CAREER AS AN

ARCHITECT

- *Peals of laughter and merriment sound from an ice skating rink where skaters can relax in the space between two huge skyscrapers dominating the New York skyline.*

- *In Montreal, a complex of retail stores, offices, and restaurants is filled with thousands of shoppers, office workers and visitors in an enclosed indoor plaza.*

- *In suburban Chicago, a large residence with wooden ceilings and walls, a stone fireplace, and a brick hearth and handmade furniture blends in harmoniously with the interior architecture.*

- *A feeling of flight is conveyed through a series of dynamic curved forms in a newly built airline terminal in New York.*

These are all dramatic examples of how architecture helps to make the world we live in more effective in fulfilling the needs of both workers and residents.

ARCHITECT — THE MASTER BUILDER

ARCHITECTURE IS DEFINED as a way of thinking about the environment, or the world we live in. Architects are highly trained professionals who are concerned with our environment, how we use energy and solar resources, and how we use the land.

The term architecture itself comes from the Greek word, "architeckton," or chief artificer or master builder, a very apt title, since in one person, the architect performs the function of the master builder. True, to carry out his or her work, the architect relies on a very important supporting team consisting of engineers, urban planners, landscape

architects, construction contractors and a host of construction tradesmen such as carpenters, electricians, brick masons as well as bankers, building product companies and many others too numerous to mention. While relying on many others in carrying a building project through to completion, the architect offers unique skills in design, planning, selection of materials and generally coordinating work. Truly, the architect is the captain of the building team, or the master builder, just as a doctor relies on the services of nurses, therapists, dietitians, social workers and a host of others in helping to guide a patient from illness to good health.

According to the American Institute of Architecture, the main professional society for architects, there are about 85,000 licensed architects in the United States. Of these, approximately two thirds are in private practice, either employees or partners of private architectural firms. The remaining third are employed by corporations, institutions, government agencies, colleges and universities and many other organizations.

Architects, with their special skills in managing building construction, estimating building costs and selecting building materials, as well as in design of buildings, can be used by building contractors, developers of land and property, urban planners, engineering firms and many other companies.

Because of this, the architect has many options to follow in pursuing his or her career. Even if one chooses to go into private practice, an architect can specialize in design and drafting, or can lend the talents and skills to sales or job development, to help manage the office, or to concentrate on some other phase of the business, construction drawings, schematics, and artistic renderings.

Architects, it should be noted, are involved in a wide variety of construction projects: from houses and residential complexes, to schools, hotels, hospitals and medical centers, stadiums, civic centers, sports complexes, office buildings and churches, temples and mosques. Architects also help to plan and design monuments and shrines to various historical and important events, such as the Vietnam Wall and the Holocaust Museum in Washington, D.C. Truly, to a very large extent the beauty and quality of life of our communities depend on the quality of its architecture.

While appearance — how dynamic or how striking a building looks, for instance — is an important characteristic of architecture, it is not the sole measure of good architecture. For example, an architect may design a building on a campus which looks clean, modern and majestic, but unless those working in the building or the students attending the university feel comfortable in their environment and can work efficiently in it, the building has failed architecturally. The same can be said about the building if the ventilation or electrical systems prove insufficient for the uses to which they are intended or if the building has been found to be not in compliance with zoning requirements, environmental pollution regulations and a host of other rules. So you can see that architecture is very important in our society and while the architect cannot be skilled in all phases of building design and development, he or she must have working knowledge of all of the various forces which affect the design, and how to blend all of these forces into one harmonious and pleasing architectural whole.

ture, a period which saw the creation of such architectural masterpieces as Versailles, Windsor Castle, and El Escorial.

In modern times, the period since the end of World War II has seen many changes in the way we look at our physical environment. In the late 1940's there did not seem to be any kind of a challenge which could not be surmounted and we have seen the development of new interstate expressways, the regional shopping center or mall, the international airport, integrated oil complexes, the nuclear power plant, huge theme parks such as Disneyland and Disney World.

The 1960's and the 1970's saw people reacting, sometimes violently, to traditional cultural institutions. This was the period which saw the birth of the conservation movement, the equal rights movement, the move toward greater racial equality, and other world concerns, and this was all reflected in our architecture.

In this century, architecture throughout the world, but especially in the United States, has been greatly influenced by two men: Louis Sullivan, who with his partner Adler designed the Carson Pirie Scott Building and the Auditorium Theater and Hotel in Chicago, and by perhaps the most influential and distinguished architect of modern times — Frank Lloyd Wright, who coined the well-known architectural expression that "Form must follow function." In other words if a building is to be a college or university then its design must be done in such a way as to make for a more effective environment in which to study.

AN ARCHITECT'S DUTIES

TO A GREAT EXTENT WHAT you do in an architectural firm will depend on your particular specialty or interest. For example some architects are more interested in customer relations or developing new business — hence they may devote the larger part of their energies to this phase of the business.

Others may prefer the creative aspect of architecture and devote their efforts to the drawing board, coming up with artistic and structurally sound creations, based on discussions with the clients and other executives from the firm who work with the client. Still other architects spend the greater part of their time and energies checking out requirements of zoning, code regulations, and regulations pertaining to heating and ventilation, electrical systems, plumbing, and infrastructure, especially in a large project. So you can see the work is quite varied and offers many options depending upon your interests and talents. But in general, the work that flows through the architectural office, where most architects are employed, follows along four stages, as outlined by the American Institute of Architects: schematic design and predesign studies, design development, construction documents, and the building or construction phase itself. Let's examine each of these stages in detail:

Pre-design and Schematic Design Studies

Here you as the architect must translate the owner's requirements and needs (helping the owner to a realization of his requirements is often a part of this step), into a logical building plan, taking into account information on the site and budget. But to do this you most likely will need to do an artistic sketch or rendering of the building, and an explanation of the design so that the client can understand what is involved.

In arriving at a pre-design, you must also consider a host of factors such as city, county or state building codes, and zoning requirements as to the type of building, fire resistive construction, legal restraints, as well as structural and mechanical requirements so that the pre-design can actually be put into effect after you get the client approval.

Here you must develop a proposed construction budget so that the client can intelligently plan for financial requirements.

Preliminary Design or Design Development Studies

Once the initial plans have been developed, the work really begins. You must analyze requirements for the site and surrounding areas, utilities, laws, codes, ordinances and soil reports, and confer with federal, state, municipal and other agencies when necessary.

A lot of work is involved in preparing the creative design. Schematic drawings must be translated into specific plans detailing form, design, and grouping of the structure and its relationship with the surrounding area. Then you must do an analysis to determine structural, mechanical and electrical requirements.

Construction Documents

Upon approval of the preliminary design, construction documents are prepared showing location of materials, construction and detail features. The documents also provide specifications of materials and methods to be used for the particular work and specifications for general work, mechanical and electrical systems, structural work and site development.

Next you file these documents for approval from proper federal, state or local agencies and these are then coordinated with general drawings.

These then form the basis for soliciting construction bids and negotiations with contractors to put up the actual building. You then take the bids which are usually sealed, tabulate them and select the winning contractor.

In this stage, it is worth noting that computer assisted design (CAD) is being used increasingly by architects to prepare the construction documents. CAD improves the speed and accuracy of the drawings detailing all basic architectural, structural, plumbing, heating, cooling, electrical and other mechanical systems. Other CAD prepared drawings may show interior space arrangements, cross sections, and building elevations. Accompanying the plans is a book of specifications detailing materials to be called for, methods of installation, and other requirements.

The Actual Construction

After a contractor has been selected and a building permit issued, you act as the owner's agent and visit the job site in all stages of construction — your primary concern is to make sure that the contractor is following through on all job specifications as shown in the building plans and documents.

Here you would check detailed shop drawings, check the progress on the building and authorize contractor's requests for payment, and okay any additional work which may not have been foreseen.

In this phase of the work, it is important that you be fair and professional in all of your dealings. While representing the rights of the client, you must also process payment requests swiftly and make certain that the contractor is aware of any problems which may arise so that these can be corrected smoothly and expeditiously.

The main interest of all concerned is to make sure the building is completed on time and within budget.

Upon completion, you issue a list of items to be corrected or completed (known as a punch list). When this is done, a certificate of completion is issued and final payment is authorized.

You should understand that this is just a basic description of the work. A complicated building project could require more delegations of duties and much greater emphasis on specialization. In a large office, you would probably specialize on some portion of the project, perhaps on the elevators or the lobby, for example, and you might seek to develop special competence in some part of the practice as a consultant in an allied profession such as mechanical, structural, or civil engineering, landscape architecture or environmental planning.

Other areas in which you might specialize: conceptual and preliminary design, interior design, production supervisor, specifications writer, and construction inspector. Ultimately, however, there is one architect responsible for the overall design and development of the project.

If you have your own architectural firm, you are also called upon to apply sound business principles to the operation of the firm. You would have to have some idea of accounting, personnel management, tax matters and other business matters.

You would also need to be able to understand contracts, write specifications and prepare drawings to conform to legal requirements and to protect your client as well as yourself, as the chief architect.

Because the work is so complex and important to the public safety, health and welfare, all 50 states require that architects be licensed.

To see how all of these various parts of the architect's work fit together, let's see how they apply on one job — the construction of a new high school.

Architect's Project: A New High School

The local school district has decided to build a new high school and your firm has been hired to handle the project. You are to make studies on location, function and cost of the school. Often such public agencies as school boards, employ architects to handle in-house services on school buildings. They also

ARCHITECTS DISCUSS THEIR PROFESSION

Consultant in Architecture

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The university I was educated at was excellent. In fact, one of the principals of our consulting firm was one of my profs at the University and we are still associated after all of these years.

I finished my schooling and graduated in 1955. At that time architecture was a four-year program. But now it is a five-year program and will probably be expanded to six years in the future.

There were only two options available then — engineering or the design option. After the second year, the program varied according to which option you were following.

There was, and still is, a three-year internship before you could take the state exam for licensure, but I had worked several summers while in school, so I was eligible to take the exam in 1956, just a year after I graduated. I took and passed it the first time. It's a four-day exam, over 36 hours, very strenuous and stressful. It's quite unusual for anyone to pass it on the first try. Often students take it three or four times. But you only have to take those sections which you have failed, so that makes it easier. I then joined a practice which had been started by one of my classmates the previous year and we became partners and were associated in practice until 1991, when we closed the firm. Now I am with a consulting firm which we had started in 1980, with my former college professor as an associate. We work with anyone who has a problem relating to the building industry. It could be someone with a building with several problems such as a roof leaking, masonry cracks, etc. We consult with the building owner or the contractor to resolve these problems to see what caused them. We also do inspections of large building complexes which are on the market. Prospective buyers require a systematic inspection of the property to see if there are any serious problems in construction or maintenance.

I became involved in architecture when I was in high

school. I loved drawing and noticed by accident that there was a room full of people drawing and found that it was a course in architecture so I enrolled in it immediately and had two years of architectural design in high school which were along the lines of what was being taught at the University, so I was well prepared for college work.

In our practice we specialized primarily in industrial work. Architects tend to specialize because that is the work which seems to come to you through the connections that you make through friends, associates and so forth. A certain line of work comes in and as you do more and more of that kind of work, the work migrates to you. Any architect who is properly trained can do any kind of work — schools, offices, industrial, fire stations, residences — any style of architecture, but the public's perception is that an architect cannot design a school unless he has done schools in the past, so they will seek people out with experience in this field and that's how specialties come about.

We have designed well over 2,000 industrial buildings in the 35 years of our practice. But in the consulting business, it's not so much our experience with any special kinds of building as it is experience and knowledge of building problems and all of the technical aspects of architecture. And over 35 years we have learned a great deal about the technical and the bureaucratic aspects of the work.

Unfortunately, you are never told exactly what your duties will be in practice by those involved in your education. Perhaps they do not want to discourage you from continuing. But in reality what we are taught in school is a lot different from what goes on in the practice.

For instance, there is a tremendous amount of effort to teach you the proper techniques of drawing and you spend a lot of time on the drawing board with freehand and mechanical drawing. You are also given a lot of time in design and in evaluating all of the things that go into the building's design. When you get into practice only about 20 percent of your time is spent on drawing and design and the balance is managerial and clerical, which requires specifications writing, contract writing, client meetings

and presentations, and administration of the building program.

In a large firm it's hard to get a cross section of knowledge about the building program. Generally in a large firm the work is more segmented and specialized. You may be working primarily on stairways or elevators or lobbies as opposed to the entire building program. I recommend that early on you try to get into a smaller firm — perhaps as a summer job during school to get acclimated to what you do in an architect's office and how to do it. Chances are you will get much more of a cross section of the work because you have a variety of duties in any office of fewer than 10 people.

Once you have the experience, you will become more involved in the process of talking to clients — what it's like to do preliminary sketches and to come up with a solution to a building problem and then on to the final design and the execution of the building itself.

With experience, it's a good idea to move and to work for a larger firm to get a variety of building experiences — other types of buildings, not merely residential projects. Perhaps you will be doing more commercial work in a larger firm.

Then it's your choice. By that time you should have determined what you like about the business — what segment you are most comfortable with, and you will be better able to determine whether you want to work for a small or large firm. You might want to open your own office if you have some connections which will bring you work or you may want to go with a large firm and work on larger building projects.

The greatest thing about this field is that it's creative. I know of no profession that gives you as much opportunity at creativity as architecture. Basically you sit down with a blank sheet of paper and a pencil and create a three-dimensional object that hopefully will be around long after you're gone. We have a tremendous latitude in creating every inch of space in that building — how it's built, the materials used. It's a tremendous challenge.

In practice, every project that comes in has a pro-

gram — sometimes the clients come in with the program and know precisely what they want. In other cases they do not, but may have a general idea of it. For example, a client may want to build a small office building. The person may own property on which to build the office building and may want to build as large a building as is permissible. But there may not be any idea of how big that building can be — how many stories. So the person engages an architect who will study the site, zoning and building restrictions for that property, as to what is allowable and then come up with a preliminary program or design. The architect will do the building just as high as possible and provide space for parking for so many cars. And storm water retention will be needed and many other requirements. The architect would list all of the technical problems mandated by the building and zoning codes, and these would have to be solved in the preliminary program.

Most students come out of school and want to design buildings in a way that will enhance their reputation, but they mistakenly think they know everything there is to know about building. But the young graduate has just touched the tip of the iceberg. This beginner has not yet learned the economics of building — how for instance to select structure systems, building materials and methods of application. This person knows very little of the problems that you may run into — leaking roofs, walls.

It make take a few years, four years, ten years before the first real opportunity to design a building since an architect must learn all of the other aspects of building design, codes, zoning restrictions before being qualified.

Right now, most buildings going up are municipal buildings — fire stations, police stations, schools and the like. But no question, as the economy goes up, demand for buildings goes likewise. Population is still exploding so there will be a constant need for new cities, new shopping centers, new housing projects, factories, office buildings, and so forth. The more diversified you are, the more able you will be to survive economic downturns. Industry always rebounds and with it comes a need for buildings and people to do these buildings."

Melvin S. Mathison FAIA, FISA, AIA

WHAT IT TAKES TO SUCCEED

OF ALL THE PERSONALITY traits required to succeed in architecture perhaps none is more important than imagination. Are you creative...are you an idea person...architecture requires the continuous development of new and creative solutions to building problems.

But more than that, the artistic temperament must be balanced somewhat by common sense. The ability to balance the creative or the ideal with a sense of what is practical and achievable.

Beyond that, the work requires the ability to communicate ideas to clients. While being able to draw can be very helpful, it is more important to be able to conceptualize visually and to understand spatial relationships.

Good communication skills — both written and oral — and the ability to work either independently or as part of a team are very important.

Knowledge of and familiarity with computers is a must since most firms use computers not only for word processing but for specifications writing, two and three-dimensional drafting and financial management. Indeed there are many software programs written specifically for architecture firms in each of these areas. In addition, a knowledge of CAD is extremely helpful since most architecture firms are already involved in this area or are planning to become involved in the near future.

Other very desirable qualities in architecture are: synthesis — can you take a welter of details and blend them into a logical, rational whole.

Perseverance — can you see a project through to completion despite irritating delays and interruptions?

Scientific ability — are you adept in math, engineering and other scientific studies? The architect is almost daily involved in problems dealing with mechanical, power, lighting, sanitary and other technological problems.

Massing — can you judge the distance between objects, and their bulk, height, length and width? The architect must have a good eye for size and shape.

Finally, how skilled are you at visualizing such things as space, color and texture — all very important in creating a work which is stimulating and pleasing to the senses.

If you can answer yes to most of the above traits or qualities than chances are you have the personality makeup which would be required to succeed in architecture.

CONSIDER THE PROS AND CONS

BY NOW YOU PROBABLY HAVE some idea as to whether this is a profession which would be of interest to you.

Here are several other considerations — both pro and con — which may help you to decide if you want to pursue this career field.

On the negative side, many practicing architects state that the actual practice is far from what they expected when enrolled in architecture school. In

many cases students enter the profession thinking they are fully qualified to handle any assignment that may come their way, when often they are not. Usually, they lack the specific experience in the practical application of their knowledge that is required to do the job.

Even those architects who have many years of experience behind them may not be fully qualified to handle all aspects of a given building project. The bigger and more complex the project, the greater the likelihood that consultants in various areas of construction — electric power, sound stages, x-ray and operating room suites in hospitals and many, many other areas — will be called in for their expertise.

If you are not careful, you can get pigeonholed in one particular segment of the job — in developing details or parts of the overall project, after the creative developmental work has already come off the board. If this is what you want — and many in the field are satisfied with this — fine. But if you want to advance to the higher and better paying jobs in the firm, you need to gain experience in all phases of the work — preliminary and developmental, construction documents, construction management, practice management, and so forth. And this can only be done if you have shown that you have the capacity to handle additional responsibility and are ready to advance to more complex aspects of the work.

Perhaps the greatest portion of the work in architecture school — is devoted to design and drafting. However in actual practice, only a small part of the work is occupied by design and development, with a major part of the work being taken up by checking out plans against zoning and code requirements of various governmental agencies, local, state and federal. This type of detail is a very important part of the job and must be completed before starting the final construction documents.

While the work can be and is highly creative, it is not necessarily the most creative or talented people who are the most highly rewarded. In many cases, those who are especially talented in bringing in new business will receive the highest salaries and will rise to positions of prominence in the firm most rapidly.

Considering the extensive training period involved, anywhere from five to eight years of schooling, plus internship, the field is not as high paying as others with comparable requirements in schooling. It has been said that you do not enter this field primarily for the money, but rather for the work itself.

Finally, the work is highly cyclical. During good times, there probably will be more work than the firm can handle. You may have to work overtime to handle the volume of work coming in. But in times of downturns, there may not be enough work to keep the staff fully employed; and it is entirely possible that unless you have seniority, guaranteed salary and tenure in the company, you may be let go.

There is great satisfaction in seeing your name affixed to a prize winning entry in an architectural competition, and the top ranked architects have excellent opportunities for advancement and top salaries within the firm.