

Design Innovation and the Single-Family House

*The homebuilding industry
is more inventive
than it's given credit for.*

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THE HISTORY OF American production housing is littered with failed design innovations. Almost a hundred years ago, Thomas Edison, in an attempt to revitalize New Jersey's iron ore mines (in which he had an interest), patented a cast-iron formwork system for mass-producing concrete houses. The formwork proved too expensive and he gave up the venture. In 1927, at a time when a small bungalow cost \$5,000 to build, Buckminster Fuller designed a mass-produced steel hexagonal house that was priced at \$3,000, but there were no takers. During the 1940s, the General Panel Corporation invested \$6 million in the development and marketing of a prefabri-

cated house building system, one of whose designers was the famous Bauhaus architect Walter Gropius. Fewer than two hundred of the “packaged houses” were built. It turned out that, for homebuyers, “prefab” was in the same category as “leaky basement” and “dry rot.” In the 1970s, the federal government’s Operation Breakthrough aimed to harness the know-how of large corporations such as General Electric, Inland Steel, and American Cyanamid to produce inexpensive industrialized housing. The results neither cost less nor appealed to consumers.

American homebuyers know what they want: detached houses with private backyards. They also know what they don’t want: unconventional materials, odd-shaped rooms, flat roofs. There are several reasons for this apparent conservatism. Unlike a consumer product, the home is an investment, the largest investment that most families ever make. Consequently, homebuyers avoid needless risk. As prudent small investors they look for the tried and true. The uniformity of housing products, which architectural critics frequently disparage, is not accidental—it is precisely what buyers demand since they don’t want to be stuck with an odd or dated house when it comes time to resell in a decade or two. Contrarians do not do well in the housing market.

THE APPEAL OF THE NEW

Unlike paper investments such as equities, T-bills, and mutual funds, homes are also a source of considerable personal pleasure, pride, and satisfaction. Like clothes, they convey status and social standing. Like cars, homes tell people something about their owners. In other words, the decision to buy a house is emotional as well as financial. While houses are not consumer products, they are closely linked to consumer spending on furniture, appliances, entertainment systems, decor, and so on. Hence, the line between investment and consumption becomes blurred. Refurbishing a kitchen, for example, is done with one eye on resale value, and one eye on the attractive advertisements in *House Beautiful*. And just as the demand for consumer goods is driven by what is new and up-to-date, homebuyers are not immune to novelty. Although it is incorrect to speak of housing fads—too much money is at stake—American homebuyers have shown themselves to be open to new ideas. It is simply a question of in which direction—and how far—these ideas lead.

During the 1950s, for example, buyers turned away from time-tested housing models such as the Cape Cod cottage and the Craftsman bungalow and embraced a new type of house: the ranch. The ranch house, which is said to have originated in

San Diego in the 1930s and was also known as the California ranch, was a one-story rambling house (in some markets it was called a Rambler), with a low-pitched roof, and a simple, unprepossessing appearance. The success of the ranch was partly a result of the extraordinary demand for housing, which was in short supply due to the Depression and the Second World War—any well-priced product would have sold equally well. In addition, the convenience and informality of the ranch, which reflected the uncomplicated Eisenhower years, appealed to buyers, while the simplicity of construction (open plans, trussed roofs, straightforward details) appealed to builders. The influence of Frank Lloyd Wright, the nation’s most famous architect at the time, made itself felt, not in terms of his characteristic style, but in an overall taste for ground-hugging horizontality, dining areas combined with living rooms, as well as an absence of ornament, prominent fireplaces, and breezeways and carports.

There were other modernistic design innovations. The picture window was a large living-room window facing the street. The split-level was an arrangement in which the main living spaces were at ground level, but the bedrooms were half-a-flight up and half-a-flight down. The separation of noisy and quiet areas appealed to buyers with large families.

Split-levels also allowed living rooms to have taller, so-called cathedral ceilings.

The 1960s saw the advent of the bi-level house, which was basically a ranch with a raised basement containing the bedrooms. From a ground-level entrance, a stair led half-a-flight up to the living room, and half-a-flight down to the bedrooms. This heralded a return to full-fledged two-story houses, which had been common in the 1930s. More compact houses were a solution to the rising cost of land and the need to fit larger houses on smaller lots, but homebuilders discovered other advantages. Two-story houses are cheaper to build, as the smaller foundations and roofs reduce construction costs by up to 30 percent. In 1971, according to the National Association of Home Builders (NAHB), only 17 percent of new houses were two-story, but seven years later that figure had risen to more than 50 percent.

A two-story house also *looks* more impressive. By the 1980s, buyers had become tired of the unpretentious ranch and were ready for houses that made an architectural statement. This was demonstrated by house size. The first postwar Levittown houses were about 700 square feet, not including an unfinished attic; a modest 1950s-era three-bedroom rancher occupied as little as 800 square feet. According to NAHB, by 1970 the area of the average new house had risen to 1,500 square feet; by 1980 it had grown to 1,700

square feet; and by 2000 it was 2,226 square feet. The number of new houses smaller than 1,200 square feet has been steadily dropping (they represented more than half of all new houses in 1980, by 2000 less than a quarter), while the number of houses larger than 2,400 square feet has been increasing, from only 9 percent in 1971 to 28 percent in 1991, to 35 percent in 2000.

What accounts for the extra space? Rooms—especially baths and kitchens—are larger. There is more storage space, not only wall-closets but walk-in closets and dressing rooms. Powder rooms are standard even in starter houses, and bathrooms have multiplied until in expensive homes

there are often one or more bathrooms per bedroom. The master bedroom is now a suite that includes the bedroom, an attached dressing room, walk-in closets, and a large bathroom with double sinks and a separate shower stall in addition to the tub. High-end houses have his and hers bathrooms. The increased house size has nothing to do with larger families. According to the Census, between 1970 and 2000 the number of households with five persons or more decreased from 20.9 percent to 10.4 percent, the number of single-person households increased from 17.1 percent to 25.5 percent, and the number of households with from two to four persons stayed more or less the same

at 62.1 percent (with slightly more two-person households and slightly fewer three-to-four-person households). Precise profiles of buyers of new houses are hard to come by, but they do not necessarily mirror these statistics. First-time buyers are more likely to be couples with young children, while a large proportion of buyers of high-end houses are likely to be empty-nesters and childless couples.

The 1980s saw the traditional living-dining-kitchen arrangement that had held firm since the beginning of the century altered to living-dining-family room-kitchen. The family room, a version of the fifties basement playroom, is a casual living area off the kitchen. Over the years, as informality has prevailed—and with television the preferred entertainment—family rooms have gotten larger and living rooms smaller. Another telling sign of the shift in the domestic center of gravity: if the house has a single fireplace, it is no longer in the living room but in the family room.

The informal family room is now the largest room in the house, but it is not the fanciest. That distinction once belonged to the living room, which contained the best furniture, the family heirlooms, and the hi-fi set. Now the most decorated and pampered room is the kitchen. Partly this reflects Americans' new interest in food and cooking; partly it is a reaction to more informal customs (guests always end up in

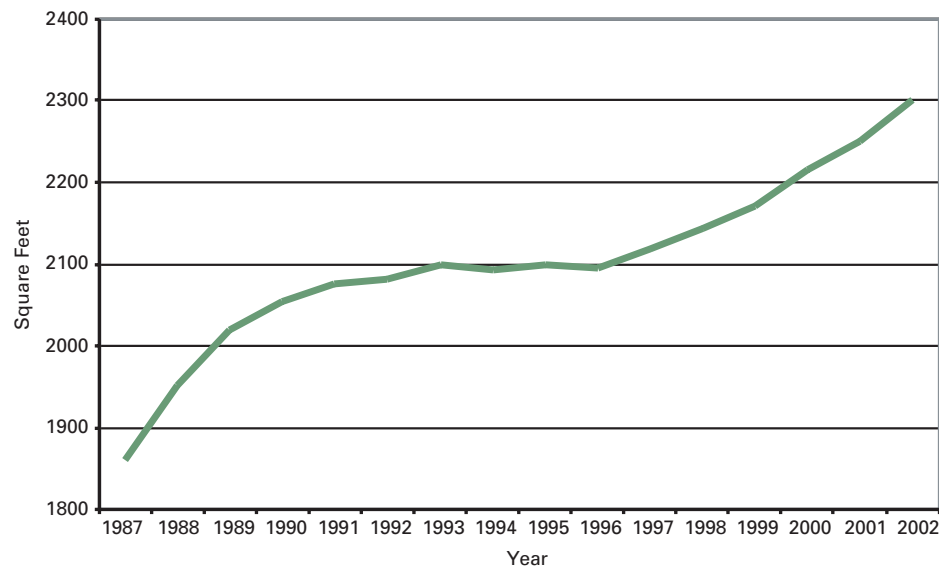
the kitchen); partly it is simply conspicuous consumption. And, as always, builders are differentiating their products from the older competition, from the small “functional” kitchens of the fifties and sixties, and from the utilitarian kitchens, originally staffed by servants, of older houses. The same combination of factors has influenced the increase in size and amenities of bathrooms.

THE APPEAL OF THE OLD

Paradoxically, as the interiors of houses have become more and more different from the past, the exteriors have reverted to tradition. Such modernistic devices as the car-port and the picture window have disappeared, while dormers, shutters, and divided lights are back. Patios and breezeways have been replaced by traditional porches. Complex details and moldings have reappeared. Homebuyers now want a house whose exterior suggests “tradition,” whether that means a historical style such as Federal, Spanish Colonial, or Mission, or merely a general sense of being “old-fashioned.”

Typical advertisements in a recent *New York Times Magazine* feature words such as “new,” “latest,” “next generation,” and “breakthrough.” However, the Luxury Homes & Estates section is different, as the ads highlight the past: “turn-of-the-

Figure 1: Floor area in square feet of the average new house, 1987–2002



Source: U.S. Census Bureau

century treasure,” “grand turn-of-the-century Shingle Style home, “c.1906 Tudor,” “restored to original 1920s splendor,” “classic pre-war Colonial.” This is not a vague nostalgia for the past. The period from 1900 to 1930 represents a pinnacle of American house building and design. A number of factors contributed to this achievement: upper-middle-class homebuyers—that is, professionals and managers—were prosperous; their architectural taste was relatively refined; the architectural profession had developed great skill in house design; domestic environmental technologies such as electricity and central heating were making rapid advances; the building industry was characterized by traditional craftsmanship—and relatively low wages; and buyers spent a lot of money on houses as there were fewer competing consumer goods and consumer distractions.

The Depression, and later the Second World War, effectively put a stop to all house building. After the end of the war, pent-up demand, encouraged by a government policy to expand homeownership, was high. GI loans and home mortgages greatly enlarged the market. Between 1948 and 1955, houses were built at an unprecedented rate of one million per year. The single-family house replaced the tenement as America’s housing for the masses. But the homebuilding industry had changed drastically. After a twenty-year

hiatus, the old know-how and craftsmanship—as well as the craftsmen—were gone. The necessary high production levels were achieved through streamlined fabrication, simplified designs, assembly-line techniques, and dumbed-down construction to suit an unskilled workforce. The result was a marked reduction in housing quality. But postwar buyers, particularly those buying a home for the first time, were eager to be homeowners, and homebuilding boomed.

By the 1980s, two things were apparent. The poorly built ranches of the 1950s and 1960s were not holding their prices, and the demand for 1900–1930 vintage houses continued to be strong. The housing market includes the sellers of old houses as well as the builders of new houses: in 2002, for example, there were 5.6 million older houses offered for sale and 1.2 million new housing starts. The two categories influence each other: new popular features, such as elaborate kitchens, migrate into house renovations, and older popular features, such as tall ceilings, are adopted by builders of new homes. Selected older houses were perceived—correctly—to be superior. People buying new houses wanted family rooms and open kitchens, but they also wanted houses as interesting as those of the 1900–1930 period. So homebuilders incorporated traditional features into the exterior design of new homes. The result was a hybrid: new

on the inside, old on the outside. Older houses were gutted and renovated to achieve the same effect.

At the same time, the quality of builders, materials producers, and building component manufacturers—and building standards, particularly in insulation—has improved. This is part of an attitudinal change that is taking place in American society as a whole. Higher personal incomes and higher education levels have produced a greater sophistication on the part of consumers, which has led to an emphasis on customer satisfaction and quality control. Houses are better built and more dependable—almost as dependable as televisions, washing machines, and cars.

DESIGN INNOVATIONS

A brief look at the previous fifty years of production housing suggests that the homebuilding industry is an odd mixture of resistance to change and search for innovation, of tradition and newness. What are current design innovations in single-family housing? According to NAHB, consumer preferences in the new house market vary: prospective buyers for \$150,000 houses are looking for 1,800 square feet (3 bedrooms, 2 1/2 baths, 2-car garage), while prospective buyers for \$350,000 houses are looking for 3,000

square feet (4 or more bedrooms, 3 or more bathrooms, 3-car garage). Both categories want a fireplace, and both want kitchens with wood cabinets, a walk-in pantry, and an island work area. The higher price bracket prefers two-story houses with nine-foot or higher ceilings, and such specialty areas as sun rooms, media rooms, and home offices.

Joseph Duckworth is a founding partner of the Arcadia Land Company and past CEO of Realen Homes, the second-largest homebuilder in the Philadelphia area. “Nine-foot ceilings have become standard,” he says, “and we are moving towards ten feet.” Duckworth sees several other design trends. “Builders have learned that buyers will pay for better architecture on façades,” he observes. “Builders have found ways to replicate traditional features such as moldings, shutters, and porch columns in new materials, and they are paying more attention to authenticity, as far as style is concerned. This is probably influenced by the projects associated with traditional neighborhood development (TND). Developers haven’t all necessarily adopted small lots and tight streets, but they have been impressed by the market success of the TND houses, which are traditional in appearance, and carefully designed.”

Two TND projects in particular have been influential: Celebration in Orlando, Florida, and Lakelands in Gaithersburg, Maryland. The projects included produc-

tion housing by national homebuilders (David Weekley Homes and Town & Country Homes in Celebration; NV Homes, Ryan Homes, and Ryland Homes in Lakelands). The success of home sales in both projects has demonstrated that production housing and traditional design are not mutually exclusive, and TND-type house designs are now standard in many large homebuilders' catalogs.

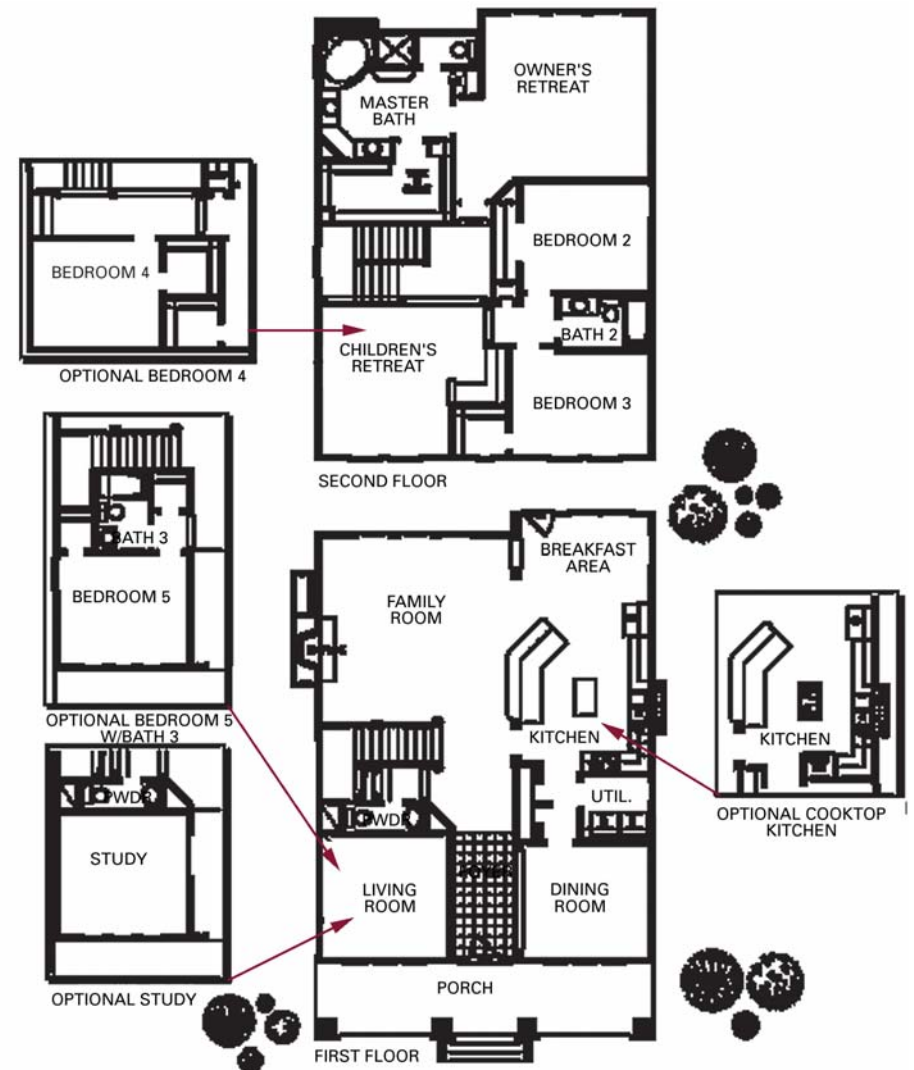
Another design innovation, according to Duckworth, is the tendency to extreme openness in first-floor plans. "The first floors of houses have almost become lofts, they are so open," he says. "All the walls have been taken down so that everything flows into everything else." The so-called bi-nuclear house of the 1960s, with separate areas for adults and children, is a thing of the past. As families have gotten smaller, visual and acoustic privacy have become less important. It is no coincidence that urban lofts are so popular with young, childless couples. The openness gives a sense of spaciousness to even small houses, and also appears to suit the informality of present-day living.

Opening up the ground floor creates a visual impact. "Where you used to have a fifteen-foot room, a five-foot hallway, and a twenty-foot room, you now enter the house and have a forty-foot view, clear to the back of the house." Dramatic entrances have always had a place in houses, all the more so in the case of production

houses, where the initial impression of the prospective homebuyer is crucial. Duckworth sees the extremely large bathrooms that were common in the 1980s and 1990s getting slightly smaller, but remaining luxurious in terms of finishes and fixtures, "like a bathroom in a five-star hotel." Kitchens, on the other hand, show no sign of getting smaller.

David Weekley, president and CEO of David Weekley Homes of Houston, generally agrees with Duckworth's observations about the popularity of open planning and family rooms. His company, the second-largest privately held builder in the United States, is active in fourteen metropolitan markets in the South and West. Many Weekley models have front porches, "classic" exteriors, and dramatic interiors. The family room is usually located in the rear and center of the house, to make it the focus of attention and to facilitate access from as many directions as possible ("three is good, five is better"). The open first floor has created new demands, however. According to Weekley, "with the gradual demise of the formal living room, and with entertaining now occurring in the combination kitchen-family room, the kids need a place of their own." Most Weekley homes have what is referred to as a "children's retreat." This flexible space is in the bedroom area and can be used as a play or study space. There is also an emphasis on creating niches and spaces that children

Figure 1: The Brooksley



can use for studying. In addition, smaller families allow each child to have his or her own private room.

A Weekley model, the Brooksley, serves to illustrate his design approach (Figure 1). The house has 2,630 to 2,730 square feet

(slightly larger than the national average for new houses) on two floors; in the Charlotte, S.C., area, on a fifty-five-foot-wide lot with a detached two-car garage, it sells for about \$250,000. There is a traditional front porch (Figure 2). The entry

vestibule is flanked by an open dining room and a very small living room (other Weekley models have done away with the living room altogether). The rear of the house is basically a large open space containing an open stair, a large family room with a fireplace, a breakfast nook, and the kitchen. The three bedrooms are upstairs. The master bedroom is located over the breakfast nook, away from the noisy family room. The children's retreat is at the top of the stairs. Flexibility is also a feature of the plan, since the children's retreat can be converted into a bedroom, and the homebuyer is also given the option of replacing the living room with a study or a fourth bedroom (with the adjacent powder room

enlarged into a bathroom).

David Weekley Homes is known as a design innovator, but Robert I. Toll, Chairman and CEO of Toll Brothers Inc., the nation's largest homebuilder of upper-end homes, is cautious about the slowness with which innovations are accepted by homebuyers. "A new idea has to prove its general acceptance," he says. The rate of acceptance appears to vary regionally, with buyers in California, Nevada, and the South being more adventurous, and those in the Northeast, the Midwest, and Texas being more conservative. Toll observes that while two-story houses are popular, there remains a strong demand for ranches, particularly in adult communities. In a 2000

NAHB consumer survey, while 50 percent of respondents preferred a two-story house, 39 percent preferred a one-story house (11 percent chose a split-level). According to Toll, ranches remain a viable product in the South and Florida, where foundation costs are cheap, but are problematic elsewhere since "people like them, but don't want to pay for them."

Dwight Schar, CEO of NVR, a national homebuilder that owns Ryan Homes and NV Homes, cautions that it often takes twenty years for new design ideas to enter the mainstream. He recalls that in the 1980s, people talked of great rooms replacing the living room, but he still sees demand for living rooms among his homebuyers. "If buyers can afford it," he says, "they still want a living room—and a dining room, and a three-car rather than a two-car garage. And with lower interest rates, they *can* afford more space." This view is borne out by a 2000 NAHB survey of recent and prospective homebuyers that found that two-thirds said they preferred a house with a living room.

CONCLUSION

Despite the new ideas trumpeted by the "Home" sections of newspapers, and the many pages devoted to the subject in magazines, design trends in domestic design are easier to identify in hindsight than on

the run. As Dwight Schar points out, features such as central vacuum systems, trash compactors, and skylights are popular one year, and gone the next. There does appear to be a long-term trend towards greater informality in room arrangement, and more open planning. Higher land prices have pushed homebuyers toward having to accept more compact—though not smaller—homes. There appears to be a willingness on the part of the homebuyer for what can loosely be called traditional styles on the exterior of homes—porches, dormers, architectural detail.

The design of American production housing is pulled in two directions. On the one hand, the homebuyer is a consumer, and is attracted by novelty. Homebuilders have responded by introducing new design features in their homes, whether they are picture windows or kitchen islands. At the same time, the homebuyer is an investor and, as an investor, is wary of unproven ideas. These fundamentally opposing positions make homebuilding a difficult and risky business. Successful homebuilders must be aware of trends, but careful about getting swept up by them. "We don't lead parades," one prominent national homebuilder told me, "we follow them."

Figure 2: The Brooksley

