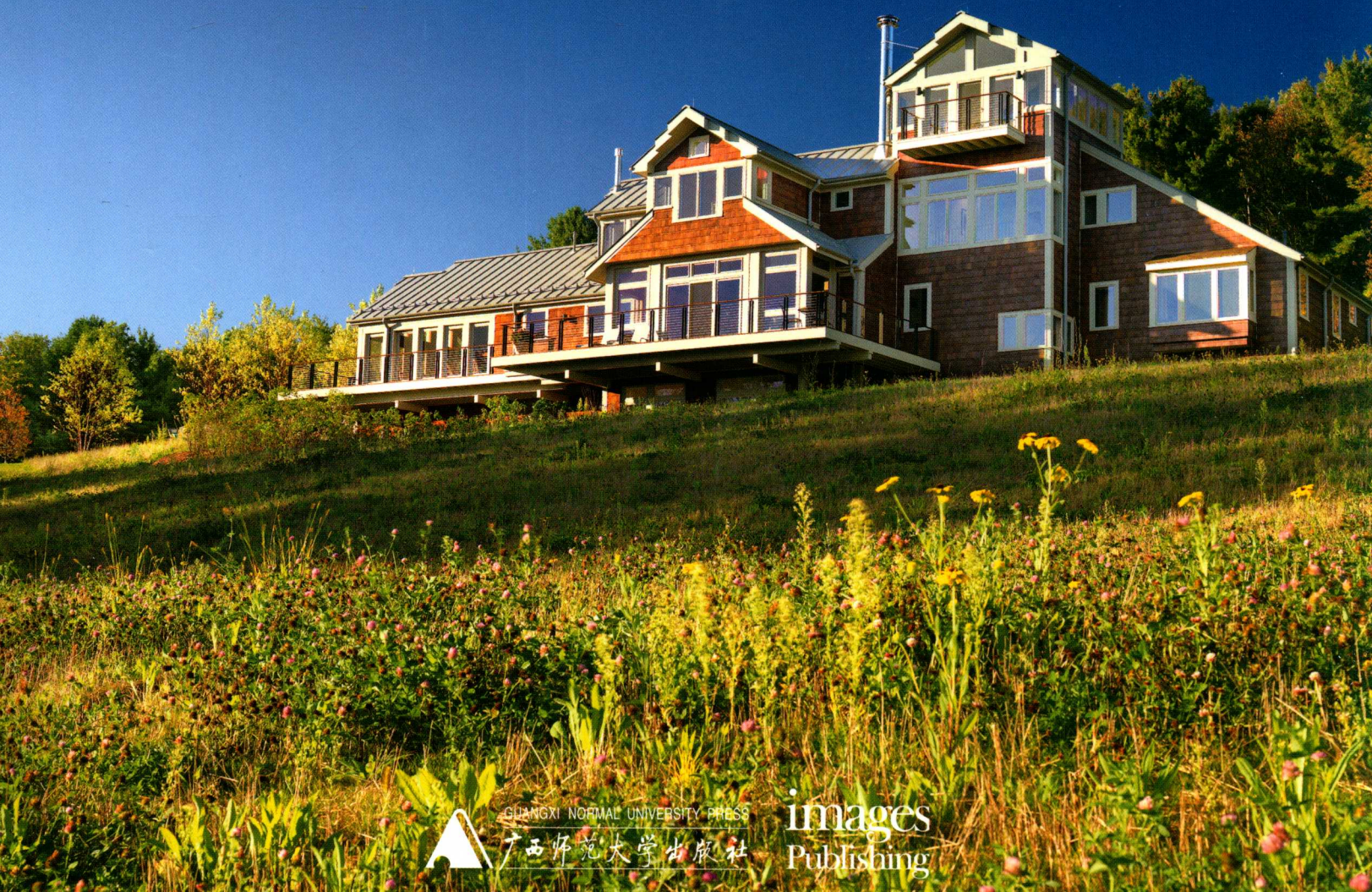


(美) 理查德·波特曼 编

美国建筑师协会会员  
美国绿色建筑委员会认证专家

齐梦涵 译

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A house is a home when  
it shelters the body and  
comforts the soul.

Phillip Moffit, 1986

房子就是你的家，  
只要它能遮风避雨，抚慰心灵

菲利普·莫菲特，1986年



(美) 理查德·波特曼 编  
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## 序言

本书是由一项个人兴趣发展而来的，我在读研究生的时候热衷于探索设计当中的心理过程。当我们进行设计的时候，我们的思想是如何运作的？我们是怎么组织、吸收信息、创造和评估选项，并做出决策的？

许多年前，当我还在读研究生的时候，我对有没有可能给电脑编程，让它来进行设计感到很好奇。那时，国际象棋被用来当做机器是否可以和人脑竞争的范例。最初的国际象棋对弈程序都是应用算法来制定决策的——电脑所走的每一步棋，都是把各种可能性一一进行尝试，最终找出一个最合理的下法。但是，即使用最快的电脑，这种做法的不合理性也很快就暴露出来了。让电脑把几乎无限多的选项都纳入考虑实在太耗费时间了。人脑的工作方式则与其不同，它会从过去积累的经验中总结出简单的规则，再依照这些规则来下决定。

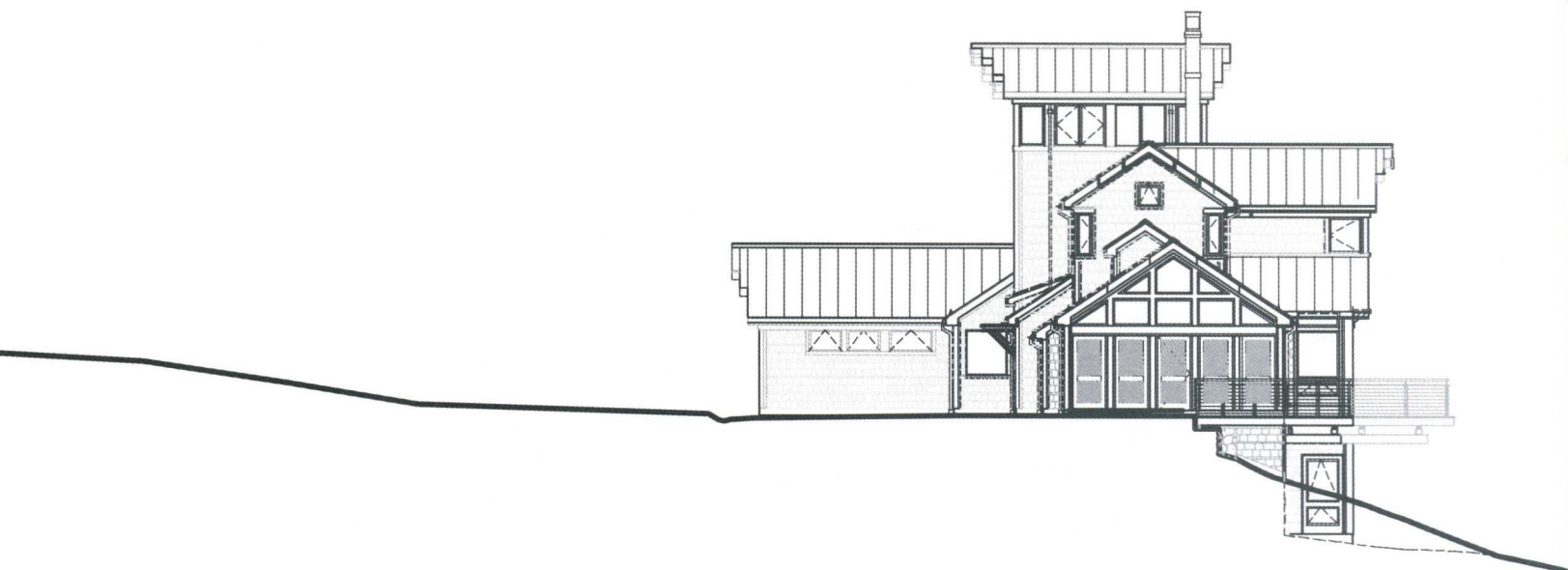
这种经验规则，或称之为“启发式方法”，不是不会犯错，但是它们大多数时候都是正确的，比如“掌控棋盘的中央”或是“早点儿把车挪出来”。启发式方法逐渐成为研发国际象棋对弈程序的基础，所以我很好奇，有没有可能也用这种方法，来编写一种设计程序呢。设计的过程能不能也像下棋一样被分解开来呢？建筑师们用的是哪些启发式方法呢？创造性思维能被描述吗？我当时没能把这个想法付诸实践。因为我用尽全部努力研究建筑实践，无法抽出时间再发展别的兴趣。不过，无论在雕塑领域还是建筑领域，我们应

该如何理解创造过程始终吸引着我。多年来，我想在工作过程中捕捉并记录下我的想法，但是记录它们需要付出相当的努力，而我一直没有条件将其付诸实行。几年前，我接手了一个设计度假屋的项目，这让我终于有机会对设计的过程进行探索，并实践我的想法。

在设计那座房子的时候，我仔细辨别出哪些信息是我做决定时需要的，哪些步骤是我为了实现该设计所应用的，并把这些想法一一记录下来。在想象空间和形式的过程中，我用连续绘图的方式来捕捉房子被如何建成，以及我对房屋的外观所做出的决定背后的思辨，我把这些图片都留存了下来。我不断地询问自己，并试图阐释我为什么要执行某个任务，以及我在执行它的时候，我在想什么。当然，在设计过程当中停下来反思自己的想法，也许会影响这个思考过程。但是即便如此，这个努力也很有启发性。

本书记录了这个过程。它从我的客户描述他们想要的房子，以及我在试图理解他们的想法时遇到的问题开始。紧随其后的是我在了解项目的位置和周边环境后，制作的基本信息概

要。我以描述我的设计目标作为设计过程的开始，然后通过绘制一系列草图来说明房子是如何逐步建成的。每一张草图旁的叙述用来描述我在设计时试图达到的目标，以及我在解决问题和创造性思考时的想法。这项研究也是一个学习工具。虽然它只为我四十年的探究——即设计过程是否可以被编入程序——提供了些许启示，但是，它依然为澄清、组织，以及更好地理解我自己的想法提供了帮助，并阐释了落成的建筑是怎样展现我的那些想法的。这项研究或许也可以帮助别人理解他们自己的设计过程，并为他们带来启发。







设计过程

**The Design Process**

The formulation of a problem is often more essential than its solution.

**Albert Einstein**

## 程序：确定业主的需求和偏好

### THE PROGRAM: Identifying the Owners' Needs and Preferences

Design is problem solving. An inventive process, it generates graphic solutions to fulfill a series of objectives. In architecture, we call the definition of these objectives a 'program' or 'brief'. The program sets out the design parameters in detail, by establishing the requirements to be achieved for the end product.

Preparing a program involves compiling and defining a client's objectives. For a house, one presumes some common objectives, like the need for bedrooms and living space. But the designer must supplement and customize these general objectives to fit the unique intentions of their client. The process begins with a series of discussions. Usually, a client isn't precise about what they want, nor knowledgeable about what is possible within their budget. Often, they have talked with others who have built their own homes. They visit newly constructed houses and talk with builders. To jog their imagination, they may have reviewed and collected pictures of what they like. Ideally, the architect would like to be armed with a clear, well-defined program before starting design. Having a precise set of objectives simplifies the process. The more comprehensive and explicit the program, the more direct and clear the design process.

But gaining an understanding of one's clients' wishes is usually complicated. For a home, the process is muddled by its highly personal nature and a client's inexperience. Often for the first time, a client tries to comprehend, articulate and maybe agree with a partner on everything they desire. It's common that clients

themselves don't clearly understand what they want. Objectives may be ill-defined or difficult to communicate. It takes a patient, concerted effort to fully elicit and grasp a person's real needs and desires.

Client objectives can be classified as quantitative or qualitative. A program will generally describe quantitative objectives that are relatively easy to define: a house does or does not have a 'master bedroom'. But it's trickier to describe qualitative objectives. The meaning of a 'gracious' stairway, 'comfortable' bath, or 'cozy' living room isn't easy to measure or communicate. Given the lack of clarity, creating acceptable solutions may require exploring many alternatives before a client's preferences can be determined and translated into a meaningful response.

As the design process proceeds, the program continues to evolve. Each client meeting becomes the setting to describe, discuss, uncover, prioritize, and redefine expectations. As the process unfolds, objectives are further clarified and priorities adjusted. For example, the initial program for this house (see following list) included a fireplace with a raised hearth. As design progressed, financial constraints dictated a smaller house. The raised hearth required more space than a flush hearth and its assertive form severely limited how the area adjacent to the fireplace could be used. The smaller sized home called for greater spatial flexibility, which became more important than the desire for a raised hearth, and led to the redesign of the fireplace.

Generally, I start the programming process by simply asking my clients to list the spaces they would like in their new home and any other considerations they deem important. I help them develop the list. For this house, my clients were a middle-aged couple from Tennessee who wished to build a second home in the mountains of western Massachusetts where they could vacation with their two grown children. The following is their list:

- a 'Berkshire cottage'
- light and sun, for example, lots of windows—as many as possible that can open
- panoramic views
- approximately 3500 square feet
- high ceilings and lots of windows in the living area with at least 9-foot ceilings in the rest of the house
- as many rooms as possible with a view over the surrounding mountains
- low maintenance/simple construction
- exposed beams where possible
- central heating and air conditioning
- alarm system
- hardwood floors—wide plank, old wood
- soundproof bedrooms and baths
- place for sound system

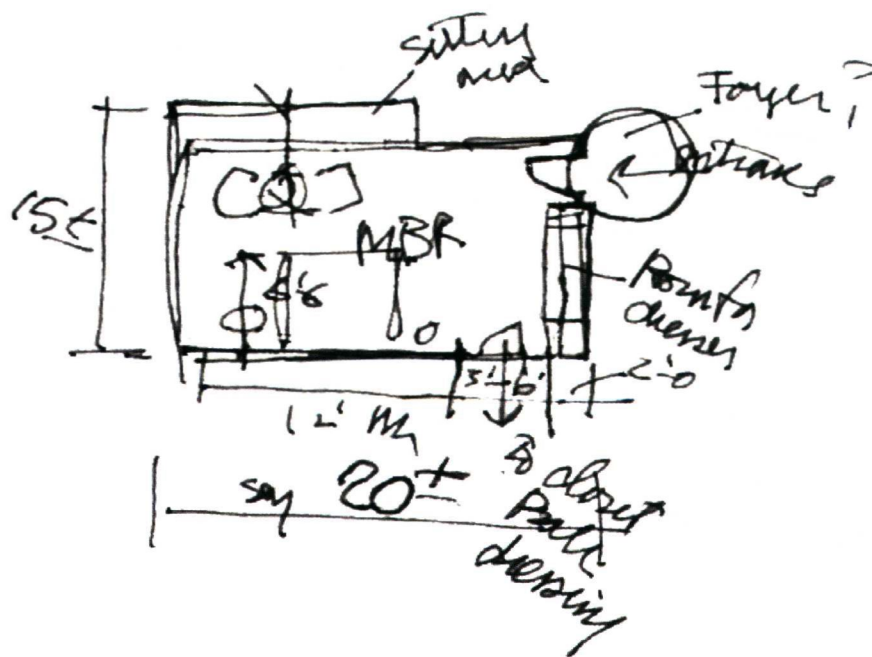


Figure 1

- master bedroom on main floor, with view, private bath—separate shower and tub, toilet and bidet in separate enclosed area, double sinks, heated floor and ceiling heat lamp
- area for desk, computer, fax, and conference calls
- three or four additional bedrooms with private baths, ceiling heat lamps
- ceiling fans
- guest powder room near living area
- open living area with dining space for up to 12 people; kitchen with granite countertops, gas stovetop, quiet dishwasher, built-in microwave, island or peninsula where stools can be used for eat-in bar
- a special 'quiet room' for reading, writing and yoga
- large stone fireplace with raised hearth
- mudroom at entrance for storing shoes, jackets, rain gear, and so on
- laundry area for washer and dryer
- three-sided, large, screened porch with view that doesn't block other views
- deck or patio with view
- two-car garage combined with new house or reusing existing garage building
- window seat

Working from these preferences, I made a list of spaces. From previous experience and through discussions with the clients, I established rough dimensions for each space by considering

the area needed for likely activities, the maximum and usual number of participants, and the usual amount of associated furniture, fixtures and equipment. For each space, I developed an approximate size, sketching a diagram like the one shown above for the master bedroom. The process helped quantify the size of spaces, the overall size of the house, and some functional issues to consider as I began the design process:

- master bedroom:  $20 \times 15 = 300$  square feet (diagram shown above)
- master bath:  $13 \times 15 = 195$  square feet
- master closet:  $8 \times 14 = 112$  square feet
- four bedrooms:  $14 \times 15 = 210$  square feet;  $4 \times 210$  square feet = 840 square feet in total
- four closets:  $2 \times 6 = 12$  square feet;  $4 \times 12$  square feet = 48 square feet in total
- four baths:  $6 \times 10 = 60$  square feet;  $4 \times 60 = 240$  square feet in total
- porch:  $21 \times 21 = 441 \times 0.5 = 220$  square feet (for calculating area, non-heated spaces are computed at 0.5 in estimating construction cost)
- laundry:  $7 \times 10 = 70$  square feet
- mudroom:  $8 \times 8 = 64$  square feet
- powder room:  $6 \times 6 = 36$  square feet
- quiet room/yoga:  $12 \times 12 = 144$  square feet
- computer area/office:  $8 \times 10 = 80$  square feet
- living room:  $22 \times 20 = 440$  square feet



- dining area:  $22 \times 12 = 264$  square feet
- kitchen:  $22 \times 12 = 264$  square feet
- pantry:  $8 \times 8 = 64$  square feet

These areas totaled 3381 square feet. Then I added space to account for undefined circulation areas such as halls, foyers, stairs and vestibules (which normally require adding 20-30 percent more space). I added 20 percent, assuming an efficient organizational layout for the house. An efficient plan would be necessary, since the space my clients desired was turning out to be larger than the 3500 square feet they had initially anticipated. It now totaled 4057 square feet.

We discussed the disparity between my assumptions and their initial size estimate. Budget always influences design. The responsible designer walks a fine line between maximizing project potential and meeting cost constraints. At this early stage of design, it was especially difficult to estimate costs; concepts were unresolved and ideas fluid. But the disparity in size made it imperative to create an efficient layout that consumed only the necessary amount of space. A more accurate cost projection for the house would require waiting until I had developed a more evolved schematic design.

Ongoing meetings with my clients helped me better understand how their budget related to their priorities regarding: the size of spaces; their preferences regarding views, privacy, acoustics, materials; degrees of formality; connections between spaces;

relationship of house to site; energy and maintenance; and quality. To further absorb their preferences, we reviewed pictures from books, magazines and the design of other houses. If possible, I will visit my clients' homes to better understand how they live. Such visits help clarify their intentions. What are their current space needs? How much do they socialize or entertain? Do they live formally or informally? Are spaces in their home decorated or utilitarian, elaborate or simple? If they have children or grandchildren, what are their needs? Do they have pets? Is there furniture or furnishings that will be retained and reused in the new home? Are there any special needs requiring specific facilities?

Over time, my understanding of my clients' preferences deepens as I get to know them, and as we explore sketch ideas that help them recall and envision objectives they didn't express initially. Knowing the desires of my clients is more than just defining the parameters for their home. I strive to comprehend their wishes and not to give back a design that's expected, but to understand them well enough to expand their expectations. If I can truly grasp their needs, then, together, we can create a more livable and enjoyable home than either of us had first imagined.

It's a dynamic process that achieves the best results through mutual give and take. I try to encourage my clients to consider ideas that may be unfamiliar to them. I hope they'll push me to justify those ideas in terms that suit their lifestyles. It is this relationship that leads to innovative but comfortable, affordable and, most importantly, livable long-term design solutions.