What Is Design?
Some Questions and Answers

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What is design?

Design is a profession that is concerned with the creation of products, systems, communications and services that satisfy human needs, improve people's lives and do all of this with respect for the welfare of the natural environment. From kitchen utensils to computer systems, from print communications to exhibitions, web sites and information systems, design affects the way in which all people live, work and play. Design involves problem finding, problem solving, analysis, invention and evaluation guided by a deep sensitivity to environmental concerns and human-centered aesthetic, cultural and functional needs.

Design and Art

How are designers and artists different?

Designers generally work objectively on teams (sometimes as individuals) to create the products, systems, communications and services needed by society. They are outer-directed, work for others, and use a wide range of design and planning tools to collect and organize information in the process of developing the things people need and want to improve their quality of life. Product designers work primarily with artifacts, systems and hardware; communications designers work mostly with messages, information systems and software. Both frequently work with professionals from other disciplines in the development of complex systems requiring broad expertise.

Artists work mostly subjectively with the motivation of self-expression to produce works fulfilling aesthetic and intellectually stimulating objectives. They are inner-directed, usually work for themselves (or individual clients), and use primarily intuitive and personally developed skills. Some techniques and processes overlap (the perceived similarity between designers and artists stems from a common use of visual media to communicate ideas), but the fundamental methods, results and—most important—goals are quite different.

Product Design and Engineering

What is product design and how is it different from engineering?

Product design and engineering are both concerned with the planning, development and production of products—simple ones like can openers and others that are actually complex systems of products such as cars, airplanes and whole transportation systems. Product designers tend to concentrate on the needs of people and the ways in which products can be made safe, easy to use, and a comfortable fit with the way people live. *Human factors design* and *human-centered design* are terms used in design to highlight the special concern of the product designer with the problems of improving the quality of man-machine relationships.

Engineers concentrate more on the problems of making a product work well for the functions it performs and optimizing its

design for production. Product designers deal with concept, human factors, appearance and performance; engineers work with details, functionality, performance and production. In simplistic terms, it is sometimes said, "designers work with thing-to-people relationships, engineers work with thing-to-thing relationships". While their specializations differ, there is also considerable common ground, and product designers and engineers frequently work together on teams.

Communications Design

What is communications design and how is it different from marketing or advertising?

Some of the techniques and vocabulary of advertising and communications design are the same. Both use the elements of visual language—type, image, color, texture and composition—to create visual messages. Marketing and advertising are ultimately concerned with persuading consumers to purchase products or services. Sometimes communications design is also directed to this end, but there are many other applications for communications design. For example, communications designers plan and develop exhibitions, publications and information systems for industry and institutions. Educational materials, multi-media productions and web sites are increasingly used in schools and to support learning in growing fields of industrial training, continuing education, and professional seminars. Conventional information systems including popular magazines, text books, technical manuals and corporate communications all require communications design to organize information, increase clarity, enhance effectiveness and ensure reader satisfaction. New forms of communications also need design, and communications designers are breaking new ground in the exploding world of the Internet.

Design Planning

What is design planning and how does it differ from design itself and other forms of planning?

Design planning is a term coined to collectively identify those aspects of design devoted to the strategic, conceptual and methodological concerns of design. As would be expected, design planning is more concerned with the initial activities encountered in a design project: establishing purpose and fundamental directions, exploring "what ends" the project should address (as opposed to "how" the ends should be achieved), developing a concept, or plan, that can be the project direction for detailed design activity, and assembling, customizing and/or creating the process, methods and tools to conduct the project.

In distinction to other forms of planning, design planning is concerned intimately with the nature of the product, system, service, institution, etc. being planned. *What it will be* is of essential interest. A key product of the design planning process will be a conceptual description of what is to be produced. Supporting that, may be a financial plan for how to fund development and how to price components and associated services, an implementation plan for how to stage development and when to introduce offerings to the market, a marketing plan for how to target niche markets and how to communicate product values— and other plans as appropriate. All of these involve specialized skills and are important to the overall business or institutional plan. The design planner may be involved in developing any or all of them, but his or her primary responsibility is the development of the conceptual plan, without which little else can be done.

Design and Fashion

To what extent is design involved with fashion?
Among the general public, there is great confusion about the nature of design because of the extensive use of the word "design" to mean fashion in advertising avant-garde chic. Fashion design is taught in some schools which have programs for clothing design, and some fashion designers have now extended their interests to products other than clothing—toiletries, grooming aids, luggage—even chocolates. Fashion designers are stylists, however, and as such must continually seek new forms without regard for matters of functionality, performance, human factors or almost any other concern. The confusion for the public arises from the fact that other design professions also are concerned with issues of aesthetics. The difference is that other design professions do not deal with aesthetics exclusively, nor in a way that places highest priority on the whimsy of the "new".

Design and Computer Technology

Are design professions using computer technology?
Almost all designers work extensively with computers. Some designers in the most progressive corporate design departments and those working in leading consulting offices are also involved in developing new uses for computers in design. Computer-aided design (CAD) affects a wide range of design jobs, and the even wider spectrum of computer-supported design is an area of intense interest and research. Design support systems are among many subjects of research at the Institute of Design; other schools are also beginning to include subjects in their curricula that depend on computer technology. Students familiar with the new processes employing computers are in increasing demand, especially in the high technology industries, where they are also receiving excellent salaries.

Job Outlook

What is the job outlook in design?
As in other professions associated with industry, job opportunities for designers are affected by business cycles. There are differences, however. Design, more than many other professions, respects talent; and for young designers with solid academic and professional records, there are almost always good opportunities. Furthermore, the acceleration of change, the availability of new technology and the growing needs of society and industry in a global economy increase the needs for design continually. In contrast to a number of other professions, the number of designers being educated is not out of proportion to the number of jobs opening in the field each year. Finally, the mood of industry is changing to express major interest in finding candidates for top management who have experience in innovative thinking, problem finding and problem solving—the things that designers do every day. Good designers get and will get good jobs.

Potential Earnings

How much money can designers earn?
Good designers—those who have prepared themselves with a good education and who are motivated to succeed—have excellent opportunities for financial reward. A young designer with a Master's degree may start in a professional consulting office at over $50,000; in a corporate design department the figure may be slightly higher: nearer $60,000. Senior designers make appropriately higher salaries, generally comparable to those of senior engineers, and design managers have salary patterns similar to other departmental managers in most firms. Owners of design offices, principal partners, and independent consultants are limited only by their energy and ability; salaries at this level can be quite high.

Design graduates with specializations in design theory, methods and process as well as the use of advanced computer techniques are increasingly being sought by employers who recognize the growing importance of sophisticated design thinking. Compensation is commensurate with preparation, but an additional $5,000 to 10,000 per year has not been unusual for Institute of Design graduates and, in general, salaries for these graduates parallel those for high-end engineering fields.

Career Change

What about changing a career?
Design education is good education because it focuses on problem-finding and problem-solving as general processes, with visualizing concepts, working with teams and supporting team work with design methods as its specializations. This is valuable nearly anywhere; and a good design education, therefore, is useful for many professions. It is also an exciting way to pursue a career; and many practicing design professionals, as you might expect, began their careers in other fields. The range of activities within design is broad and extends from hands-on research and development to management and planning.

Aptitude

What are some indications of design interests and aptitude?
Interest and aptitude for the design fields is sometimes hard to recognize. However, the experience of design educators suggests that there are some general characteristics that may identify a student with strong design potential. First, there is a general interest in the physical world—in understanding the things of the natural and man-made world, how they work, and how people relate to them. Second, there is an ability to play with abstract concepts in visual imagery—or mathematics, or language. Third, there is an inquisitive drive to fathom the unknown—always asking why, how, and "what if". Children who dissect and tinker with ideas and objects have the characteristic. Fourth, there is the ability to visualize—to imagine new ideas and the ways in which concepts can be realized. Fifth, there is general aptitude—the ability to bring reasoning skills to bear on the solution of problems through logical thought processes. Sixth, there is an overall enthusiasm and optimism about life and a belief in the importance and possibility of creating change. Finally, there is the desire to "put it all together"—rather than specializing, to find a career in which ***all*** talents and abilities can be brought to bear.

High School Preparation

What high school courses are good to take?
Well-prepared design students have broad interests and solid academic backgrounds in mathematics, the physical sciences, social sciences and humanities. To the extent possible, they will probably also have taken art, technical drawing and other courses where they could broaden their preparation. Students sometimes associate design with the fine arts and, incorrectly, plan their high school education around "creative" craft and skill courses at the expense of those in the academic category. While design requires creative and intuitive thinking, it is also intellectual and demands rigorous, logical, informed thinking to solve problems in the real world. The best prepared student is one who has taken a demanding program with both depth and breadth and has done well across the board.

College Preparation (for Graduate School)

What undergraduate preparation is best for a design career, assuming additional graduate education?
In today's world, a bachelor's degree is often not enough. For the U.S. and other more developed countries, the central thrust of the economy is moving from service to knowledge industries. The shift is a continuation of trends that began in the nineteenth century with movement of the primary "work" of the public from agriculture to manufacturing and then manufacturing to services. Manufacturing jobs are routinely passed on to developing countries now, and, increasingly, service industry jobs are also moving offshore. The new emphasis for the most developed countries is on those professions that *create knowledge.*

Design—and the emerging specialties of design, design research and design planning—are central players in the knowledge professions along with the sciences and research arms of many other fields. Given this context, it is wise to consider preparation for a career in design from a longer perspective, assuming from the beginning that graduate education will be desirable, even necessary. In this longer view, a greater range of choices emerges for the first step, undergraduate education.

In a world that seemingly values greater and greater specialization, design professionals continue to benefit from broader and broader knowledge. Design is one of the few professions in which one's ability actually increases with age. Experience and knowledge about many subjects allow creative justapositions of ideas and innovative development of relationships simply not visible to those whose knowledge is specialized and compartmented. Designers need to be generalists in their approach to content, specialists in the application of the methods of design. For a designer, more is more when it comes to knowledge. So, a broad education is desirable, and an undergraduate education that opens many doors—science, humanities, arts, technology—provides an excellent foundation for a more specialized graduate education in design. The best preparation, accordingly, would be a liberal arts program with careful additions of elective courses in the sciences, arts and technology—or, a general engineering program with careful additions of elective courses in the humanities and arts.

Time to Degree

How long does it take to learn design?

Most design undergraduate programs are four years in length; some are five. In parallel with required academic classes, programs typically allocate 1-2 years for basic skills preparation and 2-3 years for professional preparation. Even after graduating from one of the best programs, however, students should expect a 1-2 year period in the organization that hires them when they will learn the specific procedures of the organization's professional practice.

With the continuing maturation of the design professions, an increasing number of students who study design as undergraduates are taking a two-year professional Master's program in design after their undergraduate program. The program fulfilling this need at the Institute of Design is the MDes (Master of Design), a terminal degree for those interested in professional development. Some schools are also beginning to differentiate research and professional programs. The Institute of Design now offers a one-year, special program (MDM, Master of Design Methods) for experienced professionals desiring to learn and work with the most recently developed theory and methods, and a PhD program (the first PhD degree in design in the United States) for those interested in design research and university-level teaching. The PhD requires a minimum of three years study beyond the Master's degree.

More and more often now, graduate design programs admit students with undergraduate degrees in fields other than design (the Institute of Design has done so since the 1950's). In this case, there is usually a period of "removing deficiencies" during which the student takes a fast track through selected foundation courses to build enough skill and attain enough background understanding to be able to succeed in graduate level classes. At the Institute of Design, this foundation program takes one year. "Catch-up" then continues in a mix of individual and team projects at the advanced level of the regular MDes program.

Finding a Program

Where are design programs found?

Within universities, some programs are in colleges of fine arts, some in colleges of architecture or engineering. Very rarely (the Institute of Design is one), there are programs that are in full colleges or schools of design within a university. There are also design programs in independent art schools and a few that are totally independent in schools of their own. In general, design programs in universities take better advantage of the resources available to provide the broad range of preparation necessary to best support design as a process for concept development and problem-solving. Programs in independent art schools tend to treat design as craft, commercial art or form study. Independent schools usually take a training approach rather than an educational one and concentrate extensively on skills.

Selecting a School

How do you select a design program?

Selection of the design program that is "right" for you is very important and can be difficult without some guidance. Schools differ in their approaches to design and to design education. Among the more important issues to be considered are:

student/faculty ratios, program flexibility, attitude toward academic studies, design philosophy, up-to-dateness, breadth and depth of program, faculty credentials, and alumni records.

Student/faculty ratios should be relatively low because many courses must be taught in studio or "project learning" classes. Flexible programs allow students to select more classes to meet their special goals. Some programs have little or no academic content (mathematics, sciences, humanities, etc.); others have academic as well as professional components. A wide range of design philosophies exist: some schools treat design as exclusively the study of form; some emphasize commercial skills; some are highly theoretical; some are very practical. Schools vary considerably in their interest and ability to stay abreast of new technology—most particularly, computer technology. In their approach to the subject matter of design, some programs take a narrow view of what constitutes a field, others encourage broad learning across design disciplines. Some programs offer only basic courses, others have elective courses with in-depth specialties. Faculty achievements professionally and academically may vary considerably; their work will tell you a great deal about their approach to design and teaching. Finally, the success of a school's alumni says something about the quality of its preparation, although time lag makes this more of a check of consistency.

It may seem difficult to obtain this kind of information, but conversations with university personnel will usually reveal a great deal. Where possible, ask to see Bachelor's or Master's level theses or reports of final comprehensive projects; these show the work of the students at their best and also reveal some of the interests and abilities of the faculty. Visit various schools, shop around, compare notes and ask questions about the topics listed above.

Faculty

Why is a good faculty important?
The quality of the educational experience is ultimately dependent on the quality of the faculty. This is true in any discipline, but in design (and some other programs where project-oriented learning is a primary educational method), faculty quality is especially important. The reason is that much of design education is hands-on, based on research, development, experiment, prototyping, testing and criticism—rather than the conventional lecture/recitation/exercise paradigm of classroom study. This means that the faculty must have experience, broad academic preparation and the motivation to think and work directly with students on projects for which answers are not known beforehand.

Experience establishes understanding of the business environment and the role of design in the planning and implementation process. Academic preparation provides the basis for a broad, generalist view of the problem-solving process. Motivation stimulates the quest for excellence and encourages the patience necessary to guide students through the trial and error process of learning to discriminate between quality and mediocrity. Motivation tempers the desire to achieve with an appreciation for what is worth doing; academic preparation establishes the knowledge necessary to bring about change; and experience guides the application of design process, methods and tools to the accomplishment of meaningful results.

Portfolios

Is a portfolio important?
A portfolio is useful as an indication of interests and skill development. It is required for some programs, particularly those in colleges of fine arts or independent art schools. A portfolio is not required for entrance into IIT's Institute of Design and other programs with similar design philosophies.

Most important for the Institute of Design is strong academic preparation as evidenced through performance. Broad interests and participation in a range of activities are also valued, since design is a collaborative profession demanding mature cooperation among team members. If an applicant has a portfolio, it is useful for identifying strengths and weaknesses in visualizing skills; if an applicant does not have a portfolio (as is usually the case for applicants with degrees other than design), it is not a problem.

Learning More

How can I learn more about design?
Information about the design professions is available from many sources: public lectures and exhibitions, professional societies, professional design offices and corporate design departments, schools and universities and, of course, magazines and books,

A sampling of interesting books that explore design would include:

- **Vision in Motion.** Laszlo Moholy-Nagy. *Chicago: Paul Theobald and Company, 1947.*
- **What Is Design?** Paul Jacques Grillo. *Chicago: Paul Theobald and Company, 1960.*
- **The Nature of Design.** David Pye. *New York: Reinhold Publishing Corporation, 1964.*
- **Problems of Design.** George Nelson. *2d ed., New York: Whitney Publications, Inc., 1965.*
- **Moholy-Nagy. *Experiment in Totality.*** Sybyl Moholy-Nagy. 2d ed., Cambridge, MA: The MIT Press, 1969.
- **Design. *Serving the Needs of Man.*** George C. Beakley and Ernest G. Chilton. *New York: Macmillan Publishing Company, 1974.*
- **How to See. *A Guide to Reading Our Manmade Environment.*** George Nelson. *Boston: Little, Brown and Company, 1977.*
- **Design. *Purpose, Form and Meaning.*** John F. Pile. Amherst, MA: The University of Massachusetts Press, 1979.
- **How Designers Think.** Bryan Lawson. *Westfield, NJ: Eastview Editions, Inc., 1980.*
- **By Design. *Why There Are No Locks on the Bathroom Doors in the Hotel Louis XIV and Other Object Lessons.*** Ralph Caplan. New York: St. Martin's Press, 1982.
- **50 Jahre New Bauhaus. *Bauhaus-Nachfolge In Chicago.*** Peter Hahn and Lloyd C. Engelbrecht. *(in German and English), Berlin, Germany: Argon Verlag GmbH, 1987.*
- **Design Thinking.** Peter G. Rowe. Cambridge, MA: The MIT Press, 1987.
- **Design in Context.** Penny Sparke. *London: Chartwell Books, Inc., 1987.*
- **The American Design Adventure.** Arthur J. Pulos. *Cambridge, MA: The MIT Press, 1988.*

   • **Eames Design.** *The Work of the Office of Charles and Ray Eames.* John Neuhart, Marilyn Neuhart and Ray Eames. *New York: Harry N. Abrams, Inc., 1989.*
   • **Design Discourse.** *History, Theory, Criticism. Victor Margolin.* Chicago: *University of Chicago Press, 1989.*
   • **New Thinking in Design.** *Conversations on Theory and Practice.* C. Thomas Mitchell. *New York: Van Nostrand Reinhold, 1996.*

Most designers are glad to respond to serious inquiries from students. Perhaps the easiest way to get first-hand information, though, is to call a university or school and talk with administrators or faculty members about opportunities in the design fields. A letter of inquiry to a design program will usually return specific information about programs and fields. Best of all—a visit—will answer many of the questions raised above. The Institute of Design welcomes such inquiries.

Institute of Design
The Institute of Design is exclusively a graduate school. It offers programs of study that lead to the Master of Design (MDes), Master of Design Methods (MDM) and PhD in Design. All programs allow students to study design as an integrated field with concentration in one or more areas of specialty. While giving students a broad understanding of the theory, methods, knowledge and practice of design, the programs are particularly concerned with two areas: design planning, which deals with strategic issues, concept formation and the methodology of planning; and human-centered design, specialized into product design and communications design, both of which are concerned with tactical design issues, the development of form and function, and human-factors methodology applied to design in detail.

   The school welcomes students with undergraduate degrees other than design. The average age of entering students is usually around 27 to 29, and the makeup of the student body is approximately half with design degrees, half with other degrees; half from the U.S. and half from other countries. A goal is diversity of background, both academic and cultural. Students with broad interpersonal experiences will be better prepared for work in an increasingly interconnected world.

For further information, please call or visit:

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