Papers/Abstracts

Environmental Techniques

BUILDING TYPOLOGIES: AN INQUIRY[1]

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ABSTRACT

"Building type" categorical distinctions are used to organize the physical world conceptually, physically, and socially. The pervasive and unconscious use of building typologies shapes not only our physical world, but also our knowledge of it. The research sought to bring this implicit concept to an explicit level of discussion. It focused on the ways in which people currently construct and use building typologies, why they use them, and what anomalies and conflicts exist between and within building type systems.

INTRODUCTION

Building Typologies

"Typologies fascinate and convince because they are methods of mirroring what we look most for" (Hillman, 1980, p. 26).

Building typologies are constructions used to organize the physical world into categories which are conceptually, physically, and socially powerful. Designations for buildings and settings such as "school", "park", "hospital", "classical", "post-modern", "steelframe ", "assembly occupancy", etc. are categorical distinctions, often called underline building types. These categories and classification concepts are important mental and social constructs with which people organize and interpret the world. Yet, building typologies are implicit, largely invisible, and unquestioned. "We forget that they are there and regard them as natural" (Hillier and Leaman, 1973, p. 507).

Building type thinking shapes our physical world through its presence in regulation classifications which affect planning, design, building construction, renovation, and demolitions. Decisions about what gets built, where it can be located, what it looks like, and what isn't allowed to be introduced into our lives are subsumed in building codes and regulations administered by various governmental agencies.

The pervasive and unconscious use of building typologies shapes not only our physical world, but also our knowledge of it. For example, building typologies are revealed in the subjects we choose to research and teach, explicitly and implicitly.

Our NEA-funded research project, "Building Type: An Examination of the Construct", used a literature review content analysis, collaborative debate, and critical theory to critique the building type construct and its current use. This was done to investigate the relationship of building type to typological thought, and to reveal current building type usages, their underlying social purposes, and the implications of the building type construct for western culture.

This investigation originated from a reflective examination and analysis of the historical origins of building types and anomalies in current classification systems as they surfaced in the authors' and their colleagues' work. Cromley's analysis of the development of "apartment house" as a distinct building type in the mid-19th century illustrated the negotiated and social nature of building type innovation. The process involved several decades of negotiation between building developers, tenants, and regulatory agencies regarding the position of "apartment house" in relation to the categories of "tenement", "hotel", and "house" before the new building type could emerge as a new form and function with its own position in the regulatory frameworks (Cromley, 1989).

Anomalies further illustrate the subjective nature of typological classifications. Schneekloth's research into library buildings revealed that a "library" as we have always known it, i.e., a place to house books, no longer encompasses the institution of library since the physical collection no longer defines the essence of a library (Schneekloth, 1984). Banks are no longer constructing conservatively imaged buildings in which to conduct their financial affairs. Now, as gigantic corporations they have "corporate" buildings. Many financial transactions occur through ATM's (Automated Teller Machines) found in airports, grocery stores and street corners, thus decentralizing a primary function of the initial bank building type.

This transition in the building type and structure of banking has occurred rapidly in the last twenty years with relative ease. At the same time, new social structures, such as the Birth Center, have had to struggle for years to be recognized in the building codes as a discrete type to avoid having to meet "hospital" codes.

This is particularly ironic since hospitals symbolize the institution whose ideologies Birth Center proponents seek to confront.

Building reuse further illustrates the slippery nature of building classifications. Beautiful old churches are now shops for plumbers, restaurants or office buildings. Are they now churches, the new use, or both? When is a church not a church? Why is it easy to introduce some new built form (ATM's) into our physical environment and dreadfully difficult to introduce others such as Birth Centers? Are building codes really as impartial in the pursuit of life/health/safety as presented? How are changes in institutions and technologies reflected in built form? What are the social values underlying typological change and constancy?

In addition to the questions raised in our own research and teaching, the research was informed by issues raised from others' work on the sociology of building innovation, social change, and culture. Franck's analyses on the strengths and weaknesses of building types categories (1985, 1986), King's writings on culture, political economy, and the built environment (1980, 1984a, 1984b, 1988), and Rapoport's work on culture, built form, and environmental cognition (1980) were particularly influential.

Intentions and Methods

"Ideas are more difficult to handle scientifically than the economic, political, and social relations among individuals and groups which those ideas inform. And this is all the more true when the ideas involved are...the half-formed, taken-for-granted, indifferently systematized notions that guide the normal activities of ordinary men (sic) in everyday life" (Geertz, 1973, in Perin, p. 21).

Our research sought to reveal and uncover the full spectrum of building typologies operating in our culture: their purposes, content, and use. The method of inquiry included literature review and content analysis on the different spheres of users who employ some form of building typologies in the conduct of their work. The content analysis identified implicit and explicit definitional criteria underlying building types. A "typology" of uses was framed which identified six spheres of the concepts' use by their shared purposes and tacit social goals. These spheres of use are architectural history, theory, and criticism; social and cultural research; design professions; building regulations; institutions; and laypeople.

The contradictory systems of types and differential emphasis on some aspect of built form, social purpose or thought system, were the substance of the research. Our intent was not to derive a single typological definition of building type, but to uncover the diversity of its usage and common underlying traits. By bringing the implicit usages of building types to an explicit level of discussion, we were able to examine how, and by whom, the construct is currently used, and describe the concept's link to broader human actions and social contexts.

All inquiry is embedded in assumptions and worldviews. This discourse on building type rests on a five specific interpretations of the relationship between the physical world and our ideas about it.

1) The physical, material world exists independent of our perceptions and ideas about it.

2) The relationship between the physical world and our ideas and interpretations of it is interactive and constructivist.

3) Building typologies are conceptual constructs which mentally order the physical world by the division and collection of categories of things.

4) Conceptual categories such as building typologies are socially constructed and maintained.

5) Conceptual categories are dynamic and evolving.

Within these assumptions, this critical discourse (Habermas, 1979) seeks to identify building typologies, issues underlying typological thought, social purposes of various building type systems, and anomalies which point to inconsistencies and abrasions within systems. The intent is to describe.

BACKGROUND: TYPOLOGICAL THINKING

The Words

"The aim of every classification is to establish order in things and in thought" (Speziali, 1973, in Wiener, p. 462).

The construct, "building type", belongs to a family of thought concepts for ordering phenomena represented by terms such as type, typology, class, taxon, kind, specimen, etc. In discussing building typologies as ordering concepts, we engage in typological thinking. In spite of this tautology, we will examine the construct of building type as it is embedded in the more general construct of "typology".

The ontologies of the words "type", "typology", "class", and "sort" reveal that the concept of "type" is embedded within the actions of sorting, classifying, and ordering phenomena into categories. These categories are the result of two different Platonic techniques - **division**, making distinctions between things, and **collection**, grouping similar things.

The word "type" comes from the Latin typus and Greek typos, meaning "impression, image or model," and was first used between 1845 and 1854 AD to signify a category with similar members (Reese, 1980; The Oxford English Dictionary, 1961). The first appearance of "class", from the Latin classis, to signify a number of individuals possessing common attributes grouped together, is given as 1656 and 1664 A.D. (OED, 1961). A "taxonomy", defined as the science of classification and arrangement of organisms or objects according to relationships, is used extensively in the natural sciences. A "typology" is defined as a system of types used to classify or interpret individuals by establishing relationships among type categories.

Humans have always used systems of thought to name and group objects into loose categories of types through language. However, the widespread and conscious employment of typologies to distinguish and order the material world into explicit systems based on empirical criteria is a relatively recent development in Western society. It can be traced through the history of science in the 17th and 18th centuries (Foucault, 1970).

Although both **class** and **type** refer to ordering categories, the concepts underlying their origin and usage are different. Classes are usually operational and formed for specific purposes; they accommodate an "either/or" designation. Yet, classes are not assumed to define their members. Type, on the other hand, implies that the individual specimens share some "essence" or trait. Types are not intended to be empirically verifiable entities, but rather are "purely imagined backgrounds for

understanding human experience. The act which forms an ideal type is a Wasenchau, an insight into essence, and not a statistical averaging (norms) or a logical reasoning (classes)" (Hillman, 1980, p. 7).

Discussions around a type, such as building type, very often involve the use of specimens or exemplars. Traits which characterize different categories can often only be described through individual examples. Types call for living instances, perhaps because the division between one and another is not sharply defined. The fluidity of type categories is a response to efforts of typologies to embody the true nature of their elements. Classes tend to be more clearly defined, with more exclusive categories, because they do not seek to describe the essence of the individuals - only their relation to the classification system's criteria.

The Social Construction

"One question besetting type theory is this: Are types mental constructs that we impose on the world, or are types given within the world? Are they artificial or natural? Have they a logical-epistemological status or an ontological one?" (Hillman, 1980, p. 10).

In our assumptions, we assert that the physical world exists independently of our thoughts about it - a seemingly obvious statement with profound implications. The world is. Yet our structuring of the material world into ideas is social and culturally bound. "Human thought is consummately social: social in its origins, social in its functions, social in its forms, social in its applications" (Geertz, 1973, in Perin, p. 21). It is bounded by culture, in context, and in time. All cultures do not make the same distinctions between the Same and the Other, nor have we, historically, made the same distinctions that we now assume are ways to order the profusion of the existing world of things (Foucault, 1970). It follows that typologies are cultural products which reflect and influence collective interpretations of the material world. Cultures interact with their material world constructively; they interpret and impose. This implies that systems of thought are both reflections of the physical world and cultural products.

CURRENT USES OF BUILDING TYPOLOGIES

Current building typologies are social and cognitive constructions which represent a variety of interpretations about what the built environment is, what it means, and how it can be acted upon. Our inquiry sought out operative building typologies

to reveal who is using them, and what criteria is being used to divide and collect specimens within typologies.

We approached this inquiry by investigating the different spheres of users who employ some form of building typologies in the conduct of their work. Through content analysis of the users' explicit and implicit criteria underlying their building types, we framed a "typology" of users which identifies six spheres of use that share purposes and tacit social goals. The spheres of use which emerged from the content analysis are: 1) architectural history, theory, and criticism;[2] 2) social and cultural research; 3) design professions; 4) building regulations; 5) institutions; and 6) laypeople.

Spheres of Building Typology Use

Differences between the building typologies employed by the six spheres are grounded in divergent purposes for their use. These purposes included achievement of both social and instrumental goals which are particular to a culture and the group of users.

The research found four dimensions which differentiated spheres of users according to how they define and employ building typologies: 1) primary criteria upon which the initial type distinctions are made and on which the typology is formed; 2) secondary criteria which further define the types within the typology; 3) the "grain" or specificity of the building type categories and; 4) the relationships between the building types which reflect the complexity and explicitness of the typology.

Primary Criteria   There is always a first level of distinction on which creates the family of types which we have called the primary criteria. The research showed that these are based on similar characteristics of buildings' functions and/or form. Function is often defined as a set of activities whose relationship to each other has been socially determined to constitute a group of activities. An example is the teaching, socialization,

and daycare of children, which our culture defines as the function of "education." This social function is linked to the building type, "school". This function/form combination collects many activities associated with education into one type and divides this grouping from other groups of activities, such as work

or commerce. Typologies based on building function are common and implicit in laypeople's language and experience of the built environment. They are reflected in names for buildings and settings which refer to "what the building is for." Differences in how functions are defined and used as distinguishing criteria in building typologies relate directly to the purpose of the specific typology. For example, type categories used in building regulation define and group functions into occupancy types, such as "assembly", while function categories used by sociologists may define activities into groupings of social institutions such as "churches". Regulation typologies embedded in the Life Safety Code (1988) group churches and libraries as "assembly" buildings, while sociological typologies would clearly divide these functions as reflecting distinctly different institutions.

The use of form as the first distinguishing criteria leads to building typologies based on primary distinctions between elements such as the formal relationship between objects and space, building shape, material properties, architectural style, or some combination of physical/aesthetic attributes. These typologies are found most commonly in architectural history, theory and criticism, the design professions, and regulation.

Secondary criteria   The second criteria which further modify and define building type categories, are based on a wide variety of characteristics such as building location, occupants, style, history, material, etc., Again, the purposes for which the typology is used are linked to the secondary criteria. For example, architectural historians often use time periods and locations in their typologies, yielding building types such as "Virginia Log Cabins 1700-1900" within a typology of vernacular dwellings. Design professionals often use building materials to yield a building type, such as "Pre-stressed Concrete Multi-Story Buildings", within a typology which distinguishes types of construction related to building heights.

Grain   Differences in the extent to which secondary criteria are employed in a typology reveal varying levels of building type category specificity or grain, the third level of distinction. In building regulation, the aim is to provide a broad framework with clear boundaries between categories in order to classify the built environment for comprehensive application of controls. Therefore, the grain of regulatory typologies is relatively large. Professional designers, as well, seek

rather broad building types which provide a schemata of "proven" solutions. Their typologies, however, have fluid boundaries between types which enable a broad range of interpretations and manipulations. In contrast, historians and other academics most often use very fine grained distinctions to facilitate in-depth descriptive and analytical research through comparison and case study.

Relationships The fourth dimension which distinguishes the six spheres of users is the comprehensiveness of the typology itself. The **relationships** between the types reveal the complexity of typological distinctions and the consistency of application of distinguishing criteria. Because of the implicit nature of building type usage, it is often difficult to determine the building typological framework from which a single building type is derived. Use of a single building type category in research, a building program, or in laypeople's use seldom gives reference to the characteristics which distinguish it from other buildings. In many cases, such as in the collection of essays on building types in Built in the USA (Maddex, 1985), the relationships between a group of building types used do not imply a single typology. In Maddex' survey, the building types include Venturi's ducks and decorated sheds, black settlements, city halls, industrial structures, fences, and vernacular buildings. Many of these types are "lifted" from separate building typologies, each with their own definitional criteria. This is not unusual.

The exception to this finding is in building regulation which gives relatively explicit typological assignment to one type versus another. This practice of explicit definition allows builders and/or owners to negotiate the classification of their building into different types by arguing the fit between their building and typological criteria.

Instrumental Purpose

As the analysis of different users showed, there is a link between the way a building typology is defined and the purposes for which it is used. The parochial goals and work of the six spheres of users identified in the research were examined in detail in relation to their purposive use of building type. For instance, building typologies employed in building regulation are defined by material, constructions methods, and potential building hazards because the explicit intent of regulation is to insure the

life/health/safety of members of our society. Building typologies employed in academic spheres such as architectural and material culture history, sociology, etc., are used to structure and expand knowledge through typological analyses and manipulations. New insight is offered when typologies are restructured along new criteria for grouping and distinguishing specimens. Academics create entirely new typological systems which overthrow existing forms of knowing. The regulation users are by purpose conservative; the academics revolutionary. Both are valid responses to cultural roles.

Institutions use building types to reinforce and reify their existence and to legitimate their explicit purposes. They also use building types to accommodate their specific functional needs with standardized building programs and form. The building type they adopt is symbolic; those types they reject, significant. Changes within institutions are reflected in their presentation of self through building type change. As referenced earlier this can be demonstrated in the recent transformation of bank buildings towards corporate ideals which reflect new technologies and shifts in federal regulations. Although the presentation of institutional self through building type selection can be radically different, i.e., corporate versus fast food, the use and manipulation of building types to legitimate the institution is the same.

Laypeople use building typologies as a mechanism to structure the chaos of the built environment into categories of similar and different buildings/functions. These categories are related to their use of the buildings and experience in the landscape, as demonstrated in Appleyard's work on environmental cognition (Appleyard, 1976). For laypeople, it appears that the most logical ordering device has been, and continues to be a conceptual marriage of building form and use; i.e., what the building is "for" and what it "looks like".

Design professionals use a plethora of building typologies in the conduct of their work. These typologies are conceptual frameworks and bridges for design generation, form manipulation, information synthesis, and communication with related industries, regulations, clients, and building users. One of the primary tasks of designers is to address multiple agenda and integrate requirements arising from 1) building regulations, 2) physical systems, 3) social and political contexts, 4) aesthetics and meaning, and 5) professional standards and ethics.

Each of these groups of requirements embody their own building typologies and the designer's task is to move between and integrate the typologies which apply to the built form and function under design.

Social Purpose

The purposes for which people use building typologies reveal our society's use of the built environment to reinforce social goals. The types most often reflect the goals held by the dominant culture, whether they are publicly negotiated or unstated, conflicted values. The typologies used in regulation are based on the widely shared goal of the assignment of police powers to governments for protection from fire and structural hazards, maintenance of public health, and separation of noxious and hazardous activities from more valued and/or ordinary ones. In other cases, social values are publicly negotiated through building typologies, as can be seen in urban design standards, historic preservation districts and codes, zoning, etc.

Of particular interest is the use of typologies to enforce unstated, socially conflicted values. For example, the use of building typologies, as structured into our zoning regulation, enforce *de facto* social goals, which, if explicit, would be unacceptable to many people in our culture. An excellent example of this use is shown in Perin's research (1987) on how zoning is used as a socially accepted device to enforce a socio-economic class structure which desires the spatial separation of homeowners from non-homeowners. Ritzdorf's work (1986) also shows how zoning practices discriminate against women and children.

Each of the six spheres of users have social purposes underlying their use of building types, linked to the maintenance or support of particular social values. Some are explicit, openly shared values; some are explicitly negotiated values. Some purposes maintain a "hidden curricula" of values intended to be left unstated or which are simply so embedded in culture that they lie outside the realm of conscious intention.

SUMMARY

One of the most obvious findings in this inquiry is that there are multiple systems of building types in current use, which are distinguishable by primary and secondary definitional criteria and further defined by grain and relationship

of type. Since the building typologies have underlying criteria which are unstated and implicit, the different meaning systems and social values embedded in them are largely invisible. The resulting dialogue is therefore characterized by an apparent congruence in operative language, but an actual lack of congruence in the thought systems.

The lack of clarity in different meaning systems is exacerbated by the existence of type usage without typologies. It is only when a conscious system of thought is required for some purpose, such as in building regulation, that care is taken to form types into typologies. Otherwise, only the parts of the world which need to be named are structured into types.

Foucault's discourse on the development of biology reveals the difference between types as constructions which order and interpret what are viewed as important elements of the world, and a typology as an organized system of thought.

"Historians want to write histories of biology in the eighteenth century; but they do not realize that biology did not exist then, and that the pattern of knowledge that has been familiar to us for a hundred and fifty years is not valid for previous periods. And that, if biology was unknown, there was a very simple reason for it: that life itself did not exist. All that existed was living beings, which were viewed through a grid of knowledge constituted by natural history." (Foucault, 1970, p. 127 -128)

The existence of biology was impossible without the concept of the world as split into life and non-life. Yet, the world could be and was ordered and interpreted for centuries before this idea emerged. Types with and types without typologies have meaning. But the need to impose a systematic order through a typology occurs when all members of something are included for a specific purpose.

Conceptual confusion has been created by reference to "building typologies" as expressions of a single construct or as a group of like thought systems. There is an important distinction between categorizations of "type" versus "class" which were made clearer through the review of the history and development of typological thinking in general. Type categories are fluid, the embodiment of essence, respecting differences and overlaps in specimens. Class categories are more highly defined and idealized, against which specimens are compared.

In light of this distinction, building

types as used in architecture are appropriately ambiguous while types in regulation are highly defined and distinctive, i.e., "class-like". It is difficult to introduce a new type/class into the regulatory structure without affecting the entire typology since the structure is already a whole system whose typological rules include all built form. It is much easier to introduce a new type in architectural education, since the boundaries between types can overlap and typological distinctions are fluid. Distinguishing between building type categories as systematic typologies and building types as looser descriptions of essential characteristics further clarifies the current cacophony of building typologies.

"Buildings and spaces are being used daily as instruments to change the social world in which we live but we don't know half enough why it is happening or what the short and long term social, economic, political or cultural consequences are" (King, 1988, p. 2).

Instrumentally, the most important finding of this inquiry is the affirmation of the incredible power of building typological thought systems to shape our environment. As a society, we have accepted and reified existing structures of types as "real", and are therefore unable to restructure the physical world in ways that would support alternative visions of human culture. It is no accident that utopian thinkers and science fiction writers always design their worlds. Only by bringing implicit values and concepts to explicit levels of discourse can we set the stage for negotiating and changing our thoughts and actions in the landscape.

FOOTNOTES

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2.   There is a history of building types in the literature of architectural theory and history which is beyond the scope of this paper to report. This literature

includes Moulon (1987), Perez-Gomez (1983), Pevsner (1976), Rossi (1982), and Vidler (1977).

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