Level of Difficulty

As an introduction to housing, this book takes little for granted in terms of background. Concepts are developed slowly and, as noted above, considerable attention is given to defining terms, supported by graphic and tabular materials. In an area as complex as housing, it is often the absence of common agreement on terminology, methods, and concepts which adds confusion and handicaps our ability to deal with real problems. The beginning student of housing (like the author) will want to progress slowly through the text. Frequent reference will be made to materials in other chapters or to more general texts in economics, geography, political science, sociology, planning or urban studies.

It will also be obvious that some concepts and empirical examples require more background than do others. There is simply no way one can avoid complex concepts and techniques in the study of housing. Economic concepts such as indifference curves or elasticities, sociopsychological concepts such as life cycle, and spatial concepts such as place utility are useful tools. Similarly, while mathematical notations and analyses are kept to an absolute minimum, they too cannot and should not be avoided. Finally, some awareness of different political ideologies and research paradigms is taken for granted. In all cases, however, the level of difficulty is not such as to preclude use of the book by the interested layman.

NOTES

[1]The term "housing system" is used here, as a typically vague but convenient shorthand expression, to encompass the full range of interrelationships between all of the actors (individual and corporate), housing units and institutions involved in the production, consumption, and regulation of housing. It is thus a much broader term than the housing market or sector.

[2]Throughout the following text, the terms United Kingdom (U.K.) and (Great) Britain are used interchangeably, although the latter excludes Northern Ireland. Some of the statistical tables refer to the U.K., others to Britain, and still others to England and Wales only. This confusion seems unavoidable. Similar difficulties arise, on a smaller scale, in terms of whether U.S. statistics include Alaska and offshore islands.

Chapter 2

Concepts, Context and Information

What exactly is housing? What is meant by such terms as the housing sector, the housing market, the housing inventory, and the standing stock? What attributes may be used to measure housing, and which of these are unique? How can we measure the diverse benefits which housing produces when that housing varies from shacks to mansions? More specifically, what kinds of benefits, or services does the occupancy and/or purchase of housing convey to its residents? Finally we ask, what sources of information are available for the study of housing and housing policy? How does this information relate to those research and policy issues which are perceived as important? These questions provide the structure for this chapter.

WHAT IS HOUSING?

There are, then, two major sources of confusion in the literature on housing: one of conceptualization the other of measurement. As outlined in the introduction, housing, at its most basic level, is certainly "shelter," but it is equally clearly much more than that. It is both a physical entity, a social artifact, an economic good, a capital stock, a status symbol, and at times a political "hot-potato." We in turn must be precise as to what aspects of this "multi-dimensional" thing we mean when we refer to "housing."

Definitions of Housing

At least six common definitions of housing appear in the literature:

as a *physical facility* unit or structure,[1] which provides shelter to its occupants, but which also consumes land and demands the provision of physical services such as water and sewerage as well as social services to households;[2]

as an *economic good or commodity*, a consumer durable good, which is traded or exchanged in a market and as an "investment" good which returns equity to its owner;

as a *social or collective good*, as an element in the social fabric and in that society's set of social relations, and which is provided to everyone just as it attempts to do in education, food and, in most cases, health care;

as a *package or bundle of services*–a view which recognizes that the occupancy of housing involves the consumption of neighborhood services (parks, schools), a location (accessibility to jobs and amenities) and the proximity of certain types of neighbors (a social environment);

as a *sector of the economy*, a component of fixed capital stock, a means of producing wealth, and a tool of governments in regulating economic growth.

Housing is clearly all of these at the same time. Each concept is also applicable to particular aspects of housing and is relevant for specific purposes. This listing of definitions does not, however, help us in its present form. It separates and confuses several related but different dimensions of housing–and mixes a concern for what housing is with what it might be. It also does not clearly differentiate between what we put into housing and what we get out of it, including the critical question of location. It may be possible to clarify these distinctions by recombining them through the concept of housing "services."

The Concept of Housing Services

As is by now obvious, housing production brings together a variety of "inputs," while occupancy of that housing provides a series of "outputs." These inputs and outputs in turn can be conceived as representing *housing services*, i.e., as benefits (or disbenefits), for builders, owners, and renters. Clearly, different kinds of housing, in different locations, require very different inputs *and* deliver very different services to those who own or occupy it. It is the role of the market, the housing agency, or whatever system of allocating housing is used to match these inputs and outputs.

Drawing on the preceding definitions, the types of services which housing delivers can be summarized in the form of a schematic flow diagram (Fig. 2.1). Housing supply on the ground represents the combination of a set of inputs: a physical facility (materials), capital, land and labor (including entrepreneurial ability)–the standard "factors" of production which reflect the particular set of relationships in the means of production in that country–combined with location (accessibility) and a local environment or neighborhood.[3] From these inputs flow a series of services as outputs: these include (1) *shelter*–a place to live and protection from the elements; (2) *equity*,[4] for owners at least, in terms of the financial return on a major asset in their personal investment portfolios (and a tax-free asset at that for owner-occupiers); (3) *satisfaction and status*, in that the consumption of housing (preferably comfortable housing in an attractive location) provides a degree of social satisfaction and for some is clearly an important component in

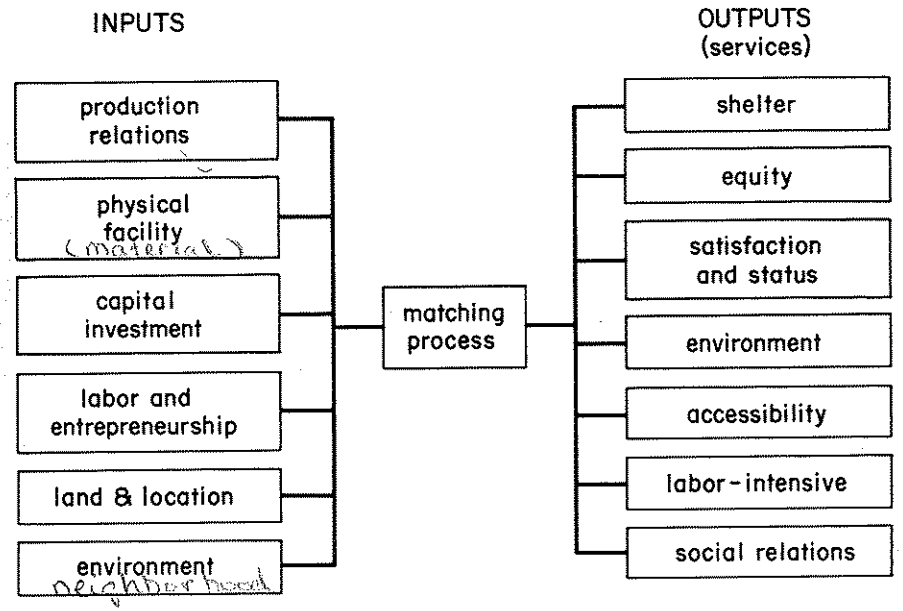

Fig. 2.1. The flow of housing services.

establishing and visibly publicizing their social status; (4) a set of *environmental* attributes and services which arise as externalities (effects external to but impacting on the house itself);[5] and (5) a level of *accessibility* to places of work, shopping, friends, and leisure pursuits.

More broadly, the occupancy of housing in part contributes to defining a set of *social relations*, to identifying a household's position in the social and spatial structure of a local community and a city. This in turn influences the occupants' life style as well as their personal commitment to the status quo in a neighborhood, a city, and the social system generally.

Although the list of services flowing from housing could easily be extended, it will suffice here to add one other, *labor-intensive* services. Isler (1970) defines this component as including maintenance, custodial and protective (i.e., security) services, as these terms are commonly used in reference to rental accommodation. Such services are commonly paid for either in rent, when they are the responsibility of landlords, or in property taxes (or rates) when performed by local government. In the case of owner-occupied housing, these services are generally overlooked; but they should not be. The first two services, maintenance and custodial, are usually performed by the owner personally, but eventually they return income to that owner in the form of capital gains (price increases) or increased status and satisfaction.

Measuring the Flow of Housing Services

Differentiating among these types of housing services is critical for several reasons. First it stresses that housing consists of a mix of attributes, what we term the *housing package or bundle*, some of which are external to the physical structure itself, but each of which delivers its own output. A second reason is that the concept of a flow of services from housing removes the typically sharp distinction between the producers and consumers of housing, except in reference to the rental market and the public sector. Owner-occupants, by this definition, become producers as well as consumers because of their labor inputs and the equity they can accumulate. Third is the explicit recognition given to neighborhood and locational factors. Services deriving from these external sources stress the importance of analyzing housing in terms of environmental or spatial externalities, and in terms of the different values attached to each service by households of different incomes and tastes. Interestingly, discussions of housing supply (see Chapter 5) usually refer to the physical stock of dwellings, while studies of demand refer more frequently to the demand for housing services in general (Quigley, 1978). Not surprisingly, the two approaches do not produce compatible results.

Although it is relatively easy to conceptualize what housing services are, it is quite another matter to measure the magnitude and flow of these services. As a result, most reserachers retreat in the face of the task and rely instead on selective single measures such as average price or rent, or some composite measure which treats housing services as a homogeneous bundle available at a single price. Others, notably in microeconomics, have used techniques similar to regression analysis for attaching "implicit" prices to each component (e.g., number of bathrooms, presence of garage, etc.) in the bundle of housing attributes (Berry and Bednarz, 1975; Goodman, 1978; Rosen, 1978). These techniques produce what are referred to as "hedonic" price estimates, which in turn can be equated with the flow of services from each attribute of the housing stock (see Chapter 7). A very different approach, based on survey research methods, actually explores how people use housing in their daily activities and what "values" they derive from that use (Michelson, 1977; Morris and Winter, 1978).

Clearly some combination of these research techniques is necessary if the nature and flow of housing services is to be measured in any kind of realistic form. In most cases we substitute for measures of housing services the analysis of "bundles" of standard housing attributes, such as house size, price, style, as well as neighborhood and locational attributes. Even defining what that bundle is can become complicated, however (see Chapter 3). For example, Kain and Quigley (1970) used 39 variables relating to the physical, social, and visual qualities of housing in a study of St. Louis. They also varied the spatial scale at which these variables were analyzed from the individual dwelling, and groups of adjacent properties to the residential block front and finally, census tracts. Whatever the measurement or spatial scales used, however, it should be stressed that no single scale will capture the full interdependence of housing consumption and occupancy patterns in an urban environment.

Unique Attributes of Housing

In addition to the conventional definitions of housing as a physical facility, and as an economic good exchanged through a market, housing also has a number of relatively unique attributes which should be explicitly restated. Although there is still a considerable difference of opinion on the relative importance and degree of uniqueness, the following attributes are particularly relevant here:

fixed location (or immobility): generally occupants move, houses do not (except for some mobile homes);

durability: as a physical facility, as well as an investment, housing has a long lifespan;

limited adaptability: as a result of the above attributes, the housing stock is relatively slow to respond to changing demands, although the flow of services from that stock can change rapidly over short periods of time;

inhomogeneity: i.e., the complexity and diversity of the housing stock and the services it produces, as well as the large number and diversity of buyers and sellers;

exogeneous influences: housing is highly sensitive to changes which are external to local markets;

policy overlay: housing is also subjected to a multitude of institutional regulations imposed by various levels of government; and

externalities: as recognized in the concept of the housing bundle, spatial externalities—particularly those relating the character of the immediate neighborhood environment—exert a powerful influence on what happens to any single housing unit or group of units.

Many of these attributes are in fact shared by other types of urban real estate, such as industrial and commercial land uses. However, the size and diversity of the housing stock and of its occupants, as well as the strength of local neighborhood effects or externalities, are different in degree if not in kind. Nonetheless, perhaps only in terms of its social and political importance is housing truly unique in the context of urban real estate markets.

The implications of the above attributes are in large part obvious, but are worth stressing. One effect of the immobility and physical durability of housing is to limit the degree of substitution possible between different types and styles of housing. This feature, which is explored in more detail in the next two chapters, can lead to the "segmentation" of the urban housing stock and the operation of distinct subdivisions or sub-markets in housing, which inevitably restricts the choices open to some consumers of housing.

In aggregate, the housing stock is difficult to adapt or modify in response to changes in demand in the short term, particularly since new construction usually amounts to only 1 to 3% of the existing stock in a given year. Yet the flexibility of supply provided within that stock is often underestimated. Most structures initially built for single family use can be converted into multi-family structures or for commercial, institutional, and, at times, even industrial uses. Moreover, multi-family structures can be altered to change the number of dwelling units

provided, or they too can be converted to other uses. An examination of almost any inner city neighborhood will reveal a wide range of activities taking place in what are or were formerly residential structures.

In many cases, however, these same attributes, augmented by institutional constraints such as zoning, tend to discourage adaptation and reuse of the housing stock. The existence of spatial externalities again implies that one cannot look at housing conditions, or evaluate housing needs, without examining the character of the immediate environment. The openness of housing markets to external influence and control also means that one cannot understand changes in a local market area without examining the larger social and political context of which that area is a part.

The Concept of Housing Status

Viewed from the perspective of the individual household, the outcome of the flow of services from housing as described above effectively designates the *housing status* of that household. The term housing status is defined by W. F. Smith (1970, p. 23) to represent the entire flow of services, i.e., shelter, public utilities, amenities, accessibility, and access to an environment which comes from occupying housing of particular kinds in specific neighborhoods.

The creation of this status in turn sets the stage for a series of "second-order" effects. These include the rights and obligations attached to the occupancy of housing, including the elements of security (financial and physical) and satisfaction, the right to exclude others from that property, as well as the patterns of use and behavioral activities conditioned by that unit and the objective standards of the housing which is occupied. The latter, in turn, influence the level of satisfaction and external environment of that household's immediate neighbors and the broader community of which it is an integral part.

The value of this conceptualization is that it focusses our interest in the flow of housing services on the rights, obligations, and uses to which housing is put. Housing status then becomes defined as the degree of "control" over one's personal housing environment in relation to the control exerted by others.

Access to Housing and Housing Classes

The concept of housing status can also be defined in terms of "classes" in society and the conflict between those classes. Housing classes arise whenever people enjoy differential "access" to housing, which is of course true in all societies. Thus, according to Rex (1971), there are as many housing classes as there are kinds of access to housing. He identified the following *housing situations* as typifying differential access and thus giving rise to class differences:

(1) outright owner of a house (no mortgage);
(2) owner of a house under a mortgage;
(3) public sector tenant (differentiating between those in buildings with a long life expectancy and those awaiting demolition);
(4) tenant of a house owned by an absentee landlord;

(5) owner of a house bought with short-term loans who is thus compelled to rent rooms; and
(6) tenant in a rooming house.

To the author, this list also represents a scaling of access to housing in terms of descending desirability, as well as an implicit spatial ordering from new suburbs (2), to older suburbs (1 and 5), to the inner city (3, 4, and 6).

This concept is useful here in that it explicitly introduces tenure and credit (mortgage) conditions as components in defining housing status. But it is not without criticism. Clearly the above classification is not exhaustive. For example, it ignores contemporary housing forms—notably multi-family rental and cooperative housing—and the intense contrasts and diversity which can appear within each class. It has been criticized precisely because it extends the concept of class conflict far too broadly. Lambert, Paris and Blackaby (1978) argue that in so doing it obscures the real conflicts which do occur, such as those between landlord and tenant and between institutions and credit-burdened homeowners. These are issues for later discussion.

HOUSING IN SPATIAL CONTEXT

In many ways the study of housing in its spatial context is subsumed under other areas of urban research (see Fig. 1.2). Housing is an implicit, if not explicit, focus of research in at least the following important sub-fields: (1) residential land use and urban real estate; (2) migration and residential mobility; (3) neighborhood change; and (4) social area analysis and urban ecology.

Housing is the building "stock" equivalent of residential land use; in effect it adds the third dimension to such studies (location and site size being the other two), and it is the major component in urban real estate markets. Housing is also the "built" environment for, and the major determinant of, intraurban migration and mobility. Housing is also one of the principal mechanisms through which urban neighborhoods change, and one of the stimulants for such change. Housing "space" is one of the components by which social areas and communities in the city are created and either maintained or lost. In all of these cases, the relationships are circular and cumulative—*housing is both cause and effect*.

As all four of these topics are well covered in almost all basic urban texts, we need not undertake here to summarize each in detail as a separate entity. Instead, discussions of the basic concepts in these areas is dispersed throughout this book when and if they assist in the analysis of housing per se.

Residential Land Use

Residential land use—i.e., the geographic area occupied by or assigned to housing—has been the principal concern of most researchers and planners concerned with urban land use and spatial structure. Although it occupies from 35 to 45% of the land area of most cities, housing must still compete with other

uses in the *urban land market* (Alonso, 1964). In theory these uses compete for accessibility and space, and are sorted out spatially in terms of their ability and willingness to pay the costs of locating nearer the city center. Each use has its own schedule of rents or prices it is willing to bid for each location (Fig. 2.2a). The highest bids are by those uses–high density offices, institutional, and commerical uses–which place the highest premium on accessibility and proximity to other uses within the city center. These uses tend to occupy the closest locations, with other uses distributed at increasingly further distances from the center.

The result of this sorting process is the traditional pattern of concentric zones of homogeneous land uses radiating outward from the city center (Fig. 2.2b). Depending on the size of the relative bids, the numbers of uses considered, housing would occupy perhaps three distinctly different zones within this idealized city. One is a high density zone (B-C) immediately surrounding the commercial center, much of which might consist of town-housing or high-rise apartment towers. The second zone is the broad middle band of lower density suburban housing located between older and newer industrial (C-D and E-F) districts. A third zone not usually included in most traditional descriptions of urban land use, but of growing importance, is that of exurban residential development. In such areas, housing (including second homes, retirement cottages, and recreational properties) increasingly competes with and out-bids agricultural land uses. The result is the emergence of an *urban field* around our major urban centers in which urban residential activities may extend up to 100 kilometers beyond the continuously built-up land use boundary (F and beyond).

This simplified concentric zonation, of course, seriously distorts the extensive mixing of housing with other land uses which we observe at all distances from the city center. Yet it does provide the broad spatial framework within which we examine the complex operation of a market–or what is defined in the next chapter as an allocation process–for housing space and housing services. Relatively few households or housing units, however, are directly affected by competition from nonresidential land uses, and for this reason we subsequently emphasis competition *within* the residential sector. Nevertheless, the extent to which competition from other urban land uses influences the aggregate amount, price, and location of land available for housing does set broad guidelines for the operation of the allocation process for housing itself.

Housing and Neighborhood Change

We have already acknowledged that it is impossible to separate the urban housing stock from its location and neighborhood context. Nor would one want to. The importance of the external relationships–the spatial externalities–which link the fortunes of any dwelling unit or set of units to those of its neighbor is such that any study of the housing stock must be paralleled by one which examines change in the broader neighborhood context.

There are almost as many ways to articulate the processes of neighborhood changes as there are people who have studied the subject. Johnston (1971), Herbert (1972), and Jones and Eyles (1977) offer comprehensive surveys of the

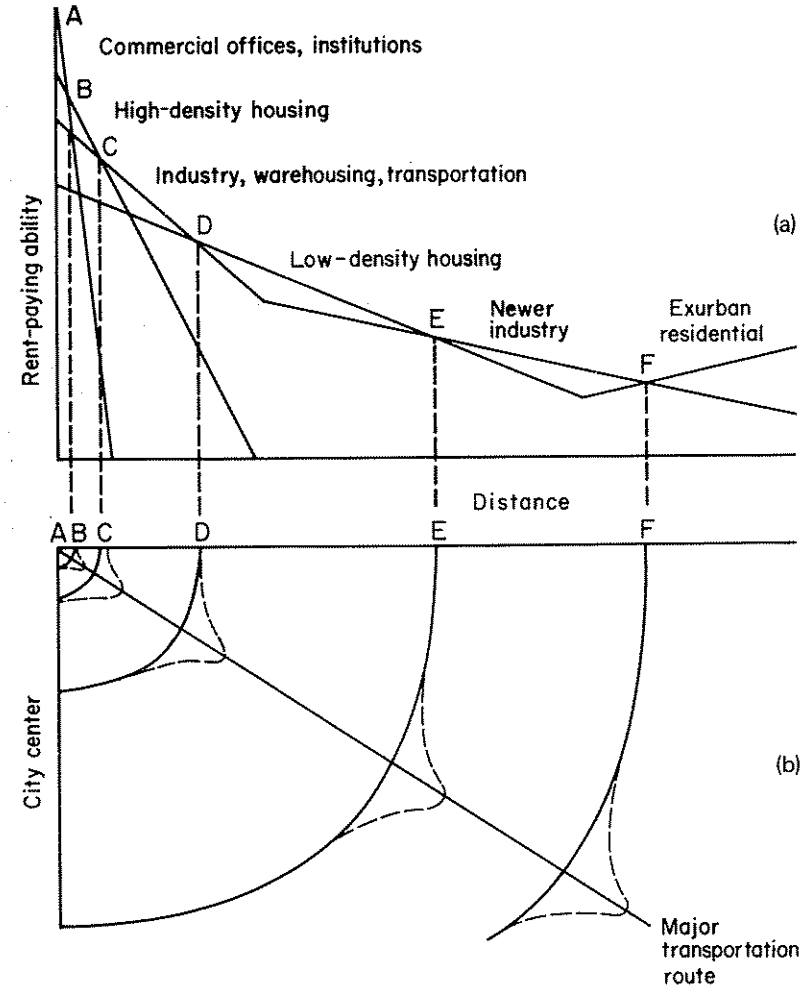

Fig. 2.2. Housing in a competitive urban real estate market.

literature and concepts of the social geography of urban areas. These approaches include the traditional ecological approach (Park, Burgess, and McKenzie, 1925), and its many variants (see Berry and Kasarda, 1977); models based on the residential filtering process (Hoyt, 1939; Lowry, 1960; Grigsby, 1963); other formulations based on the role of institutions and social conflict (Harvey, 1973, 1977; Cox, 1978); more formal economic models (Kain and Quigley, 1975); gaming and probabilistic models (Gilbert, 1972); statistical accounting frameworks (Moore and Clatworthy, 1978); and the changing patterns of social relations (Cybriwsky,

1978). Each of these approaches, in varying degrees, provides some direct (or indirect) role for the housing stock and its changing patterns of occupancy.

Perhaps the most persuasive of the above approaches to date has been the ecological approach, dominated by the Chicago school of sociology of the 1920s. Although widely criticized, these concepts still provide a useful descriptive framework for studies of the dynamics of housing in cities. In their view, neighborhoods change through a process of *invasion and succession* in which new institutions and populations gradually penetrate (invade) areas occupied by other groups and eventually come to dominate those areas by displacing members of the initial groups (succession). Spatially, the outcome of the process is the same concentric zones radiating out from the city center as in the competitive bidding process for land outlined above, except that each zone contains groups of increasing social status.

Underlying this concept or model of neighborhood change are several stringent assumptions, or what the ecologists called "conditioning factors," at least three of which relate to housing. They assumed the existence of a rapidly growing city, with an industrial economic base, a steady inflow of migrants of mixed ethnicity and generally low incomes and almost unbiquitous improvements in transportation (e.g., Chicago as it was in the early 1900s). The ecological argument also assumed that (1) housing becomes socially obsolescent through aging; (2) new housing is primarily constructed on the outer margins of the city; (3) the opportunity to improve one's housing situation is extensively promoted by a large real estate industry; and (4) people prefer new housing over old.

These assumptions are not without some validity, as evidenced by their persistence in much of the literature to this date; however, they clearly overstate the case. The geographical outcomes which result—displayed in every urban text as the classical ecological model of concentric zonation—comprise an inner "transition" zone of low-quality housing near the city center, followed by a zone of "working-man's" housing and an ethnic ghetto, and extending to better-class housing on the urban periphery. These patterns are but logical consequences of the above assumptions.

Hoyt (1939) provided perhaps the most explicit link between housing and neighborhood change in his classic study of American cities for the U.S. Federal Housing Administration (FHA). His focus was the effect of residential growth (and decline) on the homeowner and on the risk facing the investor in residential mortgages. His conclusions are well known and widely documented and need only be briefly summarized here as they relate to housing.

Hoyt concluded that changes in urban residential patterns followed systematic directions or paths, shaped by the location of areas of residences of "the leaders of society." Once established, these high-status areas tended to persist and to expand outward from the city center in well-defined sectors parallel to the fastest transport routes and towards areas with the most environmental amenities. Their outward movement was encouraged by the physical growth of the city, by the tendency to construct new high-class housing on the urban periphery, and by the consequent deterioration of older housing. The sectoral form reflected the attractiveness of accessibility, and the tendency for the growth of adjacent areas of intermediate value housing to limit the latteral expansion of high status areas. In this description, one can see many of the ingredients of subsequent models of filtering and residential change (Chapter 7).

Numerous modifications and extensions have been made to this "sector" model, some by Hoyt himself. Firey's (1947) well-known criticisms of the Hoyt model in fact act to broaden and deepen—rather than refute—that model. Firey insisted on the need to include the importance of the historically "contingent" character of land uses (and housing) in a city and the role of social values and sentiments—the cultural ecology—in shaping patterns of residential change. Rodwin (1950) also argued for an extension of Hoyt's emphasis on the attractiveness of high-status residential areas to include a more refined analysis of "class" structure and to stress the importance of rising incomes and aspirations in encouraging all households to improve their housing conditions by moving. Subsequent work in social area analysis (Herbert and Johnston, 1976) has brought these various contributions and empirical models together to provide a composite description of the urban ecological base. This includes a concentric zonation of certain household attributes, such as family size and housing stock characteristics (e.g., age, density, and structure type), and an overlay of sectoral variations in household occupation, income, and housing value. Superimposed on both of these patterns are localized ethnic communities.

In all cases, recent trends have distorted, although not destroyed, these classical patterns. Widespread highway construction in the city and suburbs, a massive decentralization of jobs, rapid racial transition, the boom in apartment buildings throughout the urban area, and the rehabilitation of housing in selective older areas of the inner city have made contemporary housing and neighborhood patterns far more variable and complex. For this reason, the student of housing must look beyond the valuable but restricted context provided by studies in urban ecology and residential land use. On the other hand, it is necessary to keep in mind the diverse origins and directions of neighborhood change envisaged in the classical ecological model and its many derivations.

One extension to this literature has been the attempt to conceptualize temporal sequences or stages of neighborhood change (Birch, 1971). Table 2.1 provides one example of what these stages might look like. They should not be interpreted as "inevitable" stages, but more as expressions of the attributes which might typify particular neighborhoods as they evolve over time (their life cycle). The utility of this example for our subsequent discussions is that it stresses the fact that neighborhood change is the composite result of a series of changes in housing, occupancy patterns, demographic structure, social composition, and land use. All of these components are interrelated, but each has its own momentum or life cycle. Housing, then, acts as both a determinant and a consequence of neighborhood change.

Housing and Household Activity Patterns

At the level of the individual household, housing—or more accurately the "home"—also plays a central role in the daily activity patterns of the household. The home is the major focus and haven for, and the base location from which most

Table 2.1. Summary of Neighborhood and Housing Life Cycles

Sequence (stage)	Housing and physical attributes			Social attributes			Other
	Dwelling type (predominate additions) and tenure	Level of construction activity	Population density	Household & family structure	Class, social status, income	Turnover, migration, mobility	Other characteristics
Suburanization (new growth) "homogeneity"	single-family (low-density multiple), owner-occupied	high	low (but increasing)	young families, small children, large households	high (increasing)	high net in-migration, high mobility turnover	initial development stage; cluster development; large scale projects.
In-filling (on vacant land)	multi-family, rental	low decreasing	medium (increasing slowly or stable)	aging families, older children, more mixing	high (stable)	low net in-migration, low mobility turnover	first transition stage—less homogeneity in age, class, housing; first apts.
Downgrading (stability and decline)	conversions of existing dwellings to multifamily; rental	very low	medium (increasing slowly) population total down	older families, fewer children	medium (declining)	low net out-migration, high turnover	long period of depreciation and stagnation, some non-residential succession
Thinning out	non-residential construction—demolition of existing units	low increasing	declining (net densities may be increasing)	older families, few children, non-family households	declining	higher net out-migration, high turnover	selective non-resid. succession
Renewal	(a) public housing; rental	high	increasing (net)	young families, many children	declining	high net in-migration, high turnover	the second transition stage; may take either of two forms depending on conditions
or	(b) luxury high-rise apt. & townhouse	high	increasing (net)	mixed	increasing	medium	
Rehabilitation & gentrification	conversions	medium	decreasing	few	increasing	low	

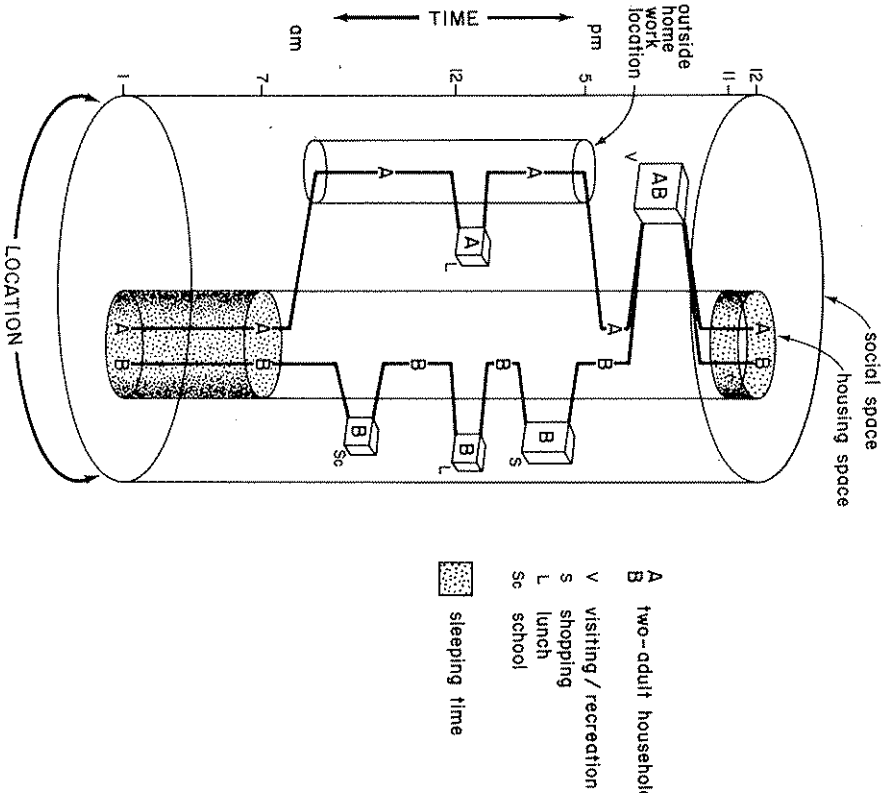

Fig. 2.3. Housing in the daily prism (time-space mapping) of household activity patterns (after Hägerstrand).

households pursue their day-to-day activities—their daily cycle. The type and location of that housing, combined with the attitudes of households toward their housing situation, in turn condition those activity patterns (Chapin, 1976). Only the most regular and recurring of those activities, however—the journey to work is one example—are eventually recorded in the aggregate, longer-term patterns of housing and neighborhood change.

This daily rhythm of social behavior can be illustrated by reference to the concept of "time-space" mapping, based on Hägerstrand's formulation of the *daily prism*. Figure 2.3 illustrates this concept by outlining the typical movements of a couple (A B) through space and time as they carry out their daily routines of

working, visiting, shopping, traveling, and home-based activities. Of course the actual patterns will differ for each household, depending on its age, composition, life-style, and income, and for each location of residence, but with the home remaining as the common base. Although the principal emphasis in this volume is with those activities which are less frequent and more dramatic (e.g., moving house), and with those activities which are mirrored in the behavioral patterns of aggregates of households, it is important that we do not overlook the fact that housing shapes, and is shaped by, many individual human activities which are not evident at the aggregate scale.

HOW THE HOUSING STOCK CHANGES

In addition to defining what is commonly meant by the term housing, and what is involved in such concepts as housing services, attributes, and status, it is also essential that we indicate what forms or types of changes can take place within the housing stock itself. Here the term housing stock or *the standing stock of housing* is defined as the inventory of residential structures or individual dwelling units currently occupied or available for occupancy. Bringing together at this early point different forms of change in that stock provides an essential background of concepts and a common vocabulary for subsequent discussions.

Sources of Change in the Housing Stock

The total number of housing units changes over time in response to the net balance of adjustments in the different components of supply. This balance can be summarized succinctly as follows:

Total housing supply (units) time t + 1	=	Total supply time t	+	New construction time t→t + 1	+	Subdivisions of existing units	−	mergers of existing units	−	demolitions, other removals t→t + 1
						net conversions t→t + 1				

or symbolically as:

$$H_{t+1} = H_t + NC_{t,\,t+1} + Cnet_{t,\,t+1} - D_{t,\,t+1}$$

assuming that vacancies are contained in H. The total housing inventory is therefore the inherited stock or supply from previous periods plus (or minus) the net balance of new construction and conversions less removals from the stock.

To illustrate the relative size of these components of change we can refer briefly to the changes in the U.S. housing inventory between 1970 and 1976.[6] During this period, the total 1970 inventory (H_t) of 70,184,000 dwelling units increased

by 10,697,000 or 15.2%, based on the addition of 13,222,000 units through new construction ($NC_{t,\,t+1}$), less 4,686,000 units lost or removed ($D_{t,\,t+1}$), plus a net addition of 2,161,000 units from unspecified sources. Unfortunately, there are no specific estimates available of the number of units added or lost through conversion, although those units presumably are contained in the unspecified category.

This simplified breakdown can be extended, however, to include both a much wider range of changes in the housing stock and the diverse spatial and temporal expressions of these changes within cities. We are here not only interested in changes in housing supply, but in the flow of housing services that derive from sources other than alterations to the number of units. Such changes include those in the quality, tenure, and price of housing supplied, the locations within the city at which these changes take place, and their subsequent impact on neighborhood change and social welfare.

Figure 2.4 undertakes to summarize the full range of modifications which can take place in the composition and spatial pattern of a housing inventory within an urban area. Most of these are obvious kinds of changes, but seldom are they brought together and made explicit in the housing literature. Housing units can be added to the inventory as part of three structural processes: (1) as new units built on previously undeveloped land, (2) through modifications in the form and usage of the existing stock, or (3) by replacement of existing units with new construction. Each of these three processes may also take very different forms, depending on the location (as extensions to the built-up area or infilling), the scale and nature of the development (in price, occupancy, tenure, size, and design), and in the origin of the investment decisions involved (public or private). This range of inventory adjustments, in turn, conforms roughly to a time scale (from initial construction, through modifications, to eventual replacement) and to a spatial scale (moving from redevelopment in the city center to the extension of the built-up urban periphery). Each expression of adjustment in housing supply can also be measured at different levels of spatial aggregation: varying from the individual dwelling unit, building, or site, to aggregate statistics for entire city blocks, neighborhoods, or socioeconomic regions within an urban area.

Perhaps the most complex changes, and certainly the most difficult to observe and measure, take place within the existing stock itself. Here four such changes are recognized: (1) shifts in the relative *quality* or value of housing units or groups of units within the housing inventory (the filtering process); (2) changes in the *intensity* with which housing is occupied (leading to systematic changes in occupancy and population density); (3) shifts in the *tenure* of occupancy (from owner-occupied to rental and vice versa); and (4) changes in the *number* and *size* of dwellings and the type of use. The latter includes the conversion of residential structures to nonresidential uses and, although less frequent, the conversion of nonresidential structures to residential use, as well as residential conversion whereby existing housing units are subdivided or merged without a change in tenure.

The process of subdivision and merger, as defined above, is the principal mechanism through which new units may be created from the existing stock, or the size of existing units altered in the short term. Often, but not necessarily, it is accompanied

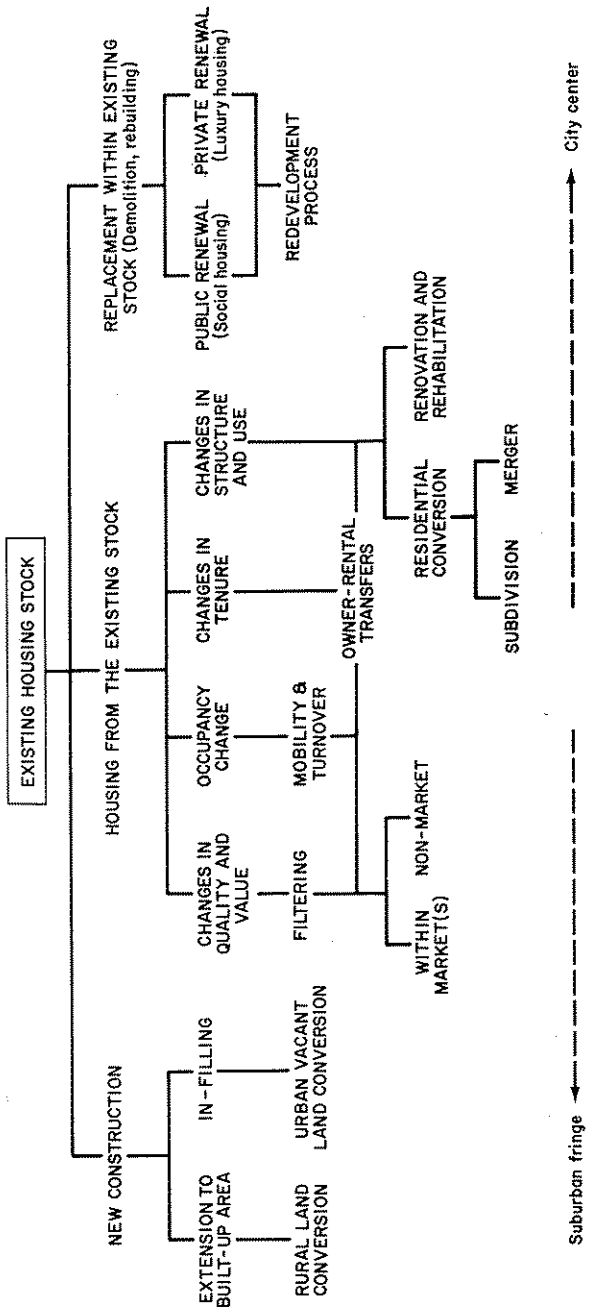

Fig. 2.4. Types and processes of change in an urban housing stock.

by a change in housing quality and tenure. Similarly, the filtering process is the principal mechanism, at least in Grigsby's (1963) view, by which housing units of different quality are released from the existing stock. We examine both of these concepts in more detail in Chapters 5 and 7.

Temporal Changes: The Aging Process

One of the few attributes of housing which can be measured with any degree of certainty is its age. The aging process is one of the underlying dynamics of the housing stock, much as it is in the demographic structure. The age of housing also tells us a great deal about the conditions under which it was financed, built, and occupied, about the character of the residential areas which result—as depicted in the ecological model above—as well as about the changing supply of housing of different styles and periods or "vintages." Thus one tends to speak of, for example, 19th century brownstones in New York and Boston, of 1950 bungalows such as in Daly City, California, or of Victorian suburbs in London and Manchester.

The most important single attribute of new housing, on the other hand, is precisely that it is new. It is obvious that the number of old residential structures, such as Victorian terrace houses or 19th century brownstones, built during past periods, cannot now be increased—although the number of dwelling units and the flow of services from those structures can be altered, as shown above. One also knows that even if nothing else changes, the addition of new housing irreversibly alters the market and the relative attractiveness of all older housing.

Once housing is built, the subsequent process of aging not only tells us something about the changing character and composition of housing, but about the pressures on the stock. Most housing is considered to have a *finite life-span*, depending primarily on two factors: the quality of initial construction and the level of subsequent maintenance. Although that life-span may, in physical terms, be several hundred years, in economic terms 50 to 60 years is considered in most instances to be a reasonable life expectancy. In North America, however, the tendency has been to accelerate this process, discarding old housing far too quickly in relation to its physical usefulness, in preference for what is new and perhaps cheaper to run. At the same time, recall that land as such does not usually deteriorate, leading to a continually changing balance of building values and site values over time.

In any case, the aging process alters the mix of housing types with each passing decade and to the extent that aging brings depreciation, changes the "quality" mix of the existing stock. Each decade also takes its toll, reducing the number of units through fire, natural disaster, redevelopment, slum clearance, conversion, and abandonment. The result is displayed schematically in Figure 2.5, which illustrates the changing age profile and life expectancy curve of a given 10-year stock of housing. If we were to overlay a series of these curves, often called housing *depreciation curves* (Grigsby, 1963), for the housing stock built in several successive decades, we could see the inherently dynamic nature of that stock, as well as the changing composition of housing inherited from past periods.

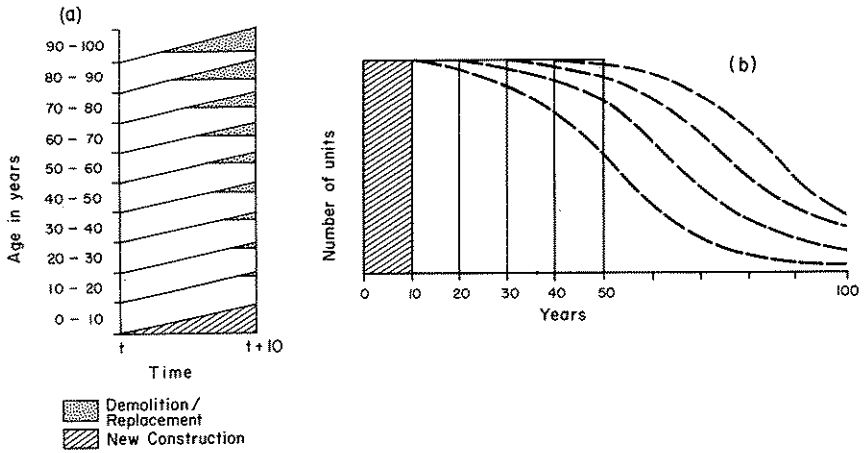

Fig. 2.5. The changing age profile of housing.

Note that this does not necessarily mean that housing quality declines consistently or even inevitably with age. On both points there is a long and detailed debate (Grebler et al., 1956; Grigsby, 1963; Needleman, 1965; Wolfe, 1969; Nutt, Walker, Holliday, and Sears, 1976; Kirby, 1979), which is still unresolved. The point is that the relative distribution of housing quality does shift and this in turn solicits different responses by households and builders.

The Spatial Imprint of Supply Changes

The period of housing construction also has a direct spatial impression. Since, as is obvious from the above, most new housing is built on the edges of cities, a map of average housing age at any given time would show a series of roughly concentric rings radiating outward over time from the city center (Adams, 1970). A series of cross sections of a hypothetical city over time such as Figure 2.6, would show a wave-like pattern of building activity, the crest of which shifts outward with each decade. As the peak of new building moves further from the center, a smaller wave of rebuilding emerges near the center, although usually not until several decades after initial construction, and it too continues to move outward over time.

Although these patterns are obvious to anyone who looks at a city, perhaps less obvious is the relationship of each building phase to external factors: to long swings in the building cycle and to sudden technological innovations, particularly in urban transport, but also to changes in building design, consumer tastes, and public policy. Figure 2.7 illustrates how the rate of buildings and the predominant mode of urban transport interact to produce spatial rings of urban development of very different size, within which the housing supplied differs in age, density, design, tenure, and price as well as location. These patterns serve as underlying

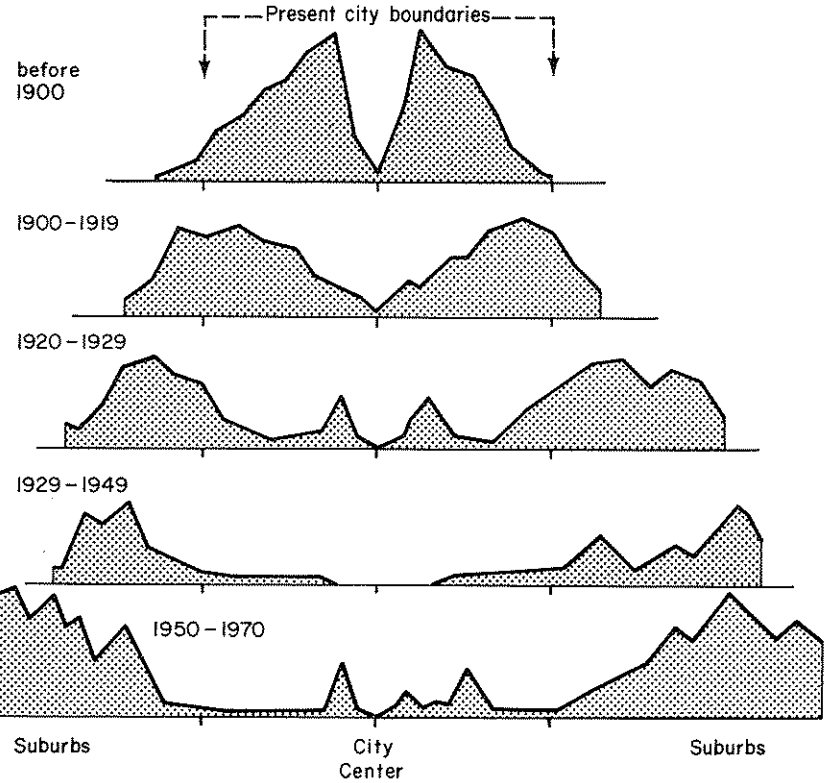

Fig. 2.6. Spatial cross section of building patterns and age of housing in a typical city.

components for our examination in subsequent chapters of the working out of supply and demand in a contemporary urban context.

INFORMATION ON HOUSING AND REAL ESTATE

Perhaps in no other field of social and economic research does the issue of basic information produce as much debate and wringing of hands as in the case of housing. We are confronted with an apparent contradiction between the image of a vertible flood of housing statistics on the one hand and repeated calls in the literature for more accurate, comprehensive, and useful data on the other hand. The obvious explanation for this real contradiction is that the multidimensional nature of housing (as an economic good, an investment asset, and a social service) raises

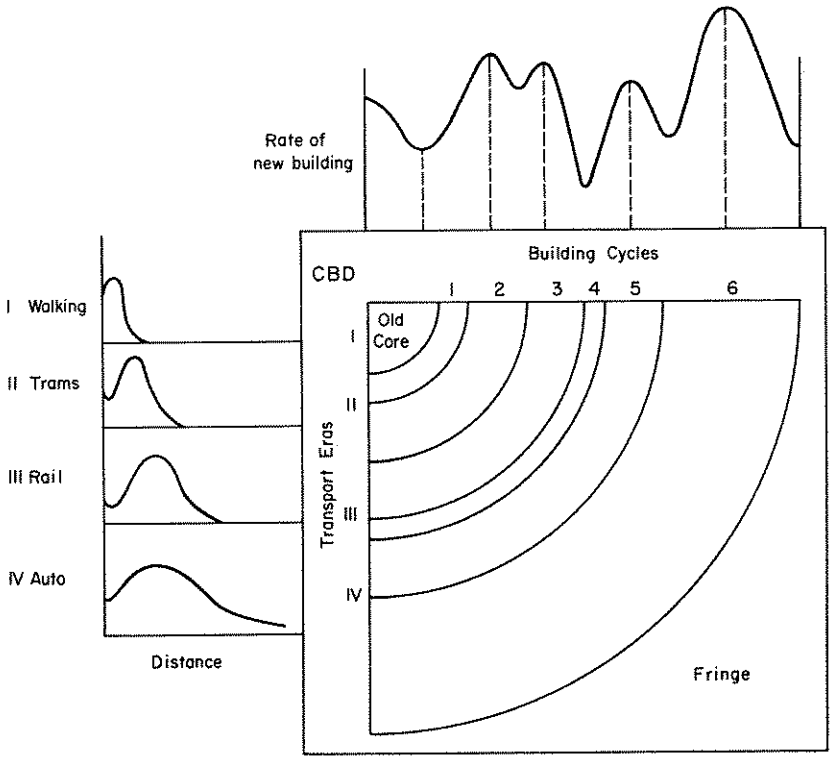

Fig. 2.7. The impact of building cycles and transport innovations on the spatial structure of housing.

questions of a far broader scope than existing sources of information could possibly hope to satisfy. The difficulty of measuring housing services noted above is a case in point.

Equally important, in far too many cases we have gathered information on housing without knowing what we wanted that information for. Other valuable sources of information, such as local property records, which exist for different purposes (setting taxes or rates), are seldom in a form which is convenient for use in housing research, while other records are soon destroyed. Still other sources are often intentionally secret, either by law (e.g., taxes) or through the self interest of participants in the housing market (e.g., estate agents).

Types and Sources of Information

Table 2.2 provides a check list of some of the potential sources of basic data on the housing stock, its occupants, and on the operation of housing markets.

Table 2.2. Some Sources and Types of Information on Housing and Real Estate

Scale	Sources	Examples of types of information
International	U.N., UNESCO OECD, World Bank	Comparative trends in investment, housing stock and housing needs
National level	Decennial census	Nature of the housing stock and its occupants; residential migration and intraurban mobility, new household formation, immigration
	Housing departments	Housing starts, completions, vacancies, improvements, financing; public sector starts, sales, rents, subsidies and occupant characteristics
	Banks, lending associations and building societies	Mortgage lending, interest rates, purchaser characteristics, sources of financing, types of subsidies
	Treasury, commerce, employment and labor departments	Investment levels, construction activity and housing costs, employment levels and building manpower needs, household furnishing and facilities
	Welfare and social security dept.	Housing needs, household budgets, rent-to-income levels, poverty and housing-related social pathologies
	Real estate and building associations	Volume and composition of market transactions, prices and rents, land costs, turnover rates, vacancies
	Special surveys	National and regional housing needs, preferences and user satisfaction
Local level	Property depts., taxation and assessment roles	Detailed records on individual properties: physical attributes of size, land area, housing quality, etc.; taxes, tenancy changes
	Local housing agencies, registry offices, local building associations and societies	Detailed property listings, market prices and rents, sales; local sources of financing; ownership patterns and land transfers; local public sector tenant characteristics
	Home builders, real estate associations	Location of new construction, local building costs, asking prices, attributes of different neighborhoods
	Local businesses and private consultants	Indices of location of residential change (e.g., telephone connections, newspaper delivery), area-based market assessments and data co-ordination
	Local welfare and social services, school boards	Specific areas of housing need, supporting services, monitoring local demographic change (e.g., school children)
	Special surveys	Local community housing needs, specific groups (e.g., elderly, homeless, transients) user preferences and satisfaction

The principal distinctions here are (1) the *scale of the information source*—national or state government agencies or associations and local governments and associations, and (2) the *level of aggregation*. The latter differentiates between aggregate data on groups of households or housing units or geographic areas, and individual-level data on single households or housing units.

For the spatial analyst, there are several important questions relating to both of these attributes. What is the potential for and suitability of spatial disaggregation—nationally by sector or within urban areas—of aggregate housing data? What is the appropriate *spatial referencing system* for individual property records? In the latter case, for example, records on individual households or units for a given city may not even specify their location within that city, as in the case of some national surveys, or the spatial units used may be arbitrary and have little or no geographic meaning. Finally, how can data from different sources, and at varying levels of aggregation, be linked?

Note that we are referring here to information *on* all housing market activity rather than information available to participants who are actively *in* the market (see Chapter 4). It should also be noted that questions of the quality of information on housing are not only of academic interest. Those public agencies which must seek to anticipate changing conditions in an urban housing market, as the basis for policy initiatives (e.g., for schools), and those businesses which depend for their existence on accurate assessments of market trends (e.g., retail firms), are equally concerned with both the nature and quality of housing data (Forrest, 1976). All would benefit by improvements in *urban data systems* relating to housing and residential change, and to the operation of urban real estate markets in general.[7]

Although the emphasis in this volume is on numeric or quantitative data, we should not loose sight of the fact that much of the important information we rely on is non-numeric or qualitative. Of particular interest are the perceptions that people, governments, and firms hold of what types of housing and environments are preferred and why, and how these perceptions in turn influence their behavior. In this context there is also a growing and relevant literature in geography, sociology, planning, psychology, and related fields (Peterson, 1967; Michelson, 1974, 1977; Morris and Winter, 1978; Clark and Moore, 1978).

One additional question we must consider in looking to sources of information on housing is their ability to "tract" or *monitor* changes accurately over relatively short periods of time. Only in this way can important "signals," which act as forerunners of major changes to come, be detected in time for policy makers to respond. Figure 2.8 provides, schematically, a sample of several of the more important variables (time series) which might be monitored in an urban housing market. These measures include the volume and composition of new construction (starts and completions), the percent of new units occupied (the absorption rate), frequencies of sales and rentals (occupancy turnover rates), the average prices of both new and resale units, household formation and demographic change, and adjustments to the existing stock. In addition, we want to know the changing cost components in housing construction and repair, and various ratios of income and costs for different income groups by family status and type of tenure. Ideally,

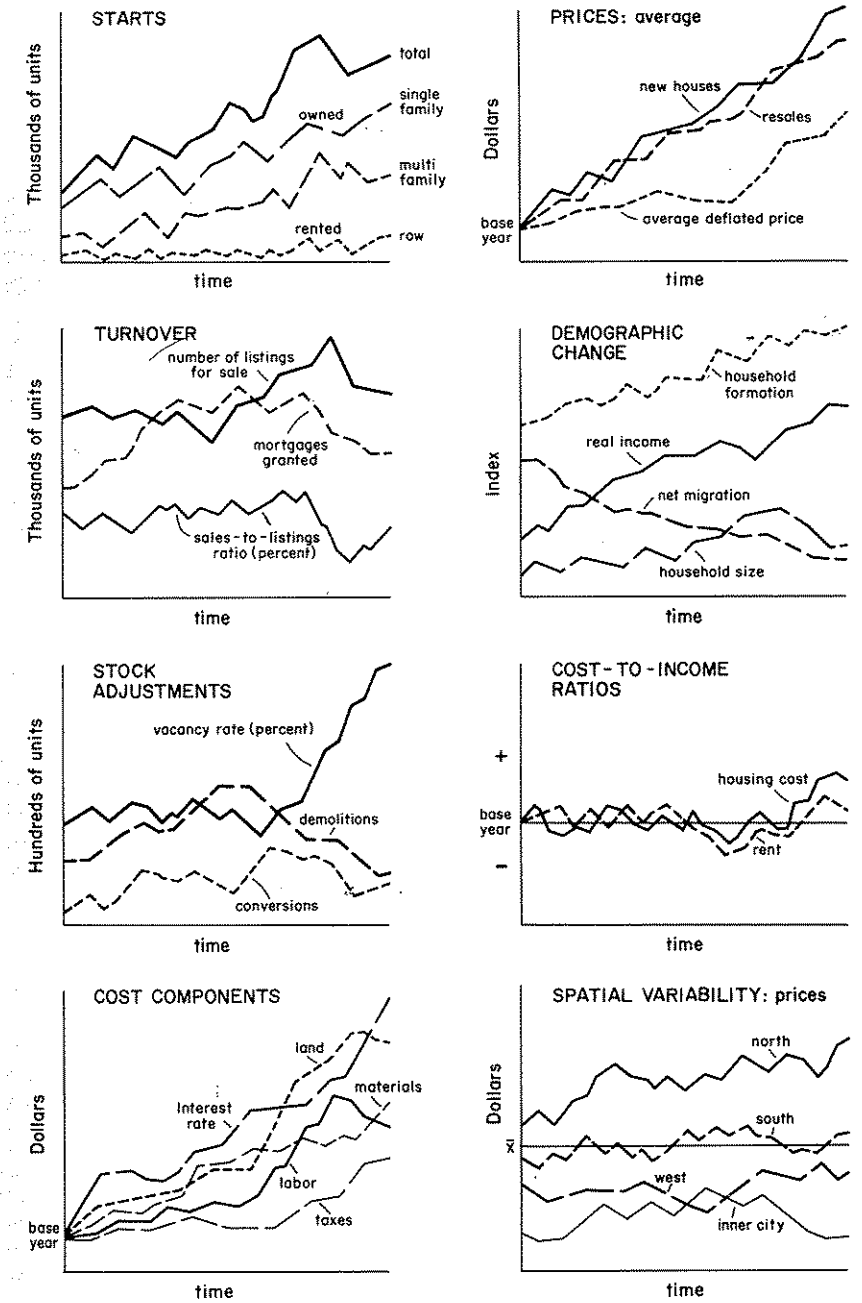

Fig. 2.8. Some elements in monitoring an urban housing market.

most of these indices should also be available for the same spatial units within the city. A tall order, indeed, but an information system worth striving for.

On the Quality of Information

Whatever the source, the researcher must undertake a series of evaluations of quality in total and for each specific purpose for which the data are to be used (see W. F. Smith, 1970; Morrison, 1977). At least five basic indices of quality stand out, based, of course, on the assumption that we already know the purpose for which the information is to be used:

> *accuracy:* whether the information available is or is not a reliable and consistent description of the real world (e.g., measures of the structural quality of housing are notoriously inaccurate and inconsistent);
>
> *comprehensiveness:* the degree to which the measures used, and the spatial delimitation of the housing market, are sufficiently broad for the problems under study;
>
> *representativeness:* since many sources of numerical data on housing derive from samples, including much of the census and special surveys on market transactions, it is essential that we know what the sampling error or "bias" is;
>
> *continuity:* the length of a consistent time series of information; and
>
> *compatibility:* the ability to link any single housing data source with other sources of relevant information.

The question of comprehensiveness in a spatial context in turn raises the question of *what is an appropriate geographic area for studies of urban markets*. If we view housing transactions as being interrelated across an entire urban area, as part of one big market, or a series of linked sub-market as defined in Chapter 4, then the information source must encompass the entire urban region. This region would extend outward to include far-flung suburban and exurban developments, as well as areas of retirement and second homes. Few existing sources do so.

A similar problem of bias emerges in the case of data representativeness, i.e., *representative bias*. This bias arises in part because only a small proportion of houses and households are in the market during any given time period. Not only does that proportion vary depending on market conditions, but so too does the composition of both households and housing units. Thus any study of changes in housing market transactions over time must consider what part of those changes are attributable to market trends and which simply reflect a *composition effect* in terms of the changing distribution of housing units involved.

There are, of course, numerous other problems associated with particular measures of the housing stock, demand, and needs—far too many to reference here. What, for example, is the appropriate measure of household income as a determinant of demand? Is it current income or long-term (permanent) income, or as Bossons (1978) argues, some measure of household *wealth* (i.e., assets)? How should housing needs be assessed, especially when housing standards tend to change with social attitudes and market conditions?

Further, how does one measure the total demand for housing within a defined geographic area? Does it include only those households who are there now? Or does it include the potential population who could be there in the future, assuming that developable land is built on at roughly the same rate as in previous periods? This is the conventional means by which local-area demand and supply are estimated. What about measures of supply and demand within already built-up areas? The point here is that by spatially disaggregating our analyses of housing demand and supply we add an immense element of complexity and uncertainty to those studies.

Recent trends in housing construction, demographic structure, and government subsidies have also further complicated the compilation and use of housing information. For example, traditional housing classifications were once relatively straightforward. Single-family units could be equated with home-ownership and lower densities, rental units tended to mean private rental and higher densities, and apartments and flats were (with the exception of large cities) primarily rented and, if new, were often high-rise. Now there is an increasing degree of mixing of these traditional types through such changes as variable forms of ownership (condominia, private and nonprofit cooperatives), structure types (stacked town-houses), and such a proliferation of housing subsidies and allowances that the traditional public-private dichotomy has lost much of its previous meaning.

NOTES

[1] A housing unit (or dwelling unit) for present purposes refers to a single house, apartment (flat), or a single room or group of rooms occupied or intended to be occupied as separate living quarters. Generally a dwelling unit is considered to be separate if it has either or both of (a) direct access from outside or from a common hallway, rather than through some other persons living area; or (b) complete kitchen facilities for exclusive use by the occupants. A housing structure is a physically separate building, containing one or more units, and which is managed as one structure.

[2] A household may be defined as one or more individuals who occupy a single dwelling unit. The principal distinction is between "family" households, in which individuals are related by blood, marriage or adoption, and "non-family" households which are any combination of individuals living together. Note that this definition links the number of households and dwelling units to such an extent that separate definitions are impossible.

[3] The term neighborhood is used here in its traditional definition as a relatively homogeneous area of physical (land use), housing, and social characteristics within which social and land use interrelationships are stronger than those outside that area.

[4] Equity in economic terms is the value of an owner's interest in a property in excess of outstanding claims or liens on that property. For a homeowner this would normally be the difference between the market value of a house and the amount of outstanding mortgage debt.

[5] The term externality as used here refers to a situation in which the use of a particular housing unit or parcel of land has a direct impact on the costs or benefits of occupying other units nearby, but for which the initial occupant does not pay, or benefit.

[6] Detailed statistics on the U.S. housing inventory in 1970 and 1976 are contained in the six volume series (H-150-76) of the *Annual Housing Survey, 1976* (see U.S. Department of Commerce, 1978).

[7]An interesting overview of the importance of micro-level urban data systems, with a unique application to geographical changes in housing occupancy, is provided in Moore and Clatworthy (1978).

Chapter 3

The Housing Condition: Indices and Patterns

At least since Engels' (1844) classic study of housing conditions of the urban working class in 19th century industrial England, there has been an almost universal concern for improving housing conditions. This chapter undertakes to provide a review of current housing conditions and recent trends in selected countries as a descriptive background for the discussions to follow. First, it examines and displays aggregate indices and trends in housing supply, demand and quality, the changing mix of housing tenure, building forms and occupancy, and housing costs and expenditures. Second, it examines the spatial patterns and variability of such indices within urban areas. Detailed discussions of specific determinants and processes of change, however, are left to subsequent chapters on the housing market (Chapter 4), spatial outcomes (Chapter 7), and problems (Chapter 8).

AGGREGATE TRENDS AND INDICES

Diversity and Change: An International Comparison

The first and perhaps most obvious point to stress, and one cited in the introduction, is the immense diversity of housing supply and quality between countries and among cities within the same country. How, in fact, does one generalize about housing conditions which vary from the tar-paper shack in Selma to the mansion in Memphis and the Fifth Avenue apartment, or from the back-to-back in Leeds to the country house in Surrey, let alone across national boundaries? The answer is that one does so only at an aggregate level and with extreme caution.