Preamble

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Over the past 50 years building performance evaluation (BPE) has developed from a concept to a multi-method and multi-disciplinary process that impacts various disciplines of the building industry. With much advances in the way this profession designs, certifies, and appraises buildings; some lingering questions remain, such as: (1) what advances in evaluation procedures have been conceived, (2) how can these be applied to green-certified, sustainable, and buildings designed for well-being, and (3) how can these results be translated to advance the design process and better predict performance? The eight chapters in this section address these questions and provide new insights in building evaluation and performance methods. The goal of most building evaluations is to produce evidence-based of performance that would in-turn support decisions about planning, design, construction, management, and certification of future buildings. The following chapters tackle these problems by arguing that designers should refine evaluation processes and develop advanced comparative methods to be used on complex buildings that push the limits of performance. The chapter authors draw on examples from several successful BPE case studies affecting a variety of high performance building typologies from commercial offices to educational and healthcare settings.

In the first chapter of Part IV, this author discusses a multi-tiered process for the evaluation of high-performance buildings and LEED™ certified ones. This process follows an inductive approach of comparing design simulation and predictions to actual performance on the physical objective level as well as the subjective and symbolic levels. The chapter discusses results from a 36-months longitudinal multi-season POE assessment case study of a laboratory building that combined innovative methods and data collection protocols to measure energy use, indoor environmental quality, and occupant satisfaction providing continuous feedback loops that improve building design, delivery, and operation.
Becker argues for expanding the role of post-occupancy evaluation (POE) within the building performance evaluation cycle by accepting various forms of data collection techniques, such as qualitative, ethnographic, and anecdotal evidence and observations that can be continuously and quickly collected by practitioners in the field. He advocates POEs as a simple diagnostic tool carried out by facility managers and used within organizations for their continuous improvement. As in medicine, these can serve as clinical experiences that aid day-to-day decision-making and provide basis for more rigorous evaluation research that might be followed out by collaborative teams of academics and practitioners.

Parshall and Fonseca’s chapter describes a comprehensive and feasible method that addresses scope, budget, and time commitments for an architectural firm’s clients. They describe a five-step and four considerations process that suit many purposes. This approach goes beyond that of traditional architectural programming and evaluation to include risk management and environmental health concerns. An important consideration in the development of this method is economy of effort while achieving the greatest value for their clients.

Marans and Callewaert provide an interesting approach to evaluate a cultural change program aimed at promoting sustainability behavior and attitudes at a university campus. The evaluation is intended to inform and provide feedback to campus stakeholders to better the day-to-day operations and programs and to serve as a model for the use of behavioral research in addressing critical environmental issues within universities and other settings.

Mallory-Hill and Gorgolewski examine the gaps between predicted and achieved performance of nine green-certified buildings located across Canada. They assessed key performance indicators for green buildings under major categories of occupancy, energy use, water use, and indoor environmental quality. Data collection involved both qualitative and quantitative techniques.

Focusing on university campus architecture and planning assessments, Bain proposes a valuable use of POEs as a tool to help building owners make permanent decisions about the future of existing assets rather than looking back at how they performed after occupation. She proposes a Functional Assessment protocol with the use of a wide range of data gathering techniques to determine the future value of specific buildings for the long term. Best situated within the campus planning process, this type of assessment determines solutions to current issues and aid planning strategies for the future.

In their chapter Kato, Mori, and Kato, report on a comprehensive BPE of pediatric intensive care units in hospitals in Japan, along with comparing situations with those of the USA. Data collection was carried out in 13 hospitals using questionnaire survey, site visits, and content analysis of 30 blogs written by parents having children patients. They concluded their chapter by illustrating how BPE supports the planning, design, and management methodology in Japan’s healthcare system.
Last but not least, Fay discusses the full cycle of a POE process by proposing methods of planning and conducting a POE, actively reporting the findings, and applying outcomes through the use of a collaborative design charrette. The design charrette, as a dissemination and application tool, presents an opportunity to engage with research that can inform future designs while also developing familiarity with the POE framework, methodologies, and building occupants perspectives.