"We Hold The Merchandising Idea As Paramount": The Virtues of Flexible Mass Production in the 1920s American Furniture Industry

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Sinclair Lewis's satirical novel *Babbitt* commented on the overpowering commercial culture America had become by the 1920s. The protagonist, George F. Babbitt, was the ultimate lover of material goods, or "things." Each home in his Floral Heights suburb followed the "best standards" where homemakers arranged furniture that was "very much like mahogany" in predictable order. Like two out of every three of his neighbors' living-rooms, Babbitt had a "blue velvet" davenport that faced the fireplace and located behind it was a "mahogany table real or imitation." The room was "as superior in comfort to the parlor" of his boyhood as new his new car "was superior to his father's buggy" [Lewis, 1980, pp. 15, 77-78]. In an age of urbanization, industrialization, mass production and mass consumerism, Babbitt and his neighbors believed they possessed the best the modern age had to offer.

However exaggerated Babbitt's world of Zenith was, the image of "furniture for the masses" is an accurate portrayal of the goals of the American furniture industry during the 1920s. Contemporary advertising celebrated the middle class and urban family and its home and encouraged its leisure and spending of money freely. Besides automobiles and radios, wooden furniture for the home was one of the many ways families could express affluence and status. Furniture manufacturers made chairs, tables, sofas, chests of drawers, and beds with methods that appeared unable to meet the unprecedented demand for home furnishings that existed in the United States during the decade [Perret, 1982, pp. 353, 373]. Inspired by the recent example of Henry Ford's system of mass production, engineers in the employ of seemingly backward manufacturers led a modernization effort to bring the furniture industry into the twentieth century. Others in the industry, however, would show that it was the virtues of merchandising in a system of flexible mass production that dictated the nature of their business. One of the strongest voices for that strategy would be elements of the rapidly growing southern furniture industry centered on High Point, North Carolina.

[1] I would like to thank Lindy Biggs and Philip Scranton for their helpful comments and advice in the writing of this article.

BUSINESS AND ECONOMIC HISTORY, Volume Twenty-eight, no. 2, Winter 1999.
 ISSN 0894-6825

Furniture manufacturing appeared to be chronically backward and inefficient in an era that encouraged one engineer to profess, "To all those who live in and love the United States of America, the keynote of every spoken and unspoken thought in these days is P-R-O-D-U-C-T-I-O-N!" [McDonald, 1920, p. 185]. The doctrine of bulk mass production pioneered by Detroit automaker Henry Ford created excitement throughout American industry. In *Only Yesterday,* Frederick Lewis Allen observed that the United States "had developed mass production to a new point of mechanical and managerial efficiency." He went on to state that, "The Ford gospel of high wages, low prices, and standardized manufacture on a basis of the most minute division of machine-tending labor was working smoothly not only in Highland Park, but in thousands of other factories" [Allen, 1964, p. 139]. One of the industries that attempted to emulate Ford's model was the wooden furniture industry. According to historian David Hounshell, the American Society of Mechanical Engineers (ASME) played a "central, missionary role" in attempting to implement Fordist mass production principles into the furniture industry. Besides moving line assembly, standardized parts, division of labor, and low-priced products, they envisioned an industry based on standardized designs, automated woodworking machinery, and uniform finishing processes [Hounshell, 1984, pp. 11, 145, 315].

The American Society of Mechanical Engineers formally recognized woodworking engineering as a legitimate profession in 1920 with the creation of the Forest Products Section. Renamed the Wood Industries Division in 1925, its members began to hold annual meetings to discuss engineering problems related to woodworking [Perry, 1930, p. 434; "Woodworking Industries to the Front," 1921, p. 84; Hounshell, 1984, p. 12]. The Chair of the Division declared that the furniture industry inherited the tradition of "very ancient arts" where its transformation into "modern mechanized arts obeying engineering rule and practice" warranted great effort [White, 1929, p. 2]. One ASME member bluntly stated in 1920 that it was "doubtful whether any other major group of modern manufacturers gives evidence of less scientific knowledge of its products" than the woodworking industry. The commentator believed furniture manufacturing had to fall under the auspices of "scientific factory production" [Perry, 1920, pp. 448-450]. Another confessed that the furniture industry was lethargic in adopting "modern principles of manufacturing" which encouraged the belief that "the problem is quite properly one for none but an experienced engineer" [Parks, 1921, p. 90]. Others in the industry, such as the department store magnate Edward A. Filene, welcomed the complete implementation of mass production methods, but it was the enthusiastic engineers of the Wood Industries Division that offered the reality of modernization [Hounshell, 1984, p. 315].

The modernization of the American furniture industry, according to the engineers of the Wood Industries Division, relied upon the increased mechanization of furniture manufacturing. Unlike the automobile or radio industries, wooden furniture manufacturing was one of the oldest industries in

America. The industry relied upon machinery and processes that were firmly rooted in the nineteenth century where manufacturers emphasized diversity, skill, and versatility. Furniture factory workers used woodworking machinery to make a myriad of furniture styles on relatively short production runs. Its type of mechanization, however, reflected its origins as a system called "flexible production" or "specialty manufacturing" by historian Philip Scranton [Scranton, 1997, p. 10-11, 17-21; Scranton, 1989, pp. 2, 7, 321, 327]. Contrary to Henry Ford's emphasis on flow where successive stages of production continued down an assembly line until completion, the batch-oriented production system of flexible furniture manufacturing involved successive stops and starts in the production process [Hounshell, 1984, p. 241]. Overall, the preeminent goal was the standardization of parts and processes involved in furniture manufacturing to speed up production and lower the overall cost of the product.

Typical 1920s wooden furniture manufacturing plants were three to four stories tall where a particular phase of construction took place on each floor (Late nineteenth-early twentieth century furniture factories varied in size from relatively small establishments where a small workforce used hand- and foot-operated machinery to large multi-story production plants powered by 150 horsepower steam engines.) [Earl, 1974, pp. 309, 313, 316; Darling, 1983, p. 96]. On the ground level, the preparatory phase began when unfinished kiln-dried lumber entered the factory to be cut into predetermined lengths and sizes with varying types of circular saws. Workers used planers and sanders to smooth out the rough stock before sending them to the second floor to complete their preparation for assembly. There, machine operators used mortisers, borers, tenoners, and dovetailing machines to facilitate construction. The second phase, the shaping of furniture components, began on the second floor of the factory. Workers at this stage primarily used large reciprocal scroll saws, lathes and turning machines which allowed a variety of shapes such as chair and table legs to be made on a consistent production basis [Batory, 1997, pp. 52, 94; Hjorth, 1937, pp. 11, 79; Kimp, 1930, pp. 5-6; Noyes, 1923, pp. 10, 11, 14, 23, 26, 33, 39, 56, 60-64, 67, 73; Ransom, 1955, p. 61; Ettema, 1981, pp. 207, 208-211, 213-214].

Technological innovation in woodworking machinery since the early 1920s allowed manufacturers to use machinery in a new and final stage of mechanized woodworking: the decoration of component parts before final assembly. Furniture machine operators used molding, shaping, routing, carving, and embossing machines in this process. After the application of ornamentation, factory workers used a variety of machine and hand sanders to prepare the furniture components for assembly and finishing [Kimp, 1930, p. 9; Noyes, 1923, pp. 44, 51, 104, 125; Hjorth, 1937, p. 202; Ettema, 1981, pp. 207, 216, 218-221, 223].

Much of the mechanization effort was directed toward the development and refinement of woodworking machinery to cut, shape, sand and bore wood at high speeds. Unlike metal working machinery, the cutters and knives on woodworking machines dealt with a wide variety of materials that varied in

density from softwoods like pine to hardwoods like mahogany. Factors such as lubrication, balancing, frictionless movement, and centrifugal strain dictated the successful operation of woodworking machinery during production runs [Rosenberg, 1975, pp. 41-42]. Engineers and designers concentrated on the refinement of self-lubricating ball bearings, high-speed alloy steel, and high-speed motors to solve the problem. Also, new self-lubricating assemblies applied oil automatically to critical high friction areas in woodworking machinery [Hjorth, 1937, pp. 16-18, 334; Brunner, 1929, pp. 13-23; Reynolds, 1929, pp. 29-32; Batory, 1997, pp. 5, 93-94; White, 1929, p. 1].

Wood Industries Division engineers also worked to eliminate time-consuming steps in the production process. They introduced universal chucks on boring and mortising machines to quicken the changeover process involved in switching the production of component parts [Englund, 1929, pp. 25-28; White, 1929, p. 1]. Lightweight portable hand-operated woodworking machines like sanders, routers, and saws were heralded as "great time and labor savers" because they reduced the amount of handwork needed for furniture manufacturing [Hjorth, 1937, p. 18].

All completed furniture components went to the third and fourth floors of the factory for final assembly and finishing. Factory workers assembled the components completely by hand, a considerably time-consuming process, due to small production runs and the differing shapes and sizes of components. They used industrial glues and wood clamps as well as hammers and small nails. Assemblers also had at their disposal a growing number of hand-held electric screwdrivers and pneumatic nail guns to assist them in their work. The assembled furniture then went to the fourth floor for finishing [White, 1929, p. 2; Kimp, 1930, p. 9; Ransom, 1955, p. 61].

Regardless of the style of furniture, finish was the first thing the consumer noticed. Mass magazines published articles to educate the public about the finishing process as well as celebrate American advances in the area. *Good Housekeeping* reported that in the construction of historical reproductions of handmade eighteenth-century mahogany furniture, manufacturers used varnishes "devised to give the same effect without the skilled and tedious labor demanded" by traditional processes. American furniture manufacturers employed women workers to replicate the century-old *patina* found on cherished antiques. Regarding painted furniture, the magazine reported that the pneumatic air brush surpassed "hand work in smoothness and beauty of finish" and was capable of finishing twenty-four chairs in one hour. Hand methods produced only four chairs per hour [Erskine, "Fine Cabinet Woods," 1921, pp. 27, 82, 85]. Despite those advances, finishers still had to sand by hand the furniture after applying two to three coats of varnish or paint [Kimp, 1930, p. 9; Ransom, 1955, p. 61]. By the end of the 1920s, manufacturers increasingly used synthetic lacquer, which provided a stronger and harder coating, to finish their products [White, 1929, p. 1].

Overall, there were widespread technological changes witnessed throughout the factory. Factories began to replace their steam power plants with Diesel

engines that generated electric power. After 1920, manufacturers increasingly removed their plant-wide belt-driven power systems and used electrical motors attached to individual machines directly or through means of a short belt. The exposed blades, gears, shafting, and belt drives of earlier woodworking machinery were very dangerous. To prevent industrial accidents, woodworking machinery manufacturers incorporated wire mesh or cast-iron guards in saws and enclosed all moving parts to minimize injury to machine operators [Hjorth, 1937, pp. 14-16, 119]. Another potential danger was the industry's major waste product, sawdust, which was a fire hazard for the factory and a health hazard for the workers. Woodworking engineers designed extensive sawdust-collection systems, sprinkler systems, and automatic fire doors to help combat those dangers ["Furniture As The South Makes It," 1929, p. 564]. According to one woodworking machinery manual, the new mode of power and measure of safety could only be attributed to "modern engineering" [Hjorth, 1937, p. 14].

Besides technological innovation, the efficient movements of workers figured prominently in the modernization of the furniture factory. In the tradition of Frederick Winslow Taylor and his idea of scientific management, one engineer declared that the furniture worker "must realize that the only way to set fair and equitable rates [of production] is to time him" with a stopwatch. For one production operation, like the sawing of wood, engineers timed each movement individually so they could plan the process down to the second [Bernstein, 1922, pp. 243, 245].

The mechanical engineering community celebrated the apparent modernization of the furniture industry on the model of Fordist mass production principles. A paper delivered before the 1929 Annual Meeting of the ASME reflected that:

> While in the old days beautiful furniture was handmade, rare, and available only for the few, today mass production has changed matters entirely. Beautiful furniture now is machine made—with greater precision, uniformity, and strength than the best of the old cabinetmakers could attain; it is abundant, and available to the great majority of people. Of the two eras, the old and the new, there are few of this generation who will hesitate, even though they may regret the passing of the old cabinetmakers, to choose modern industrial methods as best [Wallace and Wallace, 1930, pp. 20-21].

Great furniture, like Ford and Chevrolet cars, was available for the enjoyment of the masses in a new age made better by industrialization. The Wood Industries Division confidently asserted that "in machinery, in methods, in accuracy, and in speed," the profession of "wood engineering now takes its place as one of the definitely recognized branches of the mechanical engineering profession" [Wood Industries Division, 1930, p. 2].

Magazine advertisements and furniture catalogs also celebrated the triumph of the mechanical engineers in modernizing the American furniture industry throughout the decade. Karpen and Brothers of Chicago, Illinois, paid homage to the master furniture makers of "other times" but stressed that "modern Karpen ingenuity" transformed "their early designs into household treasures of hitherto undreamed of beauty, utility and durability." As a result, "modern Karpen methods" placed them "within the reach of all" [Karpen and Brothers, 1921, p. 113].

The ASME's Wood Industries Division mistakenly believed that the triumph of "modern engineering" in the furniture industry represented the successful implementation of Fordist mass production techniques. High speed motors, ball bearings, alloy steels, pneumatic and electric hand tools, portable woodworking machinery, synthetic finishes, and air brushes all brought a higher level of technological sophistication to the manufacturing process. Overall, the innovations in manufacturing technology and construction processes contributed greatly to the elimination of labor-intensive tasks that slowed production. These improvements, however, did not indicate, nor contribute, to the existence of the most prolific component of Fordist mass production: the assembly line. The specialty orientation of furniture manufacturing encouraged the continuation of placing all similar woodworking machinery at the same location within the factory. Any technological improvements influenced production within that arrangement. What the Wood Industries Division and other agents of modernization achieved was "flexible mass production," the adaptation of mass production techniques to the nineteenth century system of flexible production. Flexible mass production stressed frequent changes in the manufacturing process and product design that reflected prevailing market demands. To make that possible, manufacturers relied on batch-oriented production, multi-purpose machinery and the improvements created by "modern engineering" [Hounshell, 1984, pp. 264-266].

The foundation of a successful flexible mass production process involved manufacturers' acute awareness of constantly changing product style and market demand. Furniture was a consumer product subject to the forces of a capitalist marketplace where advertising, marketing, and merchandising played primary roles [Hounshell, 1984, pp. 264, 294, 315]. During the 1920s, retailers converged on the major furniture cities of the North, Midwest and the South—New York, Chicago, Grand Rapids, Michigan and High Point, North Carolina—to attend quarterly markets featuring the myriad of styles manufacturers had to offer. Chicago, as a central sales and distribution point, welcomed ninety-percent of the nation's furniture manufacturers to its markets [Darling, 1983, pp. 21, 293-294]. Frederick Lewis Allen observed that manufacturers aggressively campaigned through market expositions and mass magazine advertisements to make the American public as "furniture conscious" as possible [Allen, 1964, p. 140].

Voices in the southern furniture industry centered on High Point echoed this emphasis. Growing from humble beginnings after the founding of the first

southern furniture factory in 1889, manufacturers in the region began to actively market their products after the first Southern Furniture Exposition in June 1921 and to compete in the national home furnishings market [Tindall, 1967, p. 84; Thomas, 1964, pp. 25-25, 255, 391-392]. A pamphlet for the July 1928 Southern Furniture Market in High Point, North Carolina, acknowledged the ever-important influence of style and market demand when it proclaimed, "CHANGE is the order of the day." Furniture manufacturers had to satisfy a public that was "demanding new and different things" and not styles that were "on the wane." As a result, the Southern Furniture Market offered "many new, colorful designs" in "almost every style" [Southern Furniture Market Association, 1928, n.p.]. A 1929 editorial in the trade journal *Factory and Industrial Management* observed that "fashion as an influence in industry is greatly underestimated by many manufacturers." It went on to advise makers of consumer goods that they should pay close attention to the "whims of public taste" to possess "style sense, color sense, and new product sense" that would ensure business success. The editorial stressed that it was "their [the manufacturers'] responsibility to keep abreast of movements" in the fashion world and to rearrange their production schedules to cater to contemporary style considerations [Carmody, 1929, p. 838].

A consumer in the 1920s had a myriad of styles to choose from that differed in detail, construction, and finish that it set apart from others [Fleming, "Furniture Periods That Combine," 1929, p. 29; Fleming, "Furniture Periods That Harmonize," 1929, p. 20; Fleming, "Furniture Styles That Harmonize," 1929, p. 22]. By far the most popular styles during the 1920s were Early American and Art Deco. However, market observers commented that any style could be predominant at one time or a number of different ones simultaneously. A report on the Winter Markets of 1922 revealed that there was an "absence of any dominating style" where "little things" like "turnings and finishes just a bit different" made a "retailer's [and a manufacturer's] stock individual" ["Gleaned From Winter Furniture Markets," 1922, p. 55; "Modern Art Exposition," 1928, p. 321; Fitzgerald, 1995, p. 296].

Manufacturers produced three basic types of furniture during the decade, regardless of the style, that reflected the batch orientation of a flexible mass production format. Furniture factories could not simply turn out large numbers of chairs, tables, couches, chests of drawers, and beds, in predetermined styles, finishes, and colors. They resorted to constructing what were called "special pieces," "furniture finished to order," and "stock furniture." "Special pieces" were custom-ordered, expensive, and often made in lots of one or two that did not fit within the limits of machine production. Manufacturers produced batches of "furniture finished to order" and retail buyers chose the final finish and fabric styles to suit current market demands before final completion. The manufacture of "stock furniture" involved large quantities and generic designs for the general market. The latter types of furniture reflected the impossibility of the full implementation of Fordist mass production techniques [Erskine, "Ideals and Methods," 1921, pp. 135-136].

Woodworking machinery possessed the flexibility to adapt to production change easily and frequently to make "furniture finished to order" and "stock furniture," much more so than the single-purpose machinery of Ford automobile manufacturing plants [Hounshell, 1984, pp. 265-266]. One of the most versatile woodworking machines was the variety saw which was an improved version of the circular saw. Able to rip, crosscut or mitre wood at differing angles and lengths, variety saws built by companies like the J.A. Fay & Egan Company of Cincinnati, Ohio were standard equipment in furniture factories [Hjorth, 1937, pp. 24-25; Batory, 1997, p. 23].

A description of the operations at the Tomlinson Chair Manufacturing Company of High Point, North Carolina, in 1929 illustrates the complete process of balancing market and technology considerations through flexible mass production in an American furniture factory. It also indicates the level of modernization and the nature of mechanized production the American furniture industry possessed by the end of the decade. Two brothers, Sidney and Charles Tomlinson, founded the company in 1900 and made it one of the largest furniture manufacturers in the South and representative of all larger American furniture factories in the 1920s. By 1929, Tomlinson's four "modern sprinklered [*sic*] buildings" covered over thirteen acres, employed over seven hundred individuals and produced living room, bedroom, dining room and miscellaneous furniture [Tomlinson, 1929, p. 808].

The prevailing economic philosophy of Tomlinson was to adjust its manufacturing operations to fit within the limits of style and demand. Acknowledging that the "ever-increasing importance of style has brought many changes" to the industry, the company gauged public demand through designers, decorators, sales representatives, and buyers attending furniture markets. The company exhibited one-of-a-kind furniture from its sample department that represented its upcoming product line. Once ordered by retailers, a design was sent to the "nerve center" of the Tomlinson factory, the planning department where all production drawings, operations, and processes were formulated. Unheard of a year before, the planning department was the "result of changing style, the necessity for quick action and prompt shipment." Before manufacturing started, the sample department conducted a preliminary production run in its facilities to ready the design for production and to ascertain any future bottlenecks in the process. Once completed, the sample department sent the production model to the merchandising committee for final production approval. After approval, Tomlinson only used the "most modern machinery and equipment essential to good manufacturing." Within two months of the original order, the finished batch of furniture was ready for shipment [Tomlinson, 1929, p. 809].

In describing the overall operations of the Tomlinson plant, its president, Sidney H. Tomlinson admitted that:

> Many of our production runs are comparatively short. This requires the ability to make set-ups quickly, and demands good

> dispatching. It would be more economical from a manufacturing standpoint to run larger lots in many cases, but we are governed by sales requirements, and we do not make more units than we believe we can sell. In other words, we hold the merchandising idea as paramount.

A factory that could produce over twelve hundred furniture designs, not to mention choose from over a thousand types of fabric, depended on a system of flexible mass production. Tomlinson went on to assert that it made "no difference whether the product be beds, beads, or brocades, style demand has convinced the manufacturer that obsolescent products are as fatal to his profits as obsolescent manufacturing equipment" [Tomlinson, 1929, pp. 808-810].

By the end of the decade, even the engineers of the Wood Industries Division began to encourage the application of their "scientific preparation and planning" to the complicated business of selling furniture by the end of the decade [Wood Industries Division, 1930, p. 2]. Realizing that "attractive woodworking craftsmanship and methods of aggressive distribution" rarely existed in "profitable combination," furniture engineers hoped to transfer their "manufacturing skill" into a previously unexplored field. They called for "engineers of broad vision" who would shape advertising campaigns that stressed not "sturdiness, durability, and utility" but the "emotional appeal" of "jazz, flash, speed, color, luxuriousness, and 'keeping up with the Jones's,' " which was very much in vogue during the 1920s [Bigelow and Perry, 1929, pp. 75, 79].

The community of mechanical engineers in the woodworking industry, as representatives of the modern age, succeeded in bringing speed, output, safety, and a higher level of mechanization to an industry they believed to be chronically backward. In their zealousness, the Wood Industries Division, and others excited by the success of Fordist mass production, ignored the furniture industry's particular and unique set of manufacturing problems that centered on flexible specialization, markets, and style. What they knowing or unknowingly achieved was flexible mass production which was a bridge between the nineteenth century idea of flexible production and applicable twentieth century mass production techniques and technologies.

Furniture manufacturers like the Tomlinson Chair Manufacturing Company did realize the importance of marketing and style over technology within the flexible mass production process. For the rapidly growing southern furniture industry, the virtues of flexible mass production would help the regional industry achieve national dominance by the 1940s. Profits, style, demand, and markets were the driving forces in the American furniture industry, not production, standardization, and order. The latter were irrevalent if furniture could not be sold in the marketplace. Obsolete and overabundant styles were taboo in a product that was as much an instrument of personal expression as it was a functional item. The American public was not going to let the furniture industry turn them into bland society characterized by conformist and uniform Babbitts.

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