

This PDF includes a chapter from the following book:

The Education of the Architect

Historiography, Urbanism, and the Growth of Architectural Knowledge

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OA Funding Provided By:

National Endowment for the Humanities/Andrew W. Mellon Foundation
Humanities Open Book Program.

The title-level DOI for this work is:

[doi:10.7551/mitpress/2641.001.0001](https://doi.org/10.7551/mitpress/2641.001.0001)

The story, thousands of years old, is irresistible. The young prince Arjun, pupil of the great Brahmin sage Dhrona, is undoubtedly the finest archer in the land. One day, when Arjun and his brother are playing in the forest, they are disturbed by the noise of a dog barking. Just as they are wondering how best to stop this nuisance, an arrow shoots out of the bushes and passes through the dog's teeth—in a miraculous manner that clamps the dog's mouth shut, without hurting it in the least.

The young princes are astonished. This is obviously the work of a master archer, one far more skillful than Arjun himself . . . but who could this be? Looking around, they find a young dark-skinned boy: Ekalavya. "Who has taught you such mastery?" they ask in wonder. "My teacher is the great Dhrona," the boy replies. "But you are an Untouchable!" cries Arjun, "How could a Brahmin ever accept you as a student?" "Of course I would not dare to try and approach so exalted a guru," says the boy, "but I have made a small statue of him, and when I go to the forest each day, I place this image against a nearby tree—and when I practice my archery, I tell myself that the great Dhrona is watching me."

We do not know if architecture can be taught, but we know it can be learned. For learning is a process that depends on us ourselves, and our attitude of mind. Thus the traditional guru-chela relationship works precisely because the chela (student) has unquestioning trust in the wisdom of his guru (teacher). His mind and whole being are like blotting paper, eager to absorb every word, every nuance. This process, so prevalent in India and other parts of Asia, has many parallels in European history as well. Thus as a young child, the great Johann Sebastian Bach learned (taught himself!) by transcribing the compositions of earlier masters—as did so many other geniuses, such as the seventeenth-century Dutch painters, and so forth.

Over the last few centuries, this attitude of course has been rapidly eroding. Today there prevails a far different, more modern, way of learning. Its principal axiom is to encourage each student to develop his own individual judgment. For a typical example, we'll jump cut 5000 years or so forward from Ekalavya to the year 1952 A.D. Our graduate class at MIT has just finished one of our seminar classes with Professor Gyorgy Kepes. These wide-ranging seminars were truly extraordinary, and were of decisive importance to me in my own education. At this particular class, we have been shown slides of the work of Michelangelo, including, of course, the Sistine Chapel ceiling. It is a complex, confusing experience. I wonder: can one every really "see" the Sistine Chapel ceiling? Or, as in the case of da Vinci, do all the layers of cultural hype and art criticism that surround the Mona Lisa make the moment when one finally walks into that room in the Louvre and sees the real thing, the actual canvas itself, a . . . what? An anticlimax? No, actually something far worse. One cannot see the Mona Lisa. One stares, but it is invisible . . . nothing registers on the mind. The layers of hype are too dense to dissolve away . . . at least, not so quickly.

Is this also true of the Sistine Chapel? After the class is over, four of us go for a cup of coffee to the drugstore across the street. Suddenly, one of us, I think it is Jack Caldwell, says: "You know what? I don't think Michelangelo was so great." Jack could be wrong . . . or, perhaps, right. That's not the issue. What I find extraordinary, hilarious, surrealistic, is that here we are, four callow would-be architects, drinking drugstore coffee, exchanging opinions casually, seriously, on such a subject.

The moment stays in my mind because it makes vivid the process of learning I am engaged in. And of course I can readily perceive why it is of the utmost importance for a university to encourage—in fact, make mandatory—such independent judgment. It is the cornerstone of a modern education. For in our contemporary world of slanted media news and hyped opinions, it is imperative that we learn how to stand back and distance ourselves from the signals that are coming at us, all the time. We must, at any cost, nourish our individual judgment—only thus can we preserve our sanity.

And yet . . . if we have never entered the caves at Ajanta, or the last quartets of Beethoven, entered them with total trust and without our own niggling preconditions, can we ever really understand what they are all about? And if we do not understand them, can we reject them? Or alternatively, like Ekalavya, actually *learn* from them?

The example of the little Untouchable in the forest, with no teacher around but a small mud image, represents an extraordinarily powerful way to bring about that transfer of knowledge, wisdom, and attitudes that is the es-

sence of learning. In fact, right into this century, the Beaux-Arts in France still had *maîtres* in *ateliers*, each with his own group of *chelas*, who had implicit faith in him. The master, coming to your desk, would pick up a thick grease pencil and draw a bold line, changing things radically: the proportions, the cornice, the depth of the shadows, whatever. “Not this—*this!*” And you learned because you trusted his judgment, you entered the *gestalt* of his world. Even today, I find that in architectural schools throughout the United States, there are teachers who have this guru-chela relationship with their students. These studios are usually the most vital—and the most controversial. To the rest of the faculty, they do not represent an education, but a kind of terrifying Jonestown. To the *chelas* who take these courses, this experience is the single thing they always remember in later life, the one thing that made all those somewhat meaningless college years worthwhile.

So there we have the dilemma of education: one model is the guru-chela system—a wonderfully effective process which unfortunately can all too easily result in the kind of brainwashing from which the *chela* never recovers. In the other model, we have the kind of healthy contemporary skepticism which ends up with us learning hardly anything at all. How on earth do we choose between these two?

Well, perhaps we could start by looking again at those examples of artists and musicians from a few centuries ago: Bach, Haydn, da Vinci, and others. As young apprentices, there is no doubt that they learned a lot by transcribing (often quite literally) the work of earlier masters. During this formative period, they were the most devout of *chelas*. What saved each one of them from spending the rest of his life in Jonestown was that he then proceeded to distance himself from this overwhelming learning experience—and tried to start speaking in his own voice. (We all know the story of the young Bach climbing up to the attic each night to secretly copy into his notebook the organ music his uncle had expressly forbidden him to play—and how the uncle, finding the book, tears it up and punishes the boy. But as the great harpsichordist Wanda Landowska remarked: “It was much too late! For in the very act of transcription, the young Bach had learnt everything he needed to know about that music—just like the roots of a tree greedily suck up from the earth all the nourishment they need.”)

For Bach to become Bach (fantastic!!) he first had to experience the intensity and passion—however vicariously—of true greatness. Then he had to find his own voice. For after the exposure to the guru there must come the distancing. Is it possible to simulate this process in the world of academia? Could we structure the architectural curriculum in such a way that these two quite

different types of studios are available—guru studios and distancing studios—and that each of these is taught by faculty with the appropriate temperament and talent?

In such a system, each student would be able to adjust the sequence of studios, so that it is fine-tuned to his or her own specific development. This choice should be, of course, determined in consultation with a faculty advisor (who would work with the student over several years, i.e., until he graduates), thus making those choices far more meaningful and effective. Right now, during the flesh market that takes place during the first week of the semester (when each teacher peddles his wares), students tend to choose what interests them—and not necessarily what would be most useful to them. For instance, if a particular studio presentation emphasizes structural issues, and I dislike thinking of structures, then I will avoid that course. But perhaps that is exactly the course I *should* take—and precisely because I dislike structures. Far from balancing out one's education, the present system of haphazard studio choices only encourages students to be as self-indulgent as they think they can get away with. (As a teacher in an M.Arch. program remarked bitterly the other day: "We don't have students any more, we have clients.")

What would be the character and goals of these two groups of studios? Inevitably the guru studios will evoke more explicitly those qualities perceived as being indigenous to the traditional persona of the architect: viz. an activist who is, first and foremost, a compulsive problem-solver. This is in sharp contrast to, say, a sociologist or historian—who tends to be a relatively passive *observer* of events. The differences between these disciplines start right from earliest training. For if the architect freshman cannot come with a design at the end of the semester because he "doesn't have enough data" . . . well, he flunks. And, of course, the exact opposite happens to the student of history or sociology. If he comes up at the end of the semester with a new theory based on insufficient data, then *he* flunks.

Thus right from Day 1, each discipline nurtures quite a different set of instincts. Later in life, these two disparate streams try to work together in a multidisciplinary planning team. The result: chronic incompatibility. For very few social scientists, however critical they may be of society, are willing to stick their necks out and conceptualize alternative models of how life might be restructured. They just do not see this as their territory. Architects, on the other hand, are always thinking of how we might, in Bucky Fuller's ineffable phrase, "rearrange the scenery." They are always jumping in with both left feet and speculating on how the pieces might fit together in new, more advantageous ways. In short: on *what might be*.

This compulsion to synthesize is fundamental to architecture. It involves a continuous and reiterative process—which goes easily and swiftly from the large overall concept down to the smallest detail and back again. (Because to change a window mullion is to change the corner, is to change the plan, is to change the concept. Back and forth, back and forth, up and down the line.) Then again, often these transactions are not all quantifiable in the same currency, for instance: six apples, take away four mangoes, how many do you have left? The answer must be found not by quantifying apples in terms of mangoes, or vice versa (as is done in cost-benefit studies), but by keeping their identities clear and separate in your mind—and yet finding the right balance! This is what art is about: from the arrangement of objects in a still-life painting to the layout of the capitol complex at Fatehpur Sikri. To deal with these abstract equations effectively and truthfully, each element must be accepted on its own autonomous terms.

The traditional way to inculcate these instincts into students is to start teaching architecture at the undergraduate level—an early exposure of truly fundamental importance. After all, a young person's creativity in the visual arts is a talent which can be easily snuffed out in the very process of getting educated, or simply preempted by the development of some other talent that the child may possess. By catching 'em young, the creative instincts needed for architecture are reinforced as you grow up into an adult. The result: you never forget them. They always remain your shooting arm. Yet, over the last few decades, this has been changing. Alterations have been made in architectural education, particularly in the United States, so now an increasing number of students can start studying architecture *after* having taken their first degree in some other field, such as art history, sociology, literature, and so forth. In other words, from precisely those areas where the basic skills are not activist, but *passive*; not visual, but *verbal*. This has made a profound difference in the culture of the profession.

This does not mean that earlier generations of architects could not possess extraordinary verbal skills (as quotations from even the normally laconic Mies so amply demonstrate: e.g., “A brick is not rubber,” apropos of Niemeyer). But this was not their shooting arm. Thus, when an architect like Frank Lloyd Wright (who possessed a truly sensational command of language) was stymied by a difficult problem, he would always reach for his design skills—and try to design his way out of trouble. Many of the superstars around us today, coming to architecture as postgraduates, will more likely try to write—or talk—their way out of the same impasse.

Because of this oververbalization of the classroom during the last few decades, design studios often propagate procedures that have almost nothing to

do with the creative process. Even issues as pertinent as contextualism are perceived in an oddly mechanistic way. Thus, at the pinup, the student will intone: "I've made the front door blue because this house is to be in Istanbul, the city of the Blue Mosque." Bravo! And yet, how sad. For, as Gaston Bachelard has so devastatingly pointed out, the processes of creating art have almost nothing to do with those basic tools of science: cause and effect. Rather, art is like a depth charge that explodes somewhere in the innards of your unconscious, sending up to the surface the debris of recognition.

Nowhere is this difference more apparent than in the field of music. If I, for instance, am asked to create a musical composition, but have no gut instinct for the task, perhaps I might be tempted to think: Well, let's see, Beethoven started his Fifth Symphony with four notes: da,da,da,dahh. So why don't I use five? Or perhaps six? It would be a witty reference. It might even work . . . until suddenly, one fine morning, right out of nowhere, Cole Porter checks in with: "I've got you under my skin." How does he do that? No one, anywhere in this world, anytime in history, knows how you could *teach* that. But there are many, many people all around this planet who, on hearing Porter's genius, might respond . . . like Ekalavya in the forest? This is why the presence, however hallucinatory, of the guru is so important. Through our trust in him, we teach ourselves.

It really is somewhat mysterious, the way the arts get handed down from generation to generation. Much of it is by direct instruction, but some of it appears to be almost through a process of osmosis. In his incisive book *The Inner Game of Tennis*, Timothy Gallwey gives the example of someone who misses a shot and yells: "You fool!!" "Who are you shouting at?" you ask. "Nobody; just myself." So that's interesting—in each of us there is a "Myself" who gets shouted at and there's an "I" who does the shouting. Gallwey sees Myself as an incredible learner, a computer-sharp brain that programs itself very swiftly and accurately, often just by watching. I, on the other hand, is a kind of untalented policeman. Just when Myself, working on automatic, is going to hit a winner, I says: "Don't hit too low." And the ball goes into the net. When a player is playing at peak form, it's because Myself has taken over. This is why tennis players refer to someone who has played a great match as: "He was unconscious." Or, "He was playing out of his mind."

All this, of course, is not to say that rational analysis, principles of cause and effect, and so forth, have no place in architectural education. On the contrary, these tools would be fundamental to the distancing studios. Through them, students would be able to look back at what they had just learned and reappraise it. The system would also allow a school to use its faculty to much better advantage—because it would make explicit the differences between the

two types of studio, permitting each of them to be run with minimal cross-sniping. So that gurus who have their own idiosyncratic and intuitive design skills could return to the atelier model of teaching without being accused of reckless brainwashing, while those teachers that run the distancing studios would not be criticized for not being “designers,” or “creative” enough, and so forth. On the contrary, these distancing studios would be able to take advantage of the far more intense intellectual dialectic which has been triggered by the new breed of architects (the writers, the historians, the sociologists *manqué*) who have brought to this profession many extraordinary and invaluable qualities: a richness and subtlety of observation, a precision in dialectics, a fineness and nuance of perception, a comprehension of history—all of which are essential for the young professional to understand where we are, and why.

Lastly, the process of fine-tuning the studio sequence for different students may also compel us to examine a fundamental assumption which really needs questioning. And that is the notion, ingrained in all of us, that the prime aim of an architectural school is to foster and develop *design* skills. Because of this, the five years of undergraduate education are almost always structured around a series of design studios, two per year, compulsory for every student.

In actual fact, as we all know, not more than 1 office in 10 in the United States (or in most other countries, for that matter) places design values above all other objectives for the firm—and even within this sliver of organizations, the number of architects who are directly concerned with these design issues are hardly more than one in five. So we have very few architects indeed (say one out of fifty?) who will devote their whole life to a hands-on struggle for design values.

But school curricula do not reflect these very basic facts. No, on the contrary, students (regardless of any inherent aptitude for the astonishing mix of analytic, synthetic and topologic skills that make up the design process) are compelled to take such a studio every semester, for five continuous years—and it is always the heavyweight in their schedule, preempting enormous quantities of time and energy. Each semester these unhappy students are presented with brand-new problems, often in complicated and subtle contextual situations, and then asked to come up with new and brilliant responses, possibly expressed in an architectural syntax of their own invention. In the entire history of our profession, very few architects have managed to pull that one off—even *once* in their lifetime! Yet we demand this of each student, in each design studio. The result: dismay and frustration (and at several universities, among the highest stress rates of all departments).

The happy ending: Most of these students graduate into the real world where they never have to use the compulsive problem-solving design skills they never learned. And even those who may be working in high-profile

design-oriented firms make a decisive contribution to the splendid architecture the organization is producing, in areas other than design. Obviously *what* schools try to teach and to *whom* and *how* needs some rather basic rethinking.

Envoi

The story of Ekalavya has an astonishing—but perhaps quite realistic—ending. Arjun and his brother, delighted with their find, take Ekalavya back with them to their guru, the fabled Dhrona. The boy bows in obeisance to the great teacher and then, on request, shows his sensational prowess as an archer. Arjun is overjoyed, but the old Brahmin with his understanding of the realpolitik of life, realizes the implications of an Untouchable being a superior archer to the king's son. So he says to Ekalavya: "You say you are my pupil; will you then give me a *gurudakhshina* [i.e., the gift that the pupil offers in gratitude to his teacher]?" The boy nods happily. "Then," says Dhrona, "give me the thumb on your right hand." Without the slightest hesitation, Ekalavya pulls out a knife, chops off his thumb, and hands it over to Dhrona. He will never ever be able to use his bow and arrow again.