



AIA Best Practices:

A problem well stated: Owner project requirements

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Summary

A well-written owners project requirement (OPR) is the key to creating unity of intention in a project.

Toward a New Architecture

In 1923, Le Corbusier published *Vers une Architecture*, and the first English edition was published in 1927 as *Toward a New Architecture*. The publisher's preface to the 1946 edition states that it "first introduced the writings of Le Corbusier to the English reading public and was the first popular exposition in English of that 'modern movement' in architecture which was gradually establishing itself on the Continent of Europe during the first quarter of [the twentieth] century." My initial interest in pulling this book off the shelf was to find the context for Corbu's famous quote, "The house is a machine for living in," in the chapter on Airplanes:

The lesson of the airplane is not primarily in the forms it has created, and above all we must learn to see in an airplane not a bird or a dragon-fly, but a machine for flying; the lesson of the airplane lies in the logic which governed the enunciation of the problem and which led to its successful realization. When a problem is properly stated, in our epoch, it inevitably finds its solution.

The problem of the house has not yet been stated.

Stating the problem: The building program and regulatory requirements

In architecture today, to what extent is the problem stated? Who states the problem? Can the problem be well stated?

To some extent, the architect's client states the problem through some expression of a building program, which is often part of the owner/architect agreement. The extent of this program varies widely and is not necessarily proportional to the size and budget of the project. Building use or project type would be a better indicator of program development than project size.

A developer of a high-rise condominium project in a major urban center may initially state the program in little more than a paragraph by asking the architect to design a "luxury condominium project with ample amenities maximizing the number of units and FAR permitted by the given site." The developer may be familiar with the architect's work or the two may have worked together on a previous project. However, a

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medium or large law firm looking for new space may provide the architect with a small book setting out individual space and quality requirements for the project.

Hospital and institutional projects may also start with well-developed space program requirements. Government, corporate, and institutional clients may present the architect with standards they have developed, which could include requirements specific to roof systems, door hardware, and MEP/FP requirements. These requirements often result from good intentions but can suffer from being outdated or having other types of deficiencies.

Another way the problem is stated is through such regulatory requirements as zoning laws and building codes, which are generally considered beneficial advancements. In the early days of the building booms in China and the Middle East, architects sought applicable building code regulatory requirements and would adopt codes where there was lack of clarity. In the Automobiles chapter of “Toward a New Architecture,” Le Corbusier noted the role of standards in architecture:

We must aim at the fixing of standards in order to face the problem of perfection.

The Parthenon is a product of selection applied to a standard.

Architecture operates in accordance with standards.

Standards are a matter of logic, analysis and minute study: they are based on a problem which has been well “stated.”

Building codes are imposed upon the architect with the stated purpose of protecting the safety, public health, and general welfare of the occupants of buildings. Zoning laws address how projects relate to neighboring properties and seek to protect the general welfare. A project’s specifications include many references to standards; for example, specific product standards, material standards, design standards, installation standards, and test method standards. Standards are developed by industry associations, government agencies, and standards organizations such as ASTM International. Specifications also provide performance-based requirements tied to various standards. There are also recommended, non-mandatory guidelines, which serve as a reference.

Stating the problem: It’s an art and a science

Art, according to Larousse, is the application of knowledge to the realization of a conception. Now, to-day, it is the engineer who knows, who knows the best way to construct, to heat, to ventilate, to light.

– Le Corbusier, Toward a New Architecture: The Engineer’s Aesthetic and Architecture

So how do we state the problem? What is the knowledge we need to apply? What are we attempting to realize? What do we mean by design? Most architects seem to have a conception of what architectural design is, and many in the profession separate the art from the science. The art is a science and the science is an art. Architects should not be segregated into classifications of design architects and technical architects. The definitions of “design” in *Merriam-Webster’s Dictionary* are instructive: 1. to have a purpose, 2. to create, fashion, execute, or construct according to plan, 3. to draw the plans of, and 4. to devise for a specific function.

Common classifications of architectural design include conceptual design, planning, and design development. The same skill set does not apply to each of these. In some firms, particularly larger firms, architects may develop expertise in one or two of these areas. A great conceptual designer may not be a good planner and vice versa. Actually, these classifications are insufficient; the architect detailing the wall construction is also engaging in a design activity. In designing the building envelope, the architect needs to have an appreciation of the aesthetic design intent; building science; the specific performance requirements for the envelope, systems and materials; and how to arrange the various materials and systems. Design also extends into the construction phase when reviewing submittals, product data, and samples and addressing such issues as substitution requests.

Each architect on a project team should be engaged in the design of the project, regardless of his or her experience or role on the project. But in order to play their respective roles, the design team needs to have a problem well stated.

Our engineers produce architecture, for they employ a mathematical calculation which derives from natural law, and their works give us the feeling of HARMONY. The engineer therefore has his own aesthetic, for he must, in making his calculations. ... Now, in handling a mathematical problem, a man is regarding it from a purely abstract point of view, and in such a state, his taste must follow a sure and certain path. – Le Corbusier, Toward a New Architecture: The Engineer's Aesthetic and Architecture

The design of a building is the product of the efforts of the conceptual design architect, planners, designated design architects in various phases, and engineers, as well as the architects who draw the toilet room elevations, write the specifications, and detail the building envelope.

How do we derive a problem well stated? How does stating a problem well improve architecture? The references to Le Corbusier's writings are not to suggest a path to architectural greatness but rather to illustrate that stating a problem well—including approaching problem solving from an engineering or technical viewpoint—is architecture as well as planning and conceptual design. The point is also that those solving the engineering and technical aspects of projects are engaged in design and contributing to Corbu's HARMONY. The critical elements of good architecture are, then, having a purpose, creating according to a plan, devising for a specific purpose, and stating the problem well. Moreover, the problem should be well stated before the design process begins or, at the least, very early in the process.

Stating the problem: sharing the vision—in writing

For most projects, the problem is insufficiently stated. Owners partially state the problem when engaging the architect. And although regulatory requirements, standards, and performance criteria all contribute to a statement of the problem, they do not *sufficiently state* the problem. A more unified, comprehensive plan is needed at the conceptual phase.

The business of Architecture is to establish emotional relationships by means of ray materials.

Architecture goes beyond utilitarian needs.

Architecture is a plastic thing.

The spirit of order, unity of intention.

The sense of relationships; architecture deals with quantities.

Passion can create drama out of inert stone.

– Le Corbusier, Toward a New Architecture: The Lesson of Rome

Unity of intention requires purpose, a well-stated problem. A successful project depends on the owner and the design team having a shared view of the problem; understanding the problem is a prerequisite to design. In order for the owner and the architect to achieve a clear expression of the problem, it needs to be written. Intuition is not sufficient.

Owners and architects often start with a basic building program, a site, and regulatory requirements. Building performance criteria, usually tied to sustainability goals such as achieving LEED Silver or joining the AIA 2030 Commitment, are often added. Building performance, however, is more than addressing sustainability goals, and a well-stated problem is more than well-stated building performance requirements.

The commissioning process, as stated in the foreword to ASHRAE Guideline O, is a quality-oriented process for achieving, verifying, and documenting that the performance of facilities, systems, and assemblies meets defined objectives and criteria. This process is well established for HVAC&R systems in the ASHRAE Guideline I for system technical requirements. In 2006 the National Institute of Building Sciences Guideline 3, Building Enclosure Commissioning Process (BECx), was published, but building enclosure commissioning has been slow to gain traction. ASHRAE's Guideline O is intended to be used as the foundation for total building commissioning. There are as yet no other guidelines. Is it time for whole building commissioning?

One of the fundamental objectives of the commissioning process, as stated in ASHRAE GL-O, is to "clearly document the Owner's Project Requirements [OPR]," defined as follows:

A written document that details the functional requirements of a project and the expectations of how it will be used and operated. These include project goals, measureable performance criteria, cost considerations, benchmarks, success criteria, and supporting information.

A well-written OPR for the whole building that meets the general criteria of the ASHRAE Guideline on the commissioning process suggests an approach to stating the problem well. The OPR would include general program requirements, regulatory requirements, and building performance criteria as might exist without the OPR, but the OPR's objective would be to create a unity of intention.

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Architect's Handbook of Professional Practice, 15th edition Unit 1 - The Profession

Chapter 09 – Design Project Delivery

Section 07 – Emerging Issues in Project Delivery