House Building in the Machine Age, 1920s–1970s: Realities and Perceptions of Modernisation in North America and Australia

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During the 1930s and 1940s, the editors of Fortune ran a series of articles on the subject of the building industry, publishing an early collection as a book and a later group as a special issue in 1946. The following year they summarised their point of view in a catchphrase that caught the temper of the time. House building, they argued, was incidentally corrupt and inherently inefficient. Hidebound by tradition, a legacy of feudal craft in the modern manufacturing era, it was the industry that capitalism had somehow forgotten. Although members of the industry challenged the claim, Fortune’s phrase was echoed in the popular press, in Congressional reports and, such was its resonance, in Canada and the Antipodes. Indeed, it echoed down the years. Four decades later, in a selective review of changes that had occurred in the interim, Tom Schlesinger and Mark Erlich claimed that the building industry had finally entered the corporate era and threw Fortune’s phrase back in its face.

This narrative, which speaks of stubborn traditions displaced by rapid modernisation, downplays continuity and is intellectually unsatisfying. In 1947 the building industry contained innumerable businesses. It was ruthlessly competitive; how could anyone claim that it was untouched by capitalism? It consisted of all sorts of enterprises, of all sizes, operating methods, and degrees of vertical integration. In a competitive environment peopled with entrepreneurial diversity, how could grossly inefficient methods possibly have survived? An obvious answer was that they had not, and that the industry was well adapted to its business environment. Visitors to the United States were unanimously convinced that this was the case. A few defenders of the domestic industry also suggested this possibility but, as we show later, they were not taken seriously. Obsessed, from the 1920s, by an ideal of mass production that seemed to be embodied in the manufacture of automobiles, contemporaries wrung their hands. They puzzled over why the industry did not fit the model, and lauded the innovations and entrepreneurs that promised to take it in a modern direction. Routinely blinded by preconceptions, and sometimes also by self-interest, their perceptions bore only a weak resemblance to the realities of the building trade.

In Britain, the building industry has received a good deal of attention, in particular from economic historians. It has been the subject of both serious studies and systematic surveys. The same is not true, however, in North America or Australia. More than a
decade ago Marc Weiss observed that the house building industry has been ‘generally ignored by U.S. historians’, and little has changed since. Those business historians who have been guided by Alfred Chandler’s emphasis on leading firms in capital intensive sectors of the economy have not found home builders significant. Hounshell barely mentions them, and his explanation for their failure to industrialise lacks conviction. Even those, like Philip Scranton, who have explored ‘the other side of industrialisation’, have focused on other industries, including textiles, garments, tobacco, metal fabricating, jewellery and furniture manufacturing. In contrast, urban historians have written a good deal about housing, but have focused on conditions, designs, policies and politics. Beginning with Sam Bass Warner, some have studied residential development, but in their accounts construction usually plays second fiddle to land planning, and the emphasis has been on the atypical leading players, such as Samuel Gross, the largest builder in Chicago in the late nineteenth century, J.C. Nicholls, an early community builder who was active in Kansas City in the inter-war years, and the big developers of the post-war era, such as Kaiser in Southern California, Eichler in the Bay Area, and the Levitt Brothers on the East Coast. A mere handful of scholars have studied the builders themselves, including the small businesses who have always dominated the ‘industry’, together with the amateurs who have played a fluctuating but never trivial role. These scholars offer only vignettes and insights. No attempt has been made to survey the evolution of the building industry, to characterise the views of contemporaries or, consequently, to compare changing realities with diverse perceptions. We address each of these issues before concluding with some suggestions as to how the building industry might more usefully be conceived.

Because of our concern to elucidate how the building industry has been conceptualised, we frame our survey by the period in which a particular view was dominant. During the 1920s the achievements of the auto industry caught the popular imagination. The assembly-line production of cars raised productivity and reinforced a virtuous circle of declining costs, growing demand, larger production runs and further improvements in productivity. By the mid-1920s this method had become an ideal, and was viewed as the benchmark against which house building was to be judged. Through the 1960s, innumerable discussions made this comparison explicit, and in others it was an implied point of reference. This way of thinking has persisted, but from the 1970s has been called into question, first by the expansion of flexible methods in the mass production industries, and then by an academic literature that has tried to tease out the logic of these developments. We confine our survey, then, to the era of high modernisation, the machine age. This era found its purest expression in the United States, a fact that may help to explain why US observers were so keen to pour vitriol on an industry that did not fit the nation’s self-image. But broadly the same assumptions shaped thinking throughout the developed world. Builders in Britain, Western Europe and the Soviet bloc used a different mix of materials and methods, but were similarly judged on the criteria of scale, the adoption of factory methods, and above all of efficiency. Those in Canada and Australia were not only judged in the same way as those in the United States but used very much the same materials, techniques and organisational structures. Our survey, then, uses the latter two countries as a counterpoint to the United States, while raising issues that, we believe, have broad relevance to our understanding of house building in the middle decades of the twentieth century.
II

In 1953 Sherman Maisel, author of the finest study of the North American industry to be published in the twentieth century, commented that ‘less is known about house building than about any other major industry’. In one sense he was right. The product and the industry have always been complex, and few have understood the elusive logic of the shifting connections among builders, suppliers, contractors, subcontractors, and the trades. In another sense, however, he was wrong. Most people have had some sense of what goes into the making of a house, the lumber, bricks, wiring, and so forth, as well as of the basic methods of manufacture and assembly, including the techniques of framing, bricklaying, roofing, plumbing, and painting. These are much more familiar technologies than those involved in many manufacturing processes. Then, too, we all appreciate that the finished product is a rather unusual commodity: large, complex, usually immobile, durable, and sometimes horribly expensive. Finally, certain general facts about the organisation of house building have always been fairly clear. The industry is diverse, amorphous, competitive, and subject to great temporal and geographical variability. Whether these features deserve condemnation or praise, however, is another matter, and we need to examine them more closely before considering the judgements that have been expressed by contemporaries and historians.

Some might question whether it is possible to generalise about the building industry over the whole period from the 1920s to the early 1970s. A number of contemporaries emphasised how much it changed, especially during and after World War II, arguing that merchant builders introduced new management techniques. From the perspective of 1963, John Herzog claimed that this shift in scale and approach had been both ‘drastic’ and ‘relentless’. Then, during the 1960s and especially in the United States, a mobile home industry took off, while some outside corporations began to enter the housing field. Looking back in 1973, noting that observers have often compared house builders unfavourably with auto manufacturers, Leo Grebler suggested that finally ‘one or more “General Motors” appeared indeed to loom on the horizon’. It was this line of thinking that led Schlesinger and Erlich to declare that capitalism had finally taken notice of the industry. But the matter was not so simple.

In the interstices of their presentation, unresolved with their main argument, Schlesinger and Erlich conceded a ‘foundation of constancy’, that industry change had always been ‘evolutionary rather than revolutionary’. They might have poached this term from a number of writers, including James Gillies and Frank Mittelbach, who in 1963 suggested that if merchant builders were revolutionary in their management, they were evolutionary in their methods of on-site production. Similar views were often expressed. In 1944 the Twentieth Century Fund published a survey of the industry undertaken by Miles Colean, whose years with the Federal Housing Administration had made him the leading authority on the subject. Although some observers hailed the innovations that defence contractors were introducing into wartime projects, Colean warned that ‘effective developments have evolved cautiously and quietly’. A quarter of a century of change did not alter the story. In 1967 Donald Schon reflected on the modern history of innovation in the building industry. He was well qualified to pass judgement, having worked for Arthur D. Little before becoming Director of the Institute for Applied Technology in the US National Bureau of Standards. In this capacity he supervised the
Civilian Industrial Technology Program, whose purpose was to foster innovation in ‘lagging’ industries, including construction. He suggested that the industry had undergone a cumulatively ‘radical change of character’ but that this had occurred in ‘small increments’. As he saw it, change had been ‘so diffuse and made up of so many small parts that it can hardly be called an innovation in the usual sense at all’.

In truth, many trends and innovations of the post-war years were rediscoveries. In Chicago in the 1880s, and then again in the 1920s, builders like Chicago’s Samuel Gross, and Mills & Sons in Hamilton, Ontario, were operating very much in the manner of the post-war merchant builders. The same was probably true in every large city. Challenging Ned Eichler’s claims of originality for the merchant builders, Michael Doucet and John Weaver have observed that ‘improved efficiency came in ceaseless small steps’. If ever there were a situation where one must speak of continuity in change this was it.

Throughout the period in question, the house building industry was complex, including diverse builders and subcontractors, and also ill-defined, shading into other types of construction, into the production and distribution of building materials, and into the informal activities of the do-it-yourself enthusiast and amateur builder. At any time, the great majority of builders erected one or two homes a year. Most homes – and almost all until the 1960s – were erected on-site, and so builders organised work around site operations. Although some switched back and forth, most oriented themselves towards their market in one of three ways.

Traditionally the most common approach was to work for a particular client, typically a prospective home owner. Acting as a general contractor, the builder then co-ordinated and supervised a variable number of subcontractors, depending upon which trades he already employed. A common alternative was for the builder to operate ‘on spec’, meaning that he built before knowing the identity of the buyer. This was an unremarked norm in most consumer industries, and ‘speculative’ denoted that this could be an especially risky proposition in home building. Speculative builders usually operated on a larger scale than general contractors, and most observers regarded them as the progressive force in the industry. The FHA worked to promote their growth, and one of the agency’s first actions in 1934 was to give them a new and more positive name, ‘operative’ builder. The larger of these were commonly involved in land development, and grew into the ‘merchant’ or ‘community’ builders of post-war fame. Many smaller builders, however, bought lots and blocks piecemeal and retained a focus on construction.

The third type of builder was the amateur who built for his own use (oral histories show that the great majority of owner-builders too were male, while women mostly ‘helped out’). Amateurs were not part of the building industry, but cannot for that reason be ignored. They were sometimes responsible for building a large minority of homes, and so sweat equity exerted a competitive influence on house prices. A large survey carried out by the Bureau of Labor Statistics showed that across the United States in 1949 amateurs accounted for more than two-thirds of all builders, and almost a third of all starts of single family homes. Annual data for Australia show a similar level, with a peak in the early 1950s followed by a decline in the amateur’s share to 10–15 per cent in the late 1950s. Even when less common, they still mattered. Like custom and speculative builders, amateurs often employed subcontractors, although sometimes only
for the most skilful or critical tasks, such as electrical work. Lacking professional knowledge and skills, more than other types of builder they made considerable demands on building suppliers. They were a likely market for kit homes, whether supplied by mail order or by local dealers. Especially in smaller urban centres, and everywhere for about a decade after 1945, they had a major impact on the industry.

Builders of all types relied on suppliers and subcontractors, though in different ways. Vital for amateurs, building supply dealers were scarcely less important for the smaller professional builders. The manufacture and distribution of building supplies was exceedingly complex. Many materials, such as bricks and concrete, were distributed by manufacturers on a local or perhaps regional basis. Others, notably lumber, were commonly shipped further, sometimes directly, sometimes through wholesalers, and usually through an extensive network of retail lumber dealers. Still others, including tools and hardware, were routinely available from retailers, including hardware stores, lumber dealers and department stores. Retailers in effect stockpiled supplies and managed deliveries to the building site, as well as providing advice and credit. Among them, in North America the lumber dealer and in Australia the timber merchant played a critical role.30

Lumber was the most significant material that was routinely distributed through the retail network. In the early decades of the twentieth century, especially in North America, competition from mail order kit manufacturers, such as Aladdin and Sears, encouraged lumber dealers to stock a wider range of goods, to the extent of becoming one-stop building suppliers.31 Significantly, after World War I a new trade journal, the Building Supply News, was established specifically for this category of retail business. In Australia, because timber merchants retained closer financial ties to the forest companies and mills, product diversification did not occur on a large scale until the 1950s.32 But there, as in Canada and the United States, dealers were indispensable to the daily operations of the small builder. Indeed, as and when business conditions seemed favourable, many went into the home building business themselves. In 1969, for example, a survey undertaken by the dealer’s association in the United States found that a quarter of its members also belonged to the National Association of Home Builders, while 44 per cent were directly involved in contracting.33 They could be very competitive. They typically had better access to credit than the average builder, and so could more easily invest in the sort of modest innovations, such as cutting shops, that could give a marginal competitive advantage.34 They were better integrated into industry networks than small builders, and were better informed of prices and new materials. Only the larger builders found it advantageous, or even possible, to bypass them. Some of these purchased their lumber directly from mills; the largest, including the Levitt brothers and A.V. Jennings, integrated vertically by acquiring their own dealers and suppliers.35

A further element of complexity, and one that has generally resisted study, is the prevalence of subcontracting. This practice has increased in a number of industries in recent years, but has been widespread in the building industry continuously since the nineteenth century. In Britain, subcontracting emerged in the late eighteenth century, and in that country has generally been interpreted as marking the emergence of serious competition, and capitalist enterprise, in the building industry.36 In British towns and cities it seems to have become common during the nineteenth century, and was a well-established tradition by the beginning of the twentieth. In North America this
development seems to have occurred rather later, although Donna Rilling has shown that subcontracting was common, and became increasingly so, in Philadelphia in the first half of the nineteenth century. In Canada, Doucet and Weaver speak of the way one of the larger builders in late nineteenth-century Hamilton, Ontario, used subcontracting to operate ‘lean’. Everywhere, subcontracting made possible a finer division of labour, which improved productivity but eroded craft skills.

Subcontracting seems to have become steadily even more common through the twentieth century. The only annual data are for Australia in the post-war decades, which show a steady increase in the number of contractors, by comparison with both builders and tradesmen. More recently, a systematic study of Canadian builders in 1971 found that about three-quarters of the physical tasks associated with home building were subcontracted, a proportion that varied little between small and large builders. This degree of reliance on contractors seems to have been typical. Bringing their own tools and equipment, subcontractors used much the same methods on any job, small or large. Although large subcontractors were more likely to work with the larger builders, the prevalence of subcontracting has meant that the homes of small and large builders were erected in much the same way. Builders liked to use the same contractors again and again, once they had proved their reliability, but high rates of entry and exit into the industry guaranteed that the network of relationships remained fluid. Indeed, many small companies operated as builders on some jobs and contractors on others while tradesmen might set themselves up as contractors. If successful, and especially if carpenters, they might graduate to general contractors; if unsuccessful they might join someone else’s crew. The boundaries between workers and small employers were always blurred.

In all of this complexity, the most obvious fact about house builders is that there have always been so many. By the middle of the twentieth century, some industries were dominated by a handful of companies. In contrast, as an Australian committee, charged with devising a licensing system, noted in 1970, builders have been literally too numerous to count. The post-war Australian data show that, from the 1940s to the 1960s, the number of workers in the building trades never exceeded the numbers of builders and contractors by a ratio of more than four to one. Most metropolitan areas could boast several hundred builders and contractors, and in any given year throughout the early post-war era the United States contained more than 200,000, this at a time when there were also about 40,000 distributors of building materials and 15,000 manufacturers of building materials. The numbers in Canada and Australia were correspondingly smaller, of course, roughly in proportion to population, but in each country the overwhelming majority operated on a very limited scale. In the United States in 1949, 96 per cent of professional builders may fairly be described as ‘small’, starting 25 homes or less; 42 per cent were tiny, building just one unit each. Their market share was less than their numbers might indicate, of course, but never unimportant. In 1949, small builders were responsible for 46 per cent of housing starts, a share that had fallen to 22 per cent 20 years later, while the share of their Canadian counterparts remained higher, fluctuating around a third from the 1950s to the 1980s. Indeed, small builders have remained important to the present, despite the emergence of large land developers and merchant builders. In 1997, for example, they accounted for one-fifth of housing starts across the United States. Although the larger companies have attracted a good deal of
attention, they have had a significant impact mainly in the larger metropolitan areas. Then again, many have concentrated more on land development, selling blocks and lots to smaller builders. The growing scale of land development, or what Marc Weiss terms community building, has not entailed an equivalent concentration of activity among builders.

One reason why there were so many builders is because it was so easy to become one. Very little capital was required, less than in any other industry, even garments. Maisel found that in San Francisco in the early 1950s small builders had, on average, $2,700 in capital equipment, typically a pickup truck and some hand tools; in absolute terms large builders invested more, but less in relation to their labour force or annual turnover. Because they did most of the actual site work and used their own equipment, contractors required a little more in the way of capital, but still very little in larger comparative terms. If it was easy to set oneself up as a builder it was just as easy to leave the industry. Rates of entry and exit have always been unusual, almost always higher than in any other major industry. A study of home builders in Newcastle, New South Wales, found that during the 1950s and 1960s in an average year at least a third of home builders had entered the business in the previous 12 months. This rate of turnover seems to have been typical, and for many decades. No historical data are available for North America, but a recent study of Ontario found that only four of the top 50 builders in 1998 had existed 20 years previously. House builders, then, have operated in a highly competitive and fluid business environment.

The main features of the industry were broadly constant, but subject to great temporal and geographical instability. There were, and still are, major fluctuations in demand. Housing is expensive; buyers require credit and are sensitive to interest rates. Then, too, houses are flexible: during economic downturns families can double up, adapt their homes, take in lodgers, or add extensions. The demand for new homes can almost dry up, as it did in North America during the early 1930s. Although most commentators have emphasised the less predictable instability of the real estate cycle, year in and year out seasonal fluctuations have mattered even more. Colean’s study for the Twentieth Century Fund documented the seasonal variations that were typical in the early 1940s. His employment index on an annual base of 100 ranged from 70 in February to 130 in May. There was, of course a strong regional component to this: California’s range (78–118) was less than half that of New England’s (30–130). At their extreme, comparing the late 1920s with the first half of the 1930s, business fluctuations were about as large, but not much greater than those that afflicted some other industries, including producer durables.

The fluctuations in demand and production were even greater than aggregate national figures suggest. Homes were not only erected on-site but also used there, and the characteristics of the market varied greatly from place to place. There were systematic as well as purely local variations. Across the United States in 1949, for example, owner-builders accounted for 58 per cent of all dwelling unit starts (including apartments) outside the major metropolitan areas but only 14 per cent of starts within them; in contrast, the market share of the speculative builders was 41 per cent and 84 per cent, respectively. The variations among metropolitan areas were just as striking. In the same year, speculative builders erected 80 per cent of new dwelling units in Detroit but only 36 per cent in Seattle. Then again, some places were able to buck national economic
trends, even during the Depression. After 1932, Peoria, Illinois, boomed as its largest employer, Caterpillar, won government contracts for heavy equipment. During the Second World War, the greatest strains and growth occurred in the main centres of defence employment, such as Detroit in the United States and Hamilton in Canada. Afterwards, most cities grew, but among the larger centres none more consistently than those in the western, and later the southern, United States. In Australia one company, A.V. Jennings, could eventually claim to be national. In the United States, however, even the largest merchant builders of the 1950s operated on a regional or, more commonly, a local scale: Kaiser in Los Angeles, Eichler in northern California, Levitt in the general vicinity of New York. A similarly fragmented, regional pattern eventually emerged in Canada. Even the largest builders, then, faced a market that was potentially more volatile than the national average, and in many cases much more so. The complex historical geography of the industry served to underline its instability.

Most of the changes that affected house building after 1918 involved the adaptation of existing methods and extension of continuing trends. Wartime shortages encouraged the use of new materials, which the lumber industry liked to refer to as wood ‘substitutes’. Except for wall plaster, these eroded rather than displaced the demand for traditional materials. Occasionally, data are available that enable us to distinguish trends from cycles. The evidence on the size structure of the industry, though imperfect, is relatively good. During the 1950s and 1960s, contemporaries were struck by the growth of large builders. More was involved than size, for merchant builders were compelled to develop new management structures, especially to handle multiple site operations. Close observers questioned how far this trend could go. As early as 1953, Maisel suggested the larger merchant builders had already reaped most of the available economies of scale and that any further concentration in the industry would have to be accomplished by the growth of medium-sized firms. Ten years later, Herzog’s research appeared to confirm his prediction. Later, however, the concentration of the industry hit limits as markets fragmented. Infill development in gentrifying neighbourhoods, and home renovations – both the domain of the small builder and contractor – became more important. As a result, despite cyclical flux, the size structure of the building industry in the 2000s differs little from that of the 1950s or even the 1930s.

Other important shifts in the industry must be inferred from case studies and the evidence of trade journals. Most close observers, especially in Australia, detected an increased use of subcontracting after the Second World War. Unfortunately, except for that country, there are no data to confirm their impression. They also noted a secular decline of the general contractor. In 1953, in an uncharacteristically bold statement, Maisel claimed that ‘yesterday belonged to the contractor . . . the merchant builder . . . is moving in on tomorrow’. This overstatement caught the trend, although merchant builders soon blurred the distinction by erecting model homes and then pre-selling to clients who were given a range of cosmetic options. There was also a steady increase in the use of machinery, whether by builders, dealers or manufacturers, especially in the partial prefabrication of components, notably door and window assemblies, plumbing ‘trees’ and, following the development of gang-nailing techniques, roof trusses. Because of their reliance on wood technology, the United States and Canada, along with Scandinavia, were leaders in these systems; Australia soon followed.
Larger builders did their own pre-cutting and fabrication, usually on-site, but smaller builders relied on lumber dealers for this service.\textsuperscript{69} From the late 1930s through the 1960s, dealer associations encouraged the development of pre-cutting methods which were illustrated and promoted in the trade journals.\textsuperscript{70} It was often the larger dealers that led the way. Edward Hines, for example, a large dealer-wholesaler, claimed to have been the first in the Chicago area to establish a millwork facility, and by the mid-1950s was selling pre-hung doors and glazed windows ‘to help area builders cut valuable installation time’.\textsuperscript{71} This sort of service soon became common. In the United States, for example, by 1969 more than a quarter of all dealers sold prefabricated roof trusses, in most cases their own.\textsuperscript{72} Pushed, at first, by the boom in owner-building, lumber dealers evolved rapidly. They further diversified their product lines, developing services for the amateur that also enabled small professional builders to compete with their larger competitors.\textsuperscript{73}

Fabrication, whether by lumber dealers, large builders or independent companies such as Thermapane and, in Australia, Stegbar Windowall, transferred labour from the building site to a factory-like setting. A more dramatic example of this trend occurred in the late 1950s and 1960s, when the industry for manufactured (mobile) homes began to take off, especially in the United States. By the beginning of the 1970s, then, the building industry was more complex than ever. In addition to amateurs, general contractors, merchant builders and a shifting kaleidoscope of subcontractors, there were dealer-builders, prefabricators of building components and thorough-going manufacturers. In popular perception, the merchant builder had taken over from the contractor as the norm for the industry, but in truth there was no norm.

### III
Between the early 1930s and the mid-1950s the building industry experienced enormous strains and came under close public scrutiny. Devastated by the Depression, it was a leading target of the New Deal. Then, as an emerging housing shortage threatened wartime production, the federal government took a direct hand. After 1945, backlogged demand kept house builders in the public eye for another decade. For practical, policy-related reasons, then, and also because the diversity of the building industry made it a litmus test of expert opinion regarding the organisation of manufacturing in general, it is important to consider what observers made of it. The short answer is not much.

Contemporaries could not comprehend the logic of an industry that was so diverse. The majority simply assumed there was no logic. From the 1920s to the 1970s, the building industry received a barrage of criticism and was frequently ridiculed. Humorists such as Ring Lardner and Eric Hodgins poked fun at the general contractor, shown to be by turns shifty and bumbling, at the difficulty of getting subcontractors to do what they were supposed to, and in general at the myriad frustrations of building a home.\textsuperscript{74}

Housing experts offered a similar and more relentless indictment. In 1950 Charles Abrams, a leading commentator on house building, contributed a chapter on the subject to an edited collection of essays on American industry. Developing Fortune’s trope, Abrams claimed that ‘promoters’ had ‘sidestepped the building industry’, that in the late nineteenth century it had emerged as ‘the backward stepchild of the gilded age of enterprise’, and that builders still had to ‘fumble along with eighteenth century tools’.\textsuperscript{75} Significantly, in an introduction, the editor commented that Abrams’ criticisms could
‘hardly be challenged’. Few tried. Three years later, Sherman Maisel discerned three points of view on the building industry. According to him, all accepted that it was ‘industrially retarded’; they differed only on the causes and likely solutions. Some writers tried to deflect attention from the building industry on the grounds that it was not the main reason why housing costs were so high. In the 1920s, for example, Henry Wright, a prominent architect of low-cost housing, pointed out that savings in production were often capitalised into higher land costs. Together with his friend Lewis Mumford, the great urban historian and planner, he argued that experts should devote their energies to improving the planning of subdivisions rather than promoting factory production. But these arguments did not shake the consensus that the building industry was the key barrier to reducing housing costs.

Concern about costs consistently drove the debate about the building industry. During the Depression, observers believed that cost reductions would revive demand, thereby helping the industry back onto its feet and, through multiplier effects, stimulate the economy as a whole. In the late 1940s and early 1950s, rapid price inflation stymied veterans, threatening to create social unrest and to stall the post-war economic boom. In both periods, the solution was seen to be greater efficiency. This multi-faceted concept referred to the raising of labour productivity, typically through the use of new tools and techniques, capital investment, larger scale operations with a finer division of labour and a tighter scheduling of tasks, coupled with forward planning. Efficiency, then, became the watchword. By comparison, other aspects of industry operations, notably the capacity to respond to fluctuations in the quantity and character of demand, received much more limited attention.

The chorus of criticism regarding the efficiency of the industry was sometimes overwhelming, but from the late 1940s there were also a few dissonant voices. The range of opinion fell into four camps, which corresponded broadly with distinct interest groups and political orientations. The first, largest and most diverse group, comprising an overall majority, condemned house building as inexcusably and irredeemably backward. Aligning themselves with a corporate model of business efficiency, they emphasised the need to rebuild the building industry from the ground up. A second group of liberal critics emerged in policy circles during the New Deal. Engaged in changing the industry, they attributed its faults to its circumstances. They excused some failings, even as they resolved to eliminate them.

Setting themselves apart from this clamour of criticism, a few contemporaries argued that the way in which the building industry was organised had intrinsic and enduring merits. One group, amounting to no more than a scattering of academics, made its presence felt in the early 1950s. Sceptical not only of the industry but also of the charges against it, they tried to appraise it on its own terms. Builders eventually came to their own defence. Insisting that house building had been unfairly maligned and was already efficient, self-appointed spokesmen claimed that builders had made steady improvements over many decades and, if left alone, were capable of making many more. This fourth group carried little influence at the time, in part because it was so blatantly self-interested, but it was also the best informed, and its arguments repay closer attention.

Most adherents of each of these perspectives articulated only a part of the whole view. Although we cite an extensive body of writing, our presentation draws disproportionately on those whose statements were especially comprehensive. This may imply that each
view was more coherent and distinct than in fact it was, but it serves to highlight some important analytical differences.

There were plenty who condemned the building industry out of hand. In order to emphasise and justify the need for change, they cast everything in a negative light. They have not told us much that is now very useful about the industry, but they deserve our full attention because they were so numerous and hence influential. This influence was felt diffusely in the shaping of public opinion, and was most apparent in the framing of federal policy and in the way that the industry itself was kept on the defensive.

Charles Abrams was by no means the first to condemn the industry but, because of his purple prose, he became one of the more influential. The chapter he published in 1950 abbreviated the full denunciation that he had made four years earlier in *The Future of Housing*. Here, he damned the industry for almost every imaginable failure: inefficiency, shoddy workmanship, unfair competition and stagnation, not to mention ‘waste, monopoly, coercion, usury, petty graft, disorganisation, excessive charges and consumer indifferenc’.

Although, by comparison with *Fortune*, Abrams trod lightly on the building trades, he did argue that they resisted progressive change through self-interested, as well as mindlessly obstructive, jurisdictional disputes. Here, perhaps, he took the opportunity to vent some of his frustrations as a Manhattan landlord. Building codes, he argued, served the interests of the trades, and once ossified they presented a further barrier to innovation. Because the suppliers and middlemen use trade restrictions and monopoly practices to force up prices, ‘the law of supply and demand has obviously not functioned’. The builders themselves, mired in tradition, are the ‘Cinderella of the capitalist system’, earning ‘the title of “industry” as a matter of courtesy only’.

The notion that the industry was hopelessly outdated was consistently expressed in policy circles. In 1931, in a report he prepared for the President’s Conference on Home Building and Home Ownership, Arthur Holden described construction as ‘virtually the sole surviving large scale hand industry in a machine age’. Seventeen years later the Congressional Joint Committee on Housing repeated Abrams’ criticisms, referred to *Fortune’s* analysis, added the claim of ‘high profit margins’, and declared that ‘almost all homebuilders are inefficient, small-scale productive units, which would fail completely in any other important industry’. Twenty years on, the National Commission on Urban Problems repeated the refrain, speaking of a ‘handicraft industry’ operating in ways that were ‘common half a century ago’.

Similar views were expressed elsewhere. In Canada, the person who shaped federal housing policy from the mid-1930s to the mid-1950s was W.C. Clark, the Deputy Minister of Finance. In 1938 he presented his thoughts on housing at Dalhousie University. House building, he judged, was a ‘localized, handicraft’ industry, much the same as ‘that which catered to our forefathers prior to the Industrial Revolution’. It was a ‘confusion’ of contractors and subcontractors, dogged by jurisdictional disputes, ‘fluctuating markets’, ‘waste’, ‘delays’ and unnecessary ‘loss’. Introducing a Canadian theme, he suggested that in many (suburban) municipalities the problem was not that building codes were outdated but that they did not exist. The same terms (‘handicraft’), criticisms (‘restrictive practices’), and the same invidious comparison with other industries was also common currency in Australia.
Such wholesale criticism was not as strongly developed in Britain, perhaps because by the 1920s, indeed by the mid-nineteenth century in the London area, large builders were common.\textsuperscript{88} But this did not mean that the British industry was more efficient. From the 1920s to the 1960s, comparisons showed that the North American industry was superior in almost every way. In 1926, H.C. Badder concluded that American tradesmen were paid more but earned it through greater productivity.\textsuperscript{89} In 1944, a mission from the British Ministry of Works agreed, and praised the way American builders managed subcontracts, paced work, and used power tools and standardised components; it also endorsed their reliance on wood, since this lent itself to greater efficiency.\textsuperscript{90} Six years later another expert team amplified the praise, speaking of ‘complete’ pre-planning and a better ‘industrial climate’.\textsuperscript{91} Yet another group was ‘repeatedly impressed’ by the manner in which building materials were distributed, praising the ‘outstanding . . . flexibility’ and the possibilities for ‘integration backward or forward’, while concluding that ‘goods move from producer to user by the most direct practicable course’.\textsuperscript{92} Australian visitors praised the same features. In 1955 a team was struck by the organisation of both construction and supplies, as well as higher levels of mechanisation and labour productivity.\textsuperscript{93} Australian lumber dealers received a wake-up call when, at the invitation of Con Lembke, editor of the \textit{Australian Timber Journal and Building Products Merchandiser}, Art Hood spoke to groups of dealers in Canberra and Brisbane. Hood, the long-time editor of the \textit{American Lumberman}, spoke of normal practices in the North American trade. Afterwards, impressed by Hood’s emphasis on competitive marketing, one timber merchant commented that ‘this will be the greatest shot in the arm that the timber industry in Australia has ever received’.\textsuperscript{94} The features that struck outsiders favourably about the North American scene, then, were precisely those that attracted the greatest criticism from domestic observers: project management, subcontracting, reliance on wood and flexibly complex systems of distribution. The existence of such discrepant assessments indicates that the domestic criticisms of US builders say more about the critics than they do about the industry itself.

In North America, the industry’s detractors assumed that the source of the problem was the myriad practices that the industry had inherited and that obstructive self-interest maintained. Speaking from the standpoint of corporate America, \textit{Fortune} railed especially against corruption, jurisdictional disputes and working rules in the construction trades, but more generally deplored the ‘feudal controls’ exerted by tradesmen, suppliers and subcontractors, who, they suggested, were part of a hidebound ‘putting out’ system. John Burchard, the first director of the Bemis Foundation for Housing Research at MIT, spoke darkly of a network of ‘vested interests’.\textsuperscript{95} Entrenched practices were inefficient, and vested interests maintained them. Worse, the industry seemed to be a many-headed Hydra. In 1937, speaking as editor of \textit{Architectural Forum} and ex-chief engineer at the FHA, A.C. Shire deplored the ‘complexity’ and ‘inchoate organization’ of an industry that had ‘no centralizing control, no directing force’.\textsuperscript{96} Three years later, the Temporary National Economic Committee echoed his frustration. In the Committee’s view the industry was no more than a ‘haphazard grouping of small independent units’ involving ‘traditions, customs and restraints . . . that are difficult to break’ because ‘no one has any effective control’.\textsuperscript{97} Where to begin the process of reform? To break the ‘building blockade’, as Robert Lasch put it in an influential book published in 1946, the solution had to be radical.\textsuperscript{98} The goal was to cut the Gordian knot of ‘guild controls’ at a stroke.\textsuperscript{99}
The solution to house building’s problems was to jolt it into the twentieth century, to remake it as a mass-production industry appropriate to the Machine Age. ‘The house building industry’, declared the Joint Congressional Committee on Housing in 1948 ‘needs to be reorganized and put on a modern industrial basis’. Everyone agreed that large-scale operations were critical. Big builders could reap economies of scale, buy in bulk, and cut out the middlemen by buying direct from manufacturers. They could integrate vertically or, for as long as they continued to employ subcontractors, their greater size would enable them to drive a better bargain, push down prices, and in general take charge. Centralising capital, they would be able to invest in new equipment, raising productivity. For many, inspired by the German modernist architect Walter Gropius, and the Bauhaus school that he founded, the ideal was ‘prefabrication’, by which they meant the factory home. During the early 1930s this was the great hope of the industry. Alfred Sloan, President of General Motors, even expressed the view that a new industry of ‘machine-made homes’ would pull America out of the Depression. New companies experimented with varied techniques and materials, including wood, steel and concrete. These attracted enormous media attention, found support from the Federal Housing Administration, and received the imprimatur of experts at the Bemis Foundation, first John Burchard and later Burnham Kelly. Investors remained sceptical, however, and during and after the Second World War, the federal government spent millions of dollars in subsidising the start-up costs of selected experiments, most notably the Lustron steel house. Many were ingenious and some proved technically feasible, but none got off the ground. Although many observers worried about consumer acceptance, the main problem was distribution. Recognising that a total restructuring of the industry might take time, a growing number of observers came to argue that most of the benefits of mass production could be obtained even with continued on-site assembly. These included Charles Abrams and, in Canada, H.C. Clark. Their goal became the standardisation of parts, together with the prefabrication of components, subassemblies and mechanical units, preferably on as large a scale as possible. This would be a long first step towards wholesale modernisation. Ideally, little of the existing industry would remain.

Those who condemned the industry outright had composed a litany of complaints, which created difficulties when it came to proposing viable solutions. From the New Deal onwards, those whose job it was to make practical policies were compelled to identify specific features of the industry that they could plausibly hope to manipulate. These liberal critics singled out key problems, related these to the peculiar character of the market for housing, and proposed more selective solutions. In the United States, the leading exponent of this point of view was Miles Colean.

By the 1940s there was probably no one in the United States better qualified to pass judgement on the building industry than Miles Colean. From 1934 to 1940 he had worked at the Federal Housing Administration, first as its technical director and then as its Assistant Administrator. In these capacities he had ample opportunity to see the industry close up, and to debate views with the leading housing experts of the day, including Ernest Fisher, Richard Ratcliff and Coleman Woodbury. For the next two years he directed the housing survey of the Twentieth Century Fund, and later advised the Producers Council. In the report that he wrote for the Fund, Colean agreed with the popular consensus that the building industry had ‘numerous deficiencies in organization and techniques’, that it was ‘poorly organised’, ‘chaotic’, ‘backward’ and, in sum, ‘old
but not mature’. But he also acknowledged its ‘quiet, steady progress’. Indeed, as he observed the industry’s development during the 1940s he acquired increasing respect for it. By the early 1950s he was insisting it had been ‘ingenious and successful in adapting itself to its operating environment’. The problem, he concluded, lay not with the industry but with the environment of instability in which it had always functioned.

Together with Robinson Newcomb, he explored the implications of demand instability in Stabilizing Construction, a book that he wrote at the behest of the Committee for Economic Development. Because the demand for housing was both local and highly cyclical, Colean and Newcomb argued, it was just as important for builders to be flexible – and agile, in today’s terminology – as it was for them to be efficient. To respond effectively to rapid booms or downturns builders had to be nimble and lean. Payrolls, equipment and factories were a liability; instead, subcontracting, hand tools and on-site assembly was the way to go. With this disincentive to invest, builders remained small, inefficient and under-capitalised, and hence reliant on middlemen. Faced with market uncertainty, it was no wonder that tradesmen and suppliers tried to protect themselves through restrictive practices. These characteristics all presented barriers to efficiency, but they made sense.

Although they did not explore the logic of the argument as fully as Colean and Newcomb, a number of other observers believed that market instability was an important concern. This belief has consistently influenced policy debates in Canada, the United States and Australia. In Canada, for example, it was expressed by the Housing Committee of the Canadian Welfare Council, a group that included academics as well as representatives from the labour movement and mortgage lenders. In Australia it shaped the policies of the Commonwealth Housing Commission, which sought to stabilise demand and promote the growth of large builders by providing them with government contracts. In the United States it guided the housing recommendations of the National Commission on Urban Problems in 1968. Indeed, it has been consistently articulated by observers of the building scene, both in North America and in Australia.

If instability was the source of the building industry’s problems, it was the key target for any solution. Two possibilities were discussed. The first was to use public contracts to nurture large builders and dampen the cyclical swings of the private market. This point of view was argued by the public housing lobby in Australia, Canada and the United States, including the Canadian Welfare Council and, perhaps most notably, Catherine Bauer, one of the leading US advocate of public housing. It was only implemented on a significant scale, however, in Australia, and even then mainly in the late 1940s and 1950s when private-sector demand was also strong. The alternative option, personally favoured by Colean, was to strengthen the private sector so that it might ride through, and even out, any downswings. Apart from broad macro-economic measures, this typically involved the promotion of larger operative builders whose long-range planning horizon could respond in a measured way to faltering demand and even, with judicious planning, counter it.

In the end, the policy recommendations of the critics meshed quite closely with those of the detractors. Colean’s account provided a temporary rationale for some of the key industry features that its detractors had simply deplored: subcontracting was shown to have a powerful logic; although ‘wasteful’, middlemen performed necessary ‘functions’. In the short run, at any rate, there might have to be ‘a variety of solutions’ to the
challenges of restructuring. But, in the long run, the peculiar business environment in which house building operated was still seen as a barrier to be overcome. The industry was excused, but not pardoned.

Those who condemned or criticised the building industry were virtually unchallenged from the 1920s to the early 1950s. As the industry geared up in the 1940s, however, it changed, and close observers began to pay attention. Colean adjusted his views, but still saw the industry’s operating environment as a barrier to realising the ideal. Others were more inclined to believe that some features of this environment were immutable, and that some of the industry’s main features might be seen as permanent and rational adaptations.

The first sustained expression of this more favourable view was *Production of New Housing* (1950), a monograph commissioned from Leo Grebler by the Committee on Housing Research of the Social Science Research Council. As was typical, Grebler focused on the issue of efficiency, surveyed what was known about residential construction, and suggested questions for future research. Given the contempt with which many regarded the industry, his treatment is remarkable for its level tone and agnostic views. On most key issues – subcontracting, rates of innovation, levels of productivity and the distribution of materials – he retained an open mind, and emphasised the absence of firm evidence and the need for research. On contracting, for example, he suggested that there must be ‘at least a strong presumption that it developed in response to economic forces’ and that whether it made sense depended on the context. Regarding the supply of materials, he insisted that ‘research in this field cannot take for granted the validity of any position for or against existing distribution patterns and practices’; even on the issue of efficiency he pointed out that the advantages of increasing size may often have been outweighed by the disadvantages, among which he included the greater costs of overhead, the need to maintain inventories, and the challenges of maintaining flexibility in the face of change. Grebler did not express his own views, and for that reason his presentation is unsatisfying, but his dispassionate tone is refreshing.

A more satisfying statement, because it provided well-grounded answers, was soon articulated by Sherman Maisel. In the late 1940s, the US Housing and Home Finance Agency funded a number of case studies of home building and finance in local markets across the country. Maisel’s study of house building in San Francisco was the most significant, in part because he did not feel constrained to adopt the prejudices of those who had hired his expertise. Relying on interviews as well as published data, Maisel produced a detailed account of the structure and organisation of the local industry, and of its relationship to suppliers and lenders. Acknowledging that previous writers had been highly critical of this ‘most troubled and troublesome’ industry, he conceded some deficiencies, especially in management. But he argued that his evidence supported a generally favourable assessment. His finding that subcontracting was efficient, and that builders established stable relationships with their subcontractors, ‘contradicted … many popular assumptions’. His evidence showed that dealers performed many necessary services and that they gave professional customers a fair discount; indeed, among suppliers he found ‘more vigorous competition than is true in most parts of the economy’. The financial data he obtained showed that the production costs of the large builders were lower than those of the small, but that this advantage was largely absorbed in greater overheads. For this reason, he calculated that the upper limit to economies of scale was quite low. Overall, he found ‘far greater efficiency and stability than is
commonly recognized’, and concluded by commenting that, as the praise of outsiders also indicated, most judgements of the North American house builder said more about the critics than the industry.  

Few other commentators paid close attention to Maisel’s evidence, or agreed with his conclusions. Later writers did confirm parts of his assessment of the industry, for example his suggestion regarding the limits to economies of scale. Some, including government agencies, acknowledged the virtues of subcontracting. In 1952, for example, in a report on the advantages of ‘standardization, simplification, specialization in the building industry’, the US Bureau of Labor Statistics included four case studies of subcontracting, some possibly drawn from Maisel’s research. Perhaps the only writers to extend Maisel’s analysis during the 1950s were William Haber and Harold Levinson, whose work was also supported by the HHFA. In Labor Relations and Productivity in the Building Trades, they updated Haber’s earlier analysis of the building trades. Dealing with labour issues that Maisel had barely touched, they agreed that technical improvements had been ‘impressive’, and that subcontracting was efficient, making it possible for small builders to compete with large. They also argued forcefully that it was unfair to compare the efficiency of small and large builders without taking into account the fact that smaller builders typically erected homes on scattered sites and therefore had to deal with greater logistical difficulties. As the boom of the 1950s slowly caught up with the housing shortage, however, interest in the building industry waned, and so Maisel’s work – together with his balanced view of the industry – fell into neglect.

The research of Haber and Levinson, but above all Maisel, rationalised many of the key traditional elements in the organisation and methods of the building industry. It provided evidence to support arguments that defenders of the industry had begun to make during the 1940s. These defenders were connected with the industry, however, and few were taken seriously by housing experts and agencies.

The most articulate defenders of the building industry were trade associations and the editors of trade journals. Aware of the unpopularity of the industry, editors chivvied their subscribers into adopting new methods by running features on ‘progressive’ companies. The American Builder and the Canadian Builder (1952–), were targeted at, and featured, speculative builders who operated on at least a moderate scale. It was the journals for building suppliers, including Building Supply News, the American Lumberman, the Canadian Lumberman, and the Australian Timber Journal, that spoke for the most traditional elements in the industry, the lumber dealers together with the general contractors who were their bread and butter business. The editors of these journals, notably Art Hood at the American Lumberman and Con Lembke at the Australian Timber Journal, pushed their subscribers to modernise, defended their interests and articulated their point of view.

Trade journals and associations were very defensive during the 1930s, but by the late 1940s were articulating an upbeat image of the industry. They argued that it was innovative and flexible. In particular they insisted that, together, dealers and small builders could produce homes just as efficiently as the larger merchant builders who bought direct. In his response to Fortune’s criticisms in 1947, for example, the editor of Building Supply News argued that, with ‘a little coordination at the local level … any smart local dealer or builder’ could achieve ‘economies plus consumer acceptability’ that
were superior to those of any large builder or prefabricator. The trade journals claimed that dealers could do this by offering a one-stop warehousing/supply service, 30-day credit, technical advice and assistance, just-in-time delivery to building sites, and pre-cutting, the major development of the early post-war period. A number of the US companies that experimented with prefabrication in the early post-war period relied on tried-and-tested wood framing technology; their kits were mostly sold through dealers, and in about half of all cases actually erected by dealers too. More importantly, the National Retail Lumber Dealer’s Association developed a series of proprietary pre-cutting systems. The idea, as they put it in 1947, was ‘to counteract the unfounded dreams of push-button theorists who were leading the American people to expect post-war homes built of untried materials not yet in production’. The same trend swept Canada and, soon, Australia too.

The published elements of this argument were scattered across scores of articles. The most concise and accessible version was articulated by Fred Ludwig. Ludwig had for many years been general manager of the Merritt Lumber Yards in Reading, Pennsylvania, before taking a position as a mortgage broker. In 1944, he was invited to participate in the National Conference on Post-war Housing, where he spoke on ‘The Efficiency of the Small Builder’. Acknowledging the critical role of the dealer, he argued that, with minimal overhead, using proven contractors, and capitalising on an established local reputation, small builders were just as efficient as the large. Judging from the published discussion afterwards, his message was ignored, possibly because his audience thought it was both self-serving and wrongheaded. It was impossible to argue the same of David Bohannon. One of the first of the large merchant builders to emerge on the West Coast during the 1940s, Bohannon made news in 1946 by commenting that the savings he was able to make in production costs were ‘more than absorbed’ by his increased overhead. He had already expressed this view in American Builder and, in a highly laudatory article about Bohannon’s use of the innovatory ‘California method’ of pre-cutting, Fortune acknowledged the point. They buried it towards the end of the article, however, and did not pursue the implications. Neither Ludwig, nor Bohannon, nor Maisel could puncture the public and expert consensus that the building industry was hopelessly inefficient.

Indeed, after the late 1940s and early 1950s when the critics and detractors of the building industry had become more restrained, in the 1960s they returned with redoubled force. In the early 1950s some of the more extravagant claims for machine-made houses were qualified. In 1952, for example, Burnham Kelly conceded that this ambitious project was still a ‘struggling[,] growing infant’; he acknowledged that it could not be the only solution. Still, however, he called for a ‘fundamental improvement’ in methods. Then, in the 1960s, a new generation rejuvenated the technological optimism of the 1930s and early 1940s. The Civilian Industrial Technology Program (CITP) again sought to revolutionise the industry. Following the recommendations of the National Commission on Urban Problems, the US federal government mounted Operation Breakthrough, an ambitious programme to jump start the market for manufactured housing. The thinking was unchanged from the technological determinism of the early 1930s. The Commission’s report waxed enthusiastic about the ‘amazing success’ of mobile homes; it spoke of the advantages of factory fabrication and of ‘barriers’ to be overcome, with no suggestion that there might be corresponding disadvantages of
inflexibility, or immutable limitations. The implication was that universal, large-scale, off-site production was a realistic goal. In some respects the rhetoric had become even more overheated. Along with many others, Fortune had described the industry as feudal; HUD Secretary George Romney went further, invoking images of the Stone Age. Endorsing Operation Breakthrough, he claimed that recent and prospective changes meant ‘a revolution in housing construction unmatched since men came out of the caves and started building dwellings with their hands.’ Even as Operation Breakthrough struggled, many writers still bought the rhetoric arguing that a revolution was necessary. In 1971 Dorothy Nelkin attributed the failure of the CITP programme entirely to hidebound, self-interested obstructionism by the industry. She did not entertain the possibility that the industry might already be functioning well without technological revolution. W.D. Keating, speaking about industry trends in 1973, saw the current period as ‘transitional’ to a new corporate era, and reported without comment Boise-Cascade’s view that within five years ‘50 percent or more of U.S. housing will be built in factories’. The ideals of the machine age lived on into the early 1970s.

IV

In North America and Australia, the benchmark for the building industry from the 1920s to the early 1970s was a specific ideal of mass production. In its essentials, this ideal called for the heavily capitalised, large-scale fabrication of a limited range of dwelling types using standardised parts and dimensions on factory assembly lines. For many decades the automobile industry was invariably invoked as the model. In the 1920s, the department store magnate Edward Filene spoke of making ‘Houses Like Fords’, Henry Wright played with the idea of the ‘Six CYclinder House with Streamline Body’, and Robert Davison compared construction cost indexes for homes and Fords. In 1932, John Murchison articulated what had already become a tired comparison when he declared that ‘what Ford has done in the automotive industry is what must be done in the housing industry’. Then, reversing the usual direction of comparison, the architect Alfred Kastner commented that ‘if Mr. Ford’s designers used the thought-process of traditional architecture we should undoubtedly be riding around today in small copies of King George’s coronation coach’. Only in the 1960s did the point of comparison change, to aerospace, but the theoretical ideal remained the same.

Every contemporary acknowledged the force of this ideal. Most viewed it literally as the goal. A few were unsure that factory production was realistic for the building industry, but still used it as the benchmark against which they framed their arguments. The same was even true for the industry’s defenders: they had no choice but to meet their opponents on their own ground. There are intriguing questions about how different groups within the building industry viewed, understood and used the discourse of mass production in order to press their own interests with the federal government. We need to know more about how this discourse shaped, and was shaped by, the social mechanisms by which the ideal became so effective. But there can be no question about its pervasive influence.

In the United States, the ideal of mass production was bound up with a belief that its complement, mass consumption, was a defining quality of American life, one that was coming to define the very nature of citizenship. The crisis of Fordism from the 1970s
has opened up a conceptual space within which the logic of mass production has been probed and challenged, but historians of house building have not replaced, disrupted or even seriously questioned the discourse of modernisation. Those who deal with the subject as part of a larger story, usually of suburban development, have simply accepted the views of contemporary detractors and critics. Sometimes this acceptance is embarrassingly uncritical and wholehearted. In their account of ‘how the suburbs happened’, for example, the sociologists Rosalyn Baxandall and Elizabeth Ewen focus a large part of their narrative on one of the three huge suburbs built by the Levitt brothers. Describing William Levitt as ‘fabulously successful’, the ‘Henry Ford of housing’, they assert that his company ‘transformed the housing industry from small scale to large scale, from an industry relying on craft methods to one that used the latest industrial techniques’. Their account is wrong on all counts. Levitt did not transform the industry in the manner of Henry Ford. Neither he nor any other builder in that era operated on the scale that would have made that possible. Indeed, the industry was not transformed: small builders persisted and building methods evolved. Meanwhile, after initial success, Levitt ran into serious trouble. As Ned Eichler points out, by concentrating so heavily on immense projects he had never been typical of even the larger merchant builders. His was a risky business plan, and by the 1970s he was effectively bankrupt. But it would be invidious to single out Baxandall and Ewen’s account for criticism. Many other historians have made similarly inaccurate statements or, by extolling the merits of large-scale production, implied them. At most they have dissented from specific claims that detractors made. Their thinking has confined itself within the discourse of mass production.

The elements of an alternative view will have to be pieced together from two bodies of writing that until now have been largely unrelated. The first is the work of those who have written about the current housing scene. In the United States, several observers have suggested that the housing industry should be regarded as a model of flexible efficiency. Francis Ventre, for example, speaks of its ‘genius of . . . adaptive . . . response’ while, in a comparative study of Long Island and suburban Chicago, Ronald Denowitz has explored the way in which varied market conditions can create different, but equally efficient, industry responses. This way of thinking has been more fully articulated in Britain and Australia, initially during the 1970s and 1980s by Michael Ball and other researchers who were associated with the Bartlett School at the University of London. Indeed, it has been suggested that instead of building houses like cars we might try building cars like houses. In this connection, it is noteworthy that in Japan, the country that pioneered some of the modern techniques of flexible production, custom building is still the norm for single family homes and even the largest builders have been compelled to employ methods of mass customisation. Perhaps the most significant development occurred in 1993 when a group of industry professionals formed the International Group for Lean Construction (IGLC), the purpose of which is to theorise the ways in which the flexibly efficient methods of the industry might be further developed, rather than discarded. The work of these writers and professionals challenges the view that the modern housing industry is backward, and that it must be viewed through a single lens.

In order to develop an alternative and we believe better lens, especially for viewing the past, we may also draw on the growing body of work in business history concerning the ‘other side’ of industrialisation. Scranton’s work, with its recognition that that there
may be ‘multiple correct solutions’ to the problem of production, is an especially appropriate starting point for analysis of an industry that grew even more diverse over the course of the twentieth century. His identification of four types of production for the market, and the manner in which they often resolve themselves into two, ‘special’ and ‘duplicate’, has suggestive parallels to the continuing distinction between general contractors and speculative builders. It is paralleled and in some respects extended by those that have taken place within the IGLC about what has been called the ‘decoupling point’, the stage in the production process at which a dwelling begins to be customised. Scranton’s subsequent discussion of markets is part of a broader trend towards a consideration of how production and consumption have been interrelated through the mechanisms of marketing and distribution. Given that the market for housing is so dispersed and fragmented, and that so many observers have identified market instability as a major issue, such lines of inquiry have much to offer for our understanding of the housing industry.

We must resist the notion that, because it is in so many ways unusual, the house building industry is a law unto itself. This way of thinking appeared to make sense to those who held mass production as an ideal, and who implied that deviations were both regrettable and relatively uncommon. Many of the most influential statements on the subject are careful to enumerate the ways in which housing, and house building, is unique. But one of the important lessons to be drawn from historical research on the history of business is that few, if any, industries have ever conformed to the ideal of mass production. Flexible production methods, of the sort that have often seemed to dominate house building, have been present everywhere; they are necessary for any enterprise or industry. From that point of view, house building is not sui generis, but simply falls close to one end of a continuum, or one corner of an n-dimensional space. It follows that a balanced historical account of this industry illuminates larger issues of theoretical debate concerning the process of economic change that affect all industries.

House building in North America and Australia was not forgotten by capitalism, or starved of entrepreneurial initiative. Builders and their suppliers adapted ceaselessly to a fluid and unstable economic environment. They refined a congeries of methods that some have labelled flexible production, methods that have been variously important, but continuously present, in every industry. They deserve our attention for many reasons, but above all because their industry exemplifies these methods on a scale that has had few, if any, parallels. Contemporaries and historians have assumed that the industry has had something to learn; we believe that, to the contrary, that it has something to teach.

NOTES
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1 Editors of Fortune, Housing America (New York, 1932); ‘The House Not-so-Beautiful’, Fortune (May 1938), pp.63–5, 94, 96, 99; ‘Housing’ (Special Issue) (April 1946).
3 US Congress, Joint Committee on Housing, High Cost of Housing (Washington, 1948), pp.133–4;


17 Grebler, *Large Scale Housing*, p.xiii.


19 J. Gillies and F. Mittelbach, ‘Management in the Light Construction Industry’, *Real Estate Research Program*, Graduate School of Business Administration, University of California, Berkeley.


23 Ibid., p.157.


25 Doucet and Weaver, *Housing the North American City*, pp.217, 238.


32 Harris, ‘To Market!’ p.46.


38 Doucet and Weaver, *Housing the North American City*, p.83.
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46 Harris, ‘To Market!’, pp.28–9.
50 Ibid., pp.539–40.
51 Ibid., p.539.
52 Colean, *American Housing*, p.82.
61 Ibid., p.22.


74 R. Lardner, *Own Your Own Home* (Indianapolis, 1919); E. Hodgins, *Mr. Blandings Builds His Dream House* (New York, 1946). Hodgins was on the editorial board of Fortune, which in April 1946 published a short story that became the book. The latter was made into a successful movie, released in 1948, starring Cary Grant and Myrna Loy.


76 Ibid., p.108.

77 Maisel, *Housebuilding in Transition*, p.8. The first two views together correspond to the category of ‘detractors’ discussed below, while the third corresponds to ‘critics’. Maisel did not explicitly position himself in relation to these three views.


80 Ibid., p.140.


86 Ibid., pp.8, 9.


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99 Editors of *Fortune*, ‘Industry Capitalism Forgot’.

100 US Congress, Joint Committee on Housing, *High Cost of Housing*, p.12.


103 Sloan, ‘Forward View’.


105 Haskell, ‘Assembly Lines’.


108 Ibid., p.131.


110 Ibid., pp.109–25.


117 Colean, *Organizing the Construction Industry*.

118 Grebler, *Production of New Housing*. The membership of the Committee included Ernest Fisher, R. Ratcliff and C. Woodbury, and the project received early guidance from Miles Colean.

119 Ibid., pp.55, 58, 69, 82–5.


121 Ibid., pp.58–9, 231


125 Ibid., pp.31, 299.


129 Ibid., pp.20–22, 249.

130 Ibid., p.20.

131 In 1948 Art Hood added *Building Products Merchandiser* to the masthead of his journal. Con Lembke made a similar change to the *Australian Timber Journal* a decade later. These additions reflect the diversification of retail lumber dealers in the post-war period.

132 This statement, and our discussion of the trade journals, draws upon a comprehensive reading of the building supply journals named in the previous paragraph from the 1920s to the mid-1950s, a selective reading of *American Builder* and a complete survey of *Canadian Builder* from its birth in 1952.


134 S. Gertler, ‘Prefabricated Wood Dwellings’, *Construction Review*, Vol.5 No.6 (1959), pp.11–12. Some of these companies may themselves have been dealers, but this is an area in which it is impossible to obtain precise and reliable data.


139 Kelly, *Prefabrication of Houses*, p.95.

140 Kelly, *Design and the Production of Houses*, p.348.

141 Nelkin, *Politics of Housing Innovation*.


158 http://cic.vtt.fi/lean/.


