THE USES AND BOUNDARIES OF POST OCCUPANCY EVALUATION

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ABSTRACT

POE is now 25 years old. It has rapidly developed and is now valued as a process that can help improve the performance of the built environment. This paper discusses the uses and boundaries of POE.

Phases in the development of POE in the 1960's, 70's and 80's are examined and characteristics of POEs in these decades are discussed in terms of the 1) types and size of buildings evaluated, 2) variables included in the evaluation, 3) the relationships among the variables, and 4) intentions of the investigation.

POE is increasingly being used and found useful by large clients to locate, plan and design facilities. Research continues in POE particularly in the area of exploring the influence of the environment on behavior, particularly in the workplace.

The boundaries of POE applications are blurred--particularly in two areas: (1) The boundaries and interaction of environmental affects with non-environmental variables and (2) the role of technological advance in communications and computing changing the locations and nature of many activities. The emergence of databases and clearinghouses for building types is beginning and will help considerably, from an applied point of view, in improving building performance.

INTRODUCTION

Post Occupancy Evaluation (POE) as a distinct area of research, scholarly activity and application is now twenty five years old. POE is recognized and valued as a process that can improve, and help explain, the performance of the built environment. During this quarter century history, research and applications in this area have constantly expanded and now encompass significant activities beyond those found in the environment-behavior literature.

The "Dorms at Berkeley" Study (Van Der Ryn,1967) and the School and Office studies conducted at the Building Performance Research Unit (Markus, 1972) and the Pilkington Rearch Unit (Manning, 1965) respectively, was the seminal research which created this area. These projects demonstrated that this type of analysis or appraisal was one in which work could be 'useful, usable and used' ;

1) that the results of POEs had potential benefits to the users and owners of buildings as well as to architects designing similar buildings;

2) that techniques to conduct post occupancy evaluation were available, replicable and reliable; and

3) that it was being used.

This paper examines the evolution of Post Occupancy Evaluation and the spectrum of contemporary activities in this field to discern patterns in the use and boundaries of POE . This examination includes: (1) the types, size and complexity of the buildings investigated; (2) The types of variables that were included in the evaluations; (3) the relationships among the variables studied; and (4) the intentions of the POE.

The 1960's - Pioneering uses and Boundaries of POE

The term post occupancy evaluation is not used in the earliest POE research in the 1960's - such studies were part of the still infant field of environmental design research and were called environmental analysis or, in Britain, building appraisals. Few grants were available, but dormitories were, with willing and cooperative students . The "Dorms at Berkeley" study (Van Der Ryn, 1967) was followed by other dormitory studies that explored additional variables in increasingly systematic ways. This work was concurrent with research and theory in environmental design. Concepts, such as sociometrics, proximity, territoriality, and privacy, developed in environmental design research, were applied in POEs.

The nature of the buildings and the variables studied during these earliest POEs were limited. Institutional buildings with clear boundaries and formal rules

such as dormitories, mental health centers, children's environments and hospitals were obvious vehicles for these exploratory years of POE research. In the larger buildings only selected areas were evaluated. Studies included limited numbers of users and they in turn had limited choices. The physical environment was relatively small in scale, fixed, and provided few options. The variables examined were limited to areas such as sociometrics in dormitories, perceived levels of daylighting and the adequacy of desk workspace and storage. Disadvantaged users were a focus of this early POE research. These users require a close 'fit' between the environment and their needs; problems could be easily identified and significant improvements readily demonstrated and disseminated.

These first projects demonstrated the value of POE and their scope and complexity was appropriate for this phase of POE development. The sum of these limitations on projects of this time, combined with the less than adequate state of knowledge in designing buildings at that time produced results that were 'useful, usable and used' - and set the stage for a second generation of evaluations.

The 1970's - Systematic and Rigorous POEs

The scope, number, rigor and size of POEs increased significantly in the 1970's. Dozens of major projects were conducted during this decade. Housing, especially elderly and public housing and schools, were often the subjects of evaluations. The first multi-building studies were conducted. Technical and functional factors were added to the scope of POE activities after the earlier emphasis of almost entirely behavioral research and more sophisticated data gathering and analysis methods were used as part of POEs.

Of the dozen milestones of POE research in the 1970's the work by Newman (1973) particularly stands out in terms of scope - it examined data from 100 housing projects - and in influence. Newman's work linking the incidence of crime to housing form and disposition, site design, and circulation, was provocative and well publicized - it even appeared in Time magazine. This study effectively changed housing policy at the federal level as well as the stimulating the renovation of existing public housing projects - renovation that still continues today.

Although this may have been the most well publicized POE, others were also influential. This included work that provided a perspective on the importance of project management to users satisfaction in multifamily housing (Francescato et al., 1979). This evaluation included a number of projects and used sophisticated statistical analysis. McLaughlin's (1972) study of hospitals was also a multi-facility study. This innovative POE focused on the frequency of change and renovation in the major functional areas of hospitals and related these findings to the life cycle costs of providing increased built-in flexibility - a concept widely used today. This remains one of the few projects that links POE to economic costs and benefits.

All three of the abovementioned studies used multiple buildings for data gathering and comparative analysis, a major change of direction for POE research. The buildings were larger, though they were still, for the most part institutional settings - a result of much increased funding from government agencies. These studies also began to find strong links between the design of the environment and behaviors, such as the increased incidence of crime. Multimethod approaches to POE also were initiated during this decade as well as projects which first demonstrated the importance of non-architectural variables, such as management and building operations, on users. Finally these, and other, research based POEs provided the credibility that POEs could provide valuable and significant results.

The 1980's - POEs in Practice.

The major change in the POE field in the 1980's has been the development of POE into an applied activity. A stream of sophisticated research-based POEs still continues however - the BOSTI office study (Brill, 1984) is a significant example. This 5 year study examined over 70 private and public sector office environments and included responses from over 5000 workers. This study intended to explore the relationships among specific physical factors, job satisfaction , productivity and performance, as well as ease of communication in the workplace.

The 1980's has also seen POE integrated as a standard part of the construction and building management process. A number of U.S. government agencies use POEs as routine procedures some time after construction, primarily emphasizing technical and functional evaluations (Building Research Board, 1987).

The rapid growth of IFMA - the International Facilities Management Association - founded in 1980 and which has grown to over 4000 members (1987) in just 6 years, is an indicator of the interest in this area. POE is a considered a standard operating procedure in IFMA literature.

PATTERNS IN THE USE AND BOUNDARIES OF POST OCCUPANCY EVALUATION

There are some clear trends in the uses of POE over time. However the definition of the boundaries of POE, in terms of being 'useful, usable and used', is still blurred.

The Use of POE as an Applied Tool

The 1970's saw POEs funded as research whose results had varying levels of of influence in improving building performance. POE in the 1980's has been accepted by a number of major building

organizations as a standard part of the building construction and management process. The Naval Facilities Engineering Command, for example, has been using POEs for over 10 years and conducts about a dozen POEs each year. The Post Office does the same as standard operating procedure (Building Research Board, 1987).

The size and number of buildings affected has also increased greatly - at the last EDRA participants reported on projects which will have enormous impact, including the Canadian Hospital Evaluation done at a national scale, the California Department of Corrections project which will influence over a billion dollars of construction and the U.S. Postal Service Project potentially affecting post offices across the U.S. (EDRA 18, 1987). POEs are routinely used in a number of other building types: hotels, retail stores, shopping centers and office buildings, particularly by owners who manage large numbers of facilities and have an ongoing development and renovation program.

The Use of POE in the Private Sector

In the 1960's and 70's the bulk of the funding for POEs was provided by the government and this is reflected in the proceedings of the earlier EDRA conferences. However 85% of new building construction in the U.S.is done by the private sector and In the 1980's the private sector is increasingly using POE as a standard activity.

The International Facilities Management Association, for example, has now published 'benchmarks' for office buildings, based on national surveys. These provide facilities managers with normative criteria to evaluate and manage their buildings. Some of the most intense POE-related activities occur in the retail area. Large chains use demographic statistics which are directly linked to market survey data, to produce local lifestyle and purchasing profiles. This information is used to locate and target individual stores. Retailers regularly survey their customers and sales to monitor shopping habits and modify their product selection. While many stores in a national chain may share the same name, each store is customized to respond to its user population.

The emergence of the private sector developer, owner and lessor of large numbers of real estate properties has occurred since the late 1970's. This trend occured largely in the retail, office and lodging sectors where most of the POE efforts have occured. Efforts by this group are applied research POEs due to the intense competition in this area. For instance the Marriott Corporation is now well into the process of building 300 'Courtyard' hotels across the country - a plan that calls for opening one hotel each week for the next few years. POE was used in the design of this new 'product' which is aimed at the midpriced market. Full size rooms were built and modified as hundreds of customers were surveyed on room attributes. This process included the use of full scale final prototypes hotels that were used to 'tinker' with the final product (Wall Street Journal, 1985).

The early work in POE was primarily focussed on environments and users that were constrained or regulated - hospitals, children, the elderly, dormitory residents, schools, residents of public housing. The success of these studies and their usefulness was due in part to the constrained nature of these environments and/or their users. Fewer POE studies have been done in larger, unregulated and more complex environments such as retail centers, recreational and entertainment facilities, and mixed use complexes, though there has been important and continuing work done on public plazas (Whyte, 1980). Environments with such choices are much more complex, however the current work in retail environments and urban spaces are important directions in this area.

Expanded Boundaries of understanding the links between Environmental and Non-Environmental factors.

What is the role of environmental and non-environmental factors in affecting behavior? In Peters and Waterman's "In Search of Excellence" (Peters, 1982) which analyzes factors in the success of well run corporations, physical facilities are rarely mentionned as contributing to excellence. In fact the culture of the 'skunk works,' located in a 'dingy loft' some miles away from the main corporation, is attributed with some success. Communication is mentioned, as well as its relationship to proximity and opportunity for discussion, but by and large the physical environment is not considered significant. Marans and Spreckelmeyer (1981) have developed an interesting model of the work environment which emphasizes the relationship between environmental and non-environmental factors including person and job characteristics. This is an area of POE research which needs considerable effort. Can a scale or measurement techniques be developed for gauging the relative influence of physical variables in different situations? The difficulty of this goal cannot be overstressed but it is a significant boundary for POE research in which very little work has occured..

Expanded Boundaries of POE due to Technological Advances

During the next 10 years technological considerations should play an important role in the POE process. This will include advances in three areas 1) monitoring the environment 2) the development of databases and clearinghouses and 3) simulations of the built environment. On the other hand technological considerations will be making the environment itself more dynamic. Existing settings will not be used as much for traditional activities as computers and communications technology changes the way persons work, shop and recreate.

POEs have developed considerably over the past 25 years but the environments studied did not change very much. The school or dormitory or workplace of 25 years ago is not too dissimilar to the same facilities today. Current trends, however, point to significant shifts in activity patterns over the next decade. There is the first wave of a serious shift to independent workplaces due to the use of communications and computer technology. Some tasks in the corporate world have already made inroads in this direction with some success. This is an shift of the environmental boundary that may be an significant opportunity for POE research.

This same technology provides opportunities for the use of clearinghouses to share data and for the networking of practitioners in this area. POE has had a poor record of coordination among researchers in terms of the development of measures, methods, criteria and analysis techniques. Up to now this may have, in fact, been advantageous for the field. The variety of approaches to POE provided a large 'test bed' for the emergence of the more successful strategies. At this time coordination of such techniques and data may be appropriate through central organizations, probably entities associated with specific building types, such as IFMA or EDRA. Advances in the computer modeling of environments in both three-dimensional and environmental characteristics provides another available tool to propose design solutions and their effects in a number of areas.

As the POE process has proven itself to be 'useful, usable and used' it may have come to its most difficult juncture; many of the 'easy' answers have already been found. The next breakthroughs in POE will be in understanding larger, more dynamic environments with more choice and where the physical environment is one of many factors influencing the performance of the people and the facility.

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