

ROUTLEDGE REVIVALS

Post-Occupancy Evaluation

Wolfgang F. E. Preiser, Harvey Z. Rabinowitz and
Edward T. White



Post-Occupancy Evaluation

Post-occupancy evaluation, focusing on building's occupants and their needs, provides insight into the consequences of past design decisions and forms a sound basis for creating better buildings in the future.

This book, first published in 1988, includes a review of the evolution of the field, a conceptual frame-work for POE, and pragmatic information on planning, conducting, and reporting POEs. *Post-Occupancy Evaluation* categorizes the approaches to building evaluation by describing the three levels of POE effort – indicative, investigative, and diagnostic, each differing in terms of time, resources, and personnel needed.

In its scope *Post-Occupancy Evaluation* is both comprehensive and specific; professionals in the design and planning disciplines will find it an invaluable resource for understanding the theory behind POE's and the procedures needed to put the theory into practice.

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Foreword

The twentieth century has seen tremendous change in almost all aspects of human arts and sciences. Architecture, bridging both realms, has grown and changed at an accelerated pace since the century began. By around 1950, some architects had broken rank with their historical roots, pursuing creative excursions with scant attention paid to any precedent from the past. Unfortunately, this practice too often resulted in buildings that photographed well in the slick publications of the “trade press” but that may have lost touch with their purpose of providing an appropriate setting for working, playing, healing, or learning. In part, this book is about procedures for determining whether or not design decisions made by design professionals are delivering the performance needed by those who use the building.

After World War II there was a gradual growth in the body of knowledge that we now commonly call social or behavioral science. Some branches of this science, intended to deepen our understanding of human relationships with one another and with our environment, have made genuine progress. This book is about one of these branches: post-occupancy evaluation (POE).

How did the knowledge base and methods of POE come into being, how are they used by those who have become skilled in this process, and how can others learn to use them? The authors, who have performed many POEs of buildings, provide a guide to those who want to improve their professional services by adding the POE dimension to their practice.

My own work, as director of the Building Research Board of the National Research Council, includes serving on an active committee on methods for improving the use of POE by federal agencies only. In the past few years there has been a definite increase in the use of POE by federal agencies, but there is now a need to raise the quality of these efforts.

It may seem obvious to the observer of architecture that those who practice within the profession should visit their buildings from time to time to see how well the buildings are working and thus to improve their skills. That is why a professional athlete, actor, or opera singer uses a coach: as someone to observe how well he or she is performing and to provide the feedback that is needed to do a better job. But most architects have not made a practice of visiting their creations after completion and user occupation—at least not in any systematic way. This book provides guidance on how the systematic evaluation of buildings in use can enable the design community to take advantage of the lessons learned from successful and unsuccessful building performance. Those who learn from their own history are not as likely to repeat the mistakes of the past and are certainly in a better position to make good, professional judgments in the future.

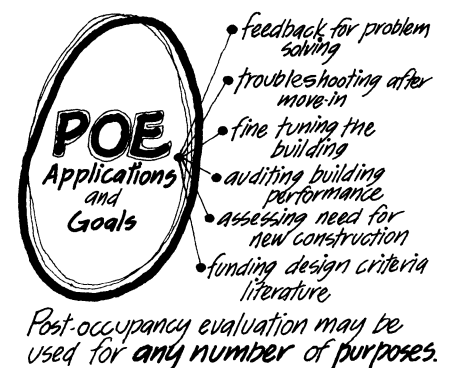
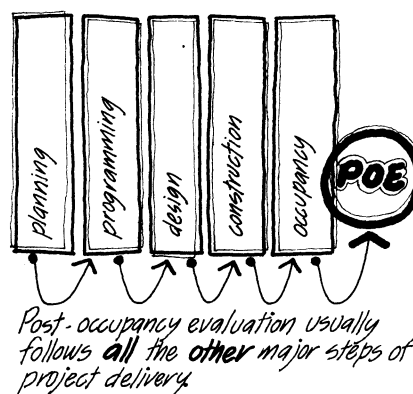
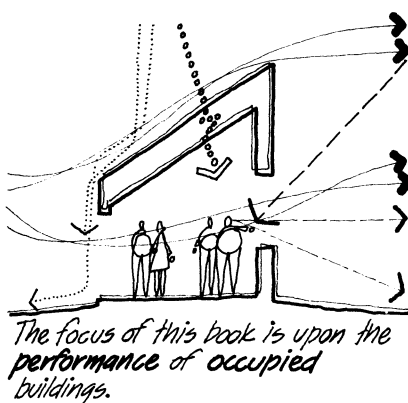
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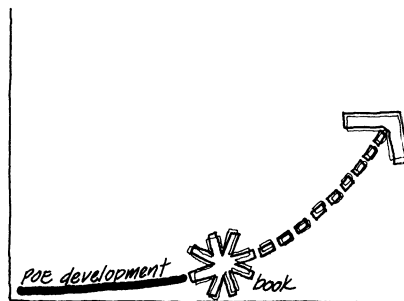
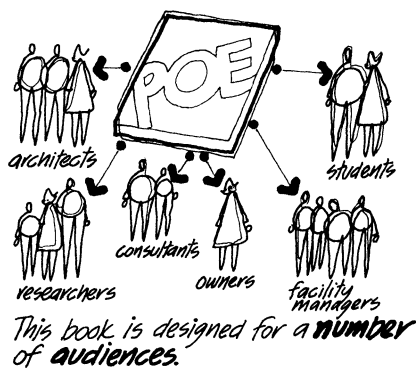
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Preface

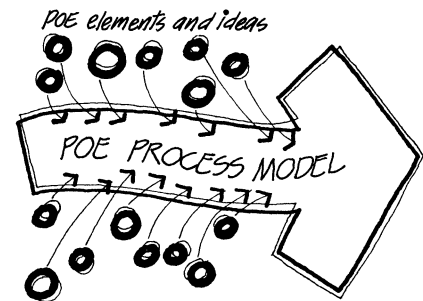
This book is about the assessment of building performance through post-occupancy evaluation, or POE. Post-occupancy evaluation is a phase in the building process that follows the sequence of planning, programming, design, construction, and occupancy of a building. According to Kantrowitz et al. (1986), the goals and applications of POEs can vary widely. For example, POEs are used for:

- Feedback to the evaluated building for purposes of immediate problem solving
- Troubleshooting during the shakedown period, that is, after the move-in, thereby correcting unforeseen problems in building use
- Balancing and fine-tuning of the building and its use through continuous feedback
- Auditing or other focused inquiries into select aspects of building performance, such as space utilization
- Documentation of successes and failures in building performance, thus justifying new construction or remodeling of existing buildings
- Generalization of POE information for updating and improving state-of-the-art design criteria and guideline literature for the architectural profession





It is hoped that this book will contribute to the **continued** development of post-occupancy evaluation as a **discipline**.



The POE process model in this book incorporates a number of elements and ideas from **others** in the field.

This book is intended to provide architects, researchers, consultants, building owners, and facilities managers with useful guidance on the process and content of POEs. It is also designed to serve as a general, introductory text in teaching this subject. *Post-Occupancy Evaluation* includes a review of the evolution of the field, a conceptual framework for POE, and pragmatic information on planning, conducting, and reporting POEs.

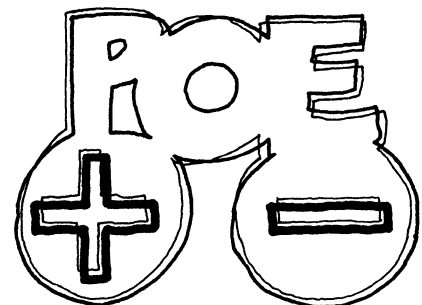
POE is now beginning to have a decided impact in the design and building professions, and it is hoped that others in the building industry will find the ideas and issues presented here stimulating and useful. Since POE is a relatively new field of specialization, this book attempts to serve as a catalyst for its continued development. Given that there may be several alternative approaches to POEs, the process model for POE presented in this book is comprehensive: POE elements, as evaluated by a variety of researchers in this area, have been incorporated. Different levels of effort and sophistication of POEs are proposed, ranging from single case studies to large-scale, comparative POEs on generic building types such as schools, housing, and offices.

The primary purpose of the book is to facilitate useful, economical, timely, and beneficial evaluations of buildings. This view of the subject does not permit exhaustive treatment of all methods and considerations that can be used in a POE. Detailed information on data-collection methodologies, survey research, sampling methods, or research designs, for example, can be found in the publications listed in the bibliography.

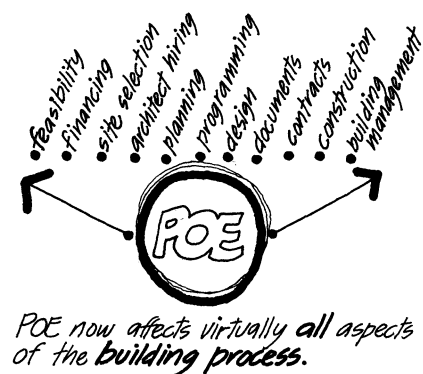
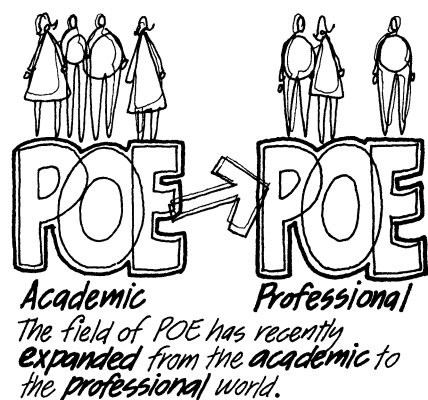
Both successes and failures in building performance are considered in POEs. The purpose of POE is to seek facts and not faults and to share the



This book is intended to facilitate POEs that are **cost effective** and produce **usable, effective** and **timely** results.



POEs should consider both the **positive** and the **negative** aspects of building performance.



findings of POEs through dissemination and the creation of information clearinghouses. The entire building industry can benefit from this information through improved building quality and better value for the dollar.

In recent years, the field of POE has expanded from the academic to the professional world. Today, POEs are conducted as part of the specialized services (Slavin 1982) being offered by a growing number of consultants, as well as a select number of progressive architectural and planning firms. Thus, POE is now becoming an established discipline that influences virtually all phases of the building process (fig. P-1).

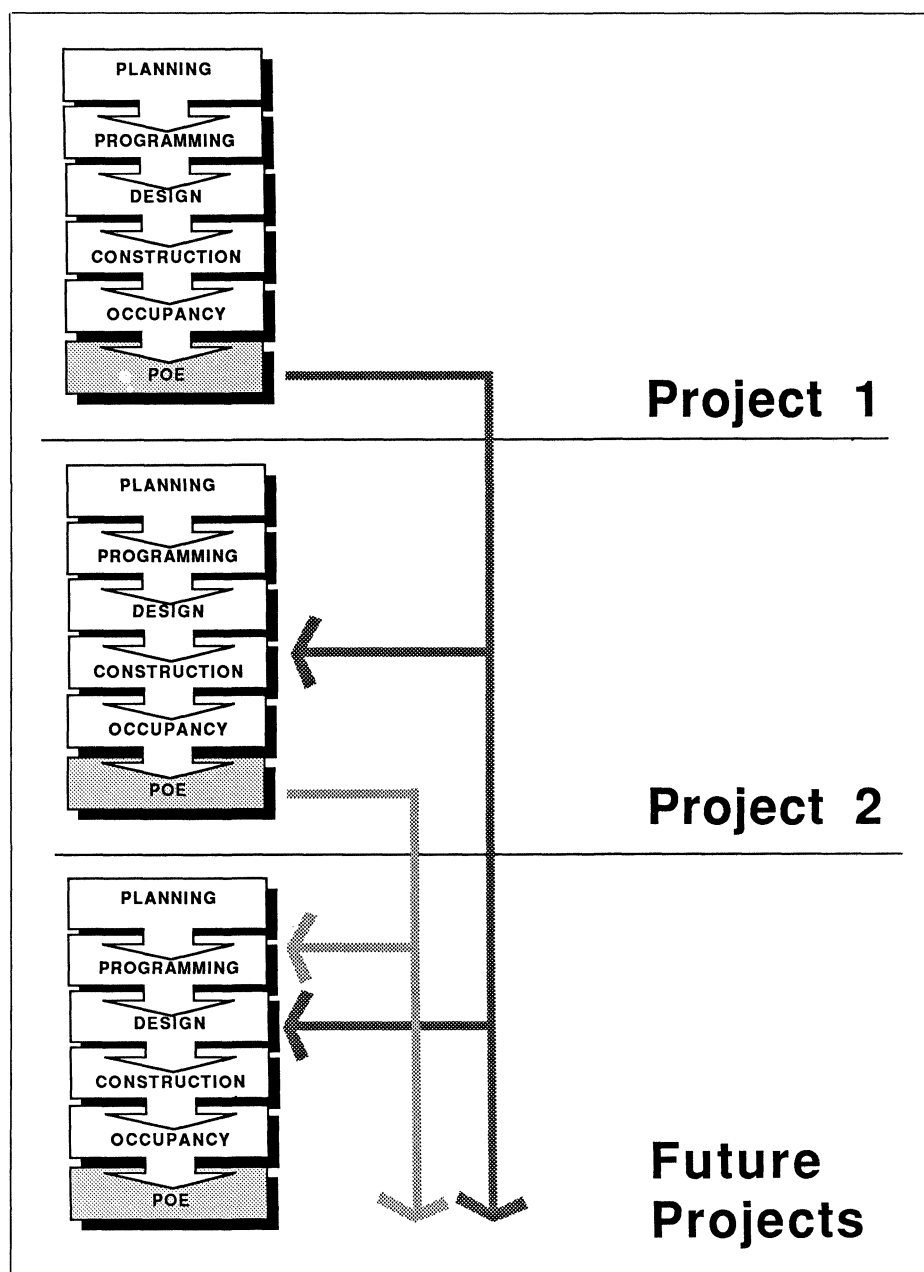
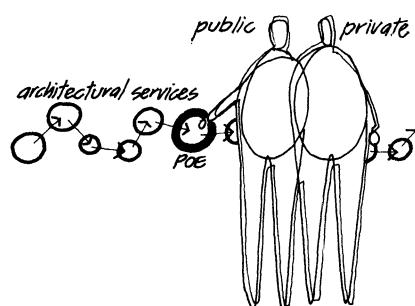
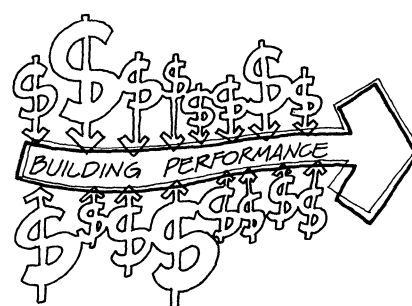


Figure P-1. POE influence on phases of the building process.



*POE has now become an **expected architectural service** by both **public and private clients**.*

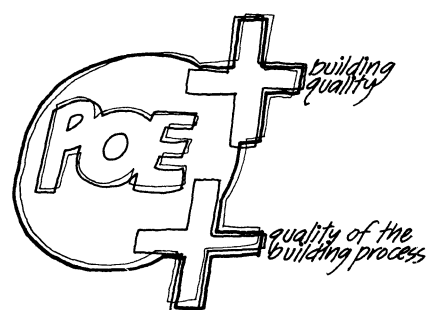


*POE is now accepted among **building professionals** because it helps to **ensure good building performance** under **tight budget** conditions.*

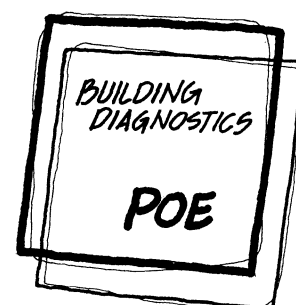
Like architectural programming in the 1960s, POE has become part of the services required by public and private sector clients. POE is now also accepted by building professionals, partly because of the increased need for accountability and the desire to procure the best possible building performance under what are usually stringent budgetary conditions.

This is appropriate in light of the current emphasis on quality control that not only examines the performance of the facility resulting from the building process, but also the transactions that take place throughout that process, including initial feasibility, programming, design, construction, and occupancy, as well as operation and maintenance during the facility's life cycle.

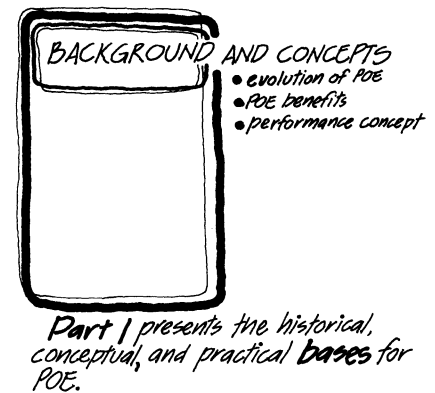
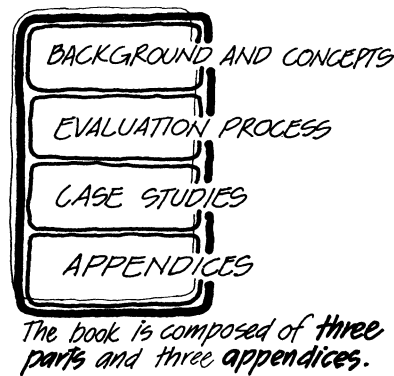
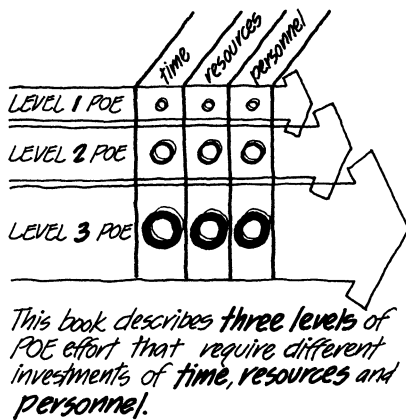
Post-occupancy evaluation is the most commonly used term for the activity of evaluating buildings in use; however, there is still some controversy and confusion among professionals about the appropriate terminology. For example, the term *building diagnostics* has been introduced (Building Research Board, 1983) as an umbrella concept for comprehensive building evaluations that subsume POEs. In building diagnostics, both technical and occupant-related performance are evaluated against explicit performance criteria, with the added diagnostic-predictive dimension allowing assessment of the probable future performance of a building. The definition of POE herein excludes purely technical evaluation, for example, of heating systems or new building materials. Technical elements of building performance are considered only in terms of their effect on occupant health, safety, security, functional performance, and psychological/physical comfort.



*POE assists in the **quality control** of both the **building** and the **building process**.*



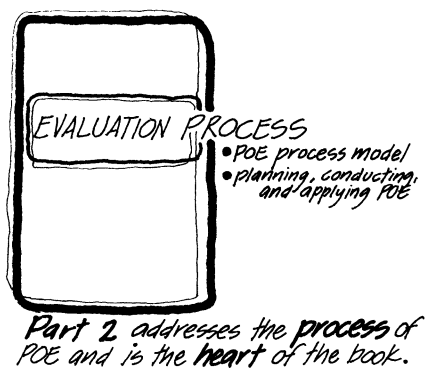
*Professionals sometimes find it difficult to **distinguish** between **building diagnostics** and **post-occupancy evaluation**.*

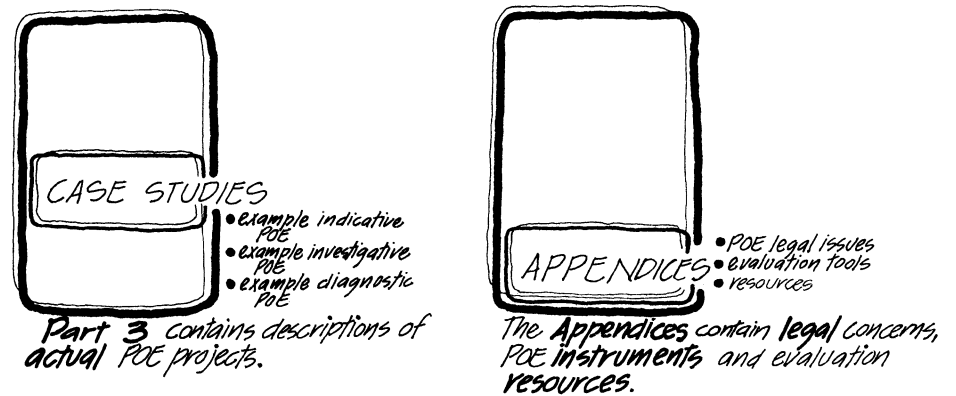


This book categorizes approaches to building evaluation by employing three levels of effort—in time, resources, and personnel required to execute POEs—complemented by case studies that illustrate practical procedures. It has three parts and three appendices. Part 1 (chapters 1 through 3), introduces the field by providing the historical, conceptual, and practical bases for POE. Chapter 1 includes a review of the evolution of POE since the mid-1960s. Chapter 2 provides the rationale for conducting POEs by examining a number of sources to determine the quality of building performance and the accountability of the design professions. The many benefits derived from POEs are described. Chapter 3 presents the *performance concept* in the building process, culminating in the *performance evaluation research framework*. In a systematic manner, this framework relates buildings and facilities to occupants and their needs. The focus is on feedback concerning the performance of existing buildings, as well as *feedforward*, or the integration of newly established design criteria, concepts, and information, into the programming and design of future, similar buildings.

Part 2 (chapters 4 through 7), dealing with the process of POE, is the core of this book. It is action-oriented and gives a detailed account of the parameters of planning, conducting, and applying POEs. Chapter 4 describes a process model for POEs. Major phases and steps in conducting POEs are outlined, based upon three basic levels of POE effort that become increasingly complex as POEs progress toward more in-depth inquiry into building performance. Chapters 5 through 7 lead the reader through the planning, conducting, and applying phases of POEs by providing guidance on the resources and logistics needed in setting up a POE, practical advice on data gathering in the field, basic information on data analysis, and the communication of findings to clients.

Part 3 (chapters 8 through 10) of the book is devoted to POE case studies at the indicative, investigative, and diagnostic levels of effort, terms that are explained in chapter 4. Chapter 8 presents indicative “walk-through”-type POEs of four senior centers in Albuquerque, New Mexico, while chapter 9 reports an investigative-type POE of an agricultural science building at the





University of Kentucky. Finally, diagnostic POEs conducted on four elementary schools in Columbus, Indiana, are summarized in chapter 10.

There are three appendices; "Legal Issues in POE" (appendix A) by Robert Greenstreet; "Usable Tools" (appendix B) with evaluation instruments, checklists and reporting formats; as well as "Resources" (appendix C). The book concludes with a glossary, bibliography, and index.

Acknowledgments

The authors would like to thank all those colleagues who helped inspire research and practice in the field of post-occupancy evaluation, especially the seminal contributions of the members of the Building Performance Research Unit and their work at the University of Strathclyde, Scotland, in the 1960s and early 1970s. Their systematic approach to building evaluation marked the beginning of the field.

A number of individuals whose work and thoughts have influenced the authors' endeavors over the years includes Thomas Markus, John Daish, Heinz von Foerster, John H. Wright, Thomas Davis, John Eberhard, Michael Brill, Louis Radner, Ezra Ehrenkranz, and Roger Barker, as well as Sim van der Ryn and Murray Silverstein.

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The ability to do innovative POEs has been most critical in advancing the thinking in this area. Support for these projects has come from the National Endowment for the Arts, the National Science Foundation, the U.S. Army Corps of Engineers, and the Irwin-Sweeny-Miller Foundation. Clients, including local school boards and municipal organizations who have provided support, as well as the hundreds of individuals whose enthusiastic cooperation and help have also been important, are gratefully acknowledged.

Thanks are owed to Robert Greenstreet for writing appendix A: "Legal Issues in POE."

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Finally, special thanks go to Susan Montgomery, Cecilia Fenoglio-Preiser, and Rose Mary Rabinowitz for their careful review of our manuscripts. We also thank the School of Architecture and Planning at the University of New Mexico and especially Tina Taylor for processing the words of this book.

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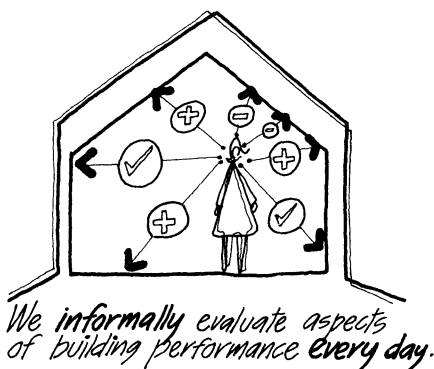
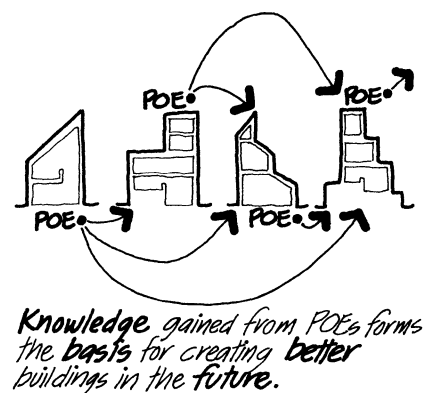
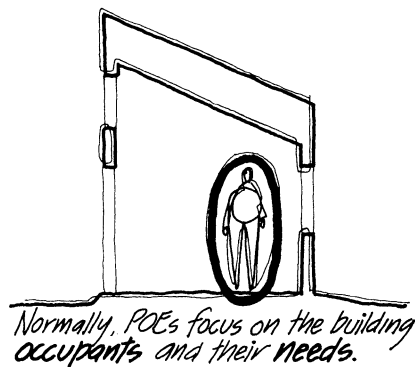
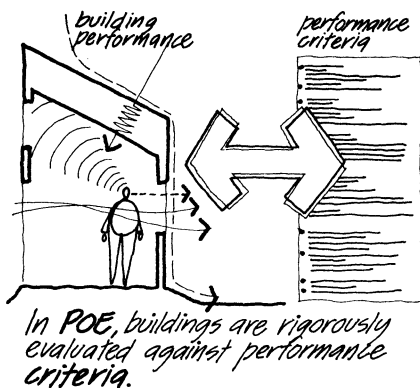
Part 1

Post-Occupancy Evaluation: Background and Concepts

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1. Uses, Benefits, and History of POE

Post-occupancy evaluation is the process of evaluating buildings in a systematic and rigorous manner after they have been built and occupied for some time. POEs focus on building occupants and their needs, and thus they provide insights into the consequences of past design decisions and the resulting building performance. This knowledge forms a sound basis for creating better buildings in the future.



The performance of buildings is evaluated regularly, although not necessarily in a self-conscious and explicit way. In a hotel room, for example, conversations taking place next door may be overheard. In this case the acoustical performance of the building is being assessed. The room temperature, the quality of lighting, storage, finishes, and even the esthetic quality of the view from the hotel window are also informally evaluated.

Similarly, those waiting for an elevator may judge the waiting time to be excessive. The evaluation criteria used in this case come from expectations that are based on previous experiences with elevators.