will give you an apologue:

"There were once two little twins who resembled each other so much that even their mother could not distinguish them. Not only were their features, height, and gait the same, but they had also the same tastes and abilities. They had to work with their hands, for their parents were poor. Both became masons. They acquired skill in their calling, and they worked equally well. Their father, a narrow-minded man, thought that these four hands that wrought at the same work with equal perfection would produce more and do still better by allotting separate labors to each pair. To one of the pairs, therefore, he said, 'You shall only do underground work'; and to the other, 'You shall only work above-ground.' The brothers thought this scarcely reasonable, as they had been accustomed to help each other in both sorts of work; however, as they were obedient children they complied. But whereas hitherto these workmen had agreed and had cooperated to the advantage of the work, from that time forward they did not cease to dispute with each other. The one who worked above the cellars maintained that his foundations were not suitably prepared, and the one who laid the latter asserted that the conditions of their structure were not respected. The result was that they separated, and as each had now become habituated to his particular work, he remained unfit for anything else."

"I think I see the gist of your apologue, but—"

"But it does not explain to you why a difference has been made between engineers and architects. In fact, a skillful engineer may be a good architect, as an accomplished architect ought to be a good engineer. Engineers make bridges, canals, docks, and embankments; but this does not prevent them from raising lighthouses, erecting factories, warehouses, and many other buildings. Architects ought to know how to do all these things; they actually did them formerly, because then the twin brothers were not separated, or rather, they were one and the same person. But since this individuality has been separated into two, each half follows its own direction. If the engineers build a bridge, the architects say it is ugly—and are not always wrong in saying so. If the architects build a palace, the engineers think, not without reason, that in its construction the materials have been employed unskillfully and without due economy or an exact acquaintance with their properties in point of durability and strength."

"But why do engineers build bridges that architects do not consider beautiful?"

"Because the question of art has been separated from that of science and calculation by that narrow-minded father who thought one brain

could not entertain both. The architects have been told: 'You are to be artists; you are to look at nothing but form—trouble yourselves about nothing but form'; while to the engineers it has been said: 'You are to occupy yourselves only with science and its applications; form does not concern you; leave that to artists who dream with their eyes open, and are incapable of reasoning!'

"Ah! that seems strange to your young mind, I can see. It is simply absurd, because the art of architecture is only a result of the art of constructing—that is, of employing materials according to their qualities or properties; and because architectural forms are notoriously derived from this judicious employment of them." *(How to Build a House,* pp. 224–26)

The means for healing this rupture could only be an education in which the architect is taught engineering as well as art and, optimally, the engineer learns how to practice his craft with appropriate artistry.

If we take a fair and unprejudiced view of things we cannot shut our eyes to the fact that the professions of the architect and the civil engineer tend to merge one into the other as was formerly the case. If it is the instinct of self-preservation that has caused architects of late to resist what they regard as the encroachment of the engineer on their domain, or to set themselves against the methods adopted by the latter, this instinct has badly served them, and if it rules it will have no other result than gradually contracting the architect's field and limiting him to the function of decorative designer. A little reflection will show us that the interests of the two professions will be best saved by their union, for in point of fact the name is of little consequence: it is the thing that is essential, and art is that thing. Whether the engineer acquires a little of our knowledge and love for artistic form—so far as that love is rational and is something more than mere sentiment—or whether the architect enters upon the scientific studies and adopts the practical methods of the engineer; whether both thus succeed in uniting their faculties, knowledge, and appliances, and thereby realize an art truly characteristic of our times, the result cannot fail to be advantageous to the public and creditable to the age. *(Discourses,* XII)

OBSERVATION AND RATIONAL ANALYSIS AS EXERCISED THROUGH THE PRACTICE OF DRAWING

The preparation for the training of an architect necessarily includes a formal education. Viollet-le-Duc focused on the discipline of drawing as the framework for assimilating various kinds of learning experiences. For him, drawing was no less a matter of intellectual training than of artistic expression, beginning with unbiased observation, continuing through analysis, and culminating with problem solving. In Learning to Draw, *he explains this process by describing the education of a young peasant boy, Jean, under the tutelage of a kindly engineer, M. Majorin.*

Direct Observation

The value of direct observation is that it is not prejudiced by culturally acquired formulas; it permits one to discern the truth of a situation in empirical fashion.

"That's not the way to do it," said André.

"But that's the way I've seen it," answered Jean, who seemed to be no longer a pupil, but to have openly rebelled.

"We will see," said André finally, since he evidently could not convince Jean. "This is not the way to draw a cat; is it, papa?"

"Let me see it," said his father. André handed M. Mellinot a piece of crumpled paper, on which was penciled the following sketch (fig. 36).

"If it is intended for a cat, it's a cat with two paws. And what's that growing out of the top of his head?"

"That's his tail," answered Jean timidly.

"Oh!" said M. Majorin, rousing himself from his revery, "let me see it."

He looked attentively at the cat and at Jean; so that the latter blushed, and hung his head, and really did not know what to do with his hands, which embarrassed him very much.

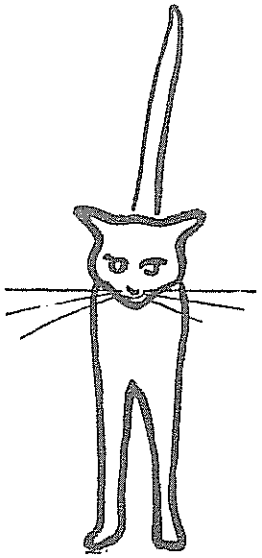
"How old are you?" asked M. Majorin.

"Eleven years old on All Saints' Day, sir."

"Do you go to school?"

"Yes, sir, when papa does not take me to pluck weeds from the gardens of the bourgeois."

"Do they teach drawing at your school?"



36. Jean's drawing of a cat.

"No, sir. They teach us to make only rounds and squares, and those not often."

"And does it amuse you to make rounds and squares?"

"Not very much."

"You prefer to draw cats?"

"Yes, sir."

"Where did you draw this?"

"On the steps of the house, where I was sitting."

"And what was the cat doing there?"

"He was turning round like that, looking for something."

"And you begged him to stop in front of you to have his picture taken?"

"Oh, no, sir! He wouldn't have done it."

"Then, how did you manage to draw him?"

"I looked at him as he came up to me very slowly, as if he were going to ask me for something to eat, for I was taking my luncheon; and he looked so funny—oh, so funny!—just like a real person. I looked at him and didn't laugh, because cats don't like to have anyone laugh at them. I watched him, and he watched me; then I took a paper, and the pencil André gave me, out of my pocket. But when the cat saw them, he ran away. Then, remembering just how funny he looked, I drew him on the paper."

"But you know very well that cats have four paws."

Jean did not answer.

"Why did you draw only two?"

"Dear me, sir! I didn't notice, I didn't see the others."

"Come, give me a kiss."

If this abrupt conclusion surprised Jean, it astonished M. and Mme. Mellinot even more.

"Will you give me your cat?" resumed M. Majorin.

"Oh, yes, sir! I'll draw others."

M. Majorin was visibly moved. They continued their walk, and the children ran into the woods.

"If I had a boy like this little fellow!" said M. Majorin almost involuntarily, after a long silence.

"Is it because he drew a cat with two paws, and a plume on the top of its head, that you express this desire?" responded M. Mellinot.

"No: because he was born an observer, and because this quality, or faculty if you will, permits one to advance, and, above all, to avoid many foolish mistakes."

"I do not understand why, to tell you the truth, one should draw a cat with two paws."

"No, you do not understand; or rather you, like many others, have seen only with the eyes of those who do not know how to see.

"To you a cat is a feline with four paws, a tail, two prominent flexible ears, and whiskers. If one should omit to show you a part of this inventory, you would not acknowledge it to be a cat. The little fellow does not care much about that: he did not see a mass of poor images pretending to represent complete cats, but a cat in a certain position that struck him, and he seized the principal features of the position. Being seated, he did not see the back of the animal, which was hidden from him by its head, and the tail appeared without any intervening part.

"His attention was not attracted to the hind paws, which were almost entirely concealed by those in front, and he did not see either the belly or the flanks. His eye in a few seconds seized the principal lines and the