

RESTRUCTURING IN THE AUTO INDUSTRY: THE PRECEDENT OF THE 1930s

Jean-Louis Loubet

Professor of Contemporary History, University of Évry-Val d'Essonne

The 1930s crisis in the French automobile industry was severe: the industry slipped from the first to the third rank in Europe. Several well-known brands went under, helpless to cope with the narrowness of the domestic market and the closure of the export market. But the largest manufacturers—Citroën, Renault, and Peugeot—were hit hard as well: Peugeot was embroiled in the Oustric bank scandal (1930), Citroën filed for bankruptcy (1934), and Renault piled up losses in 1936-37.

To the present-day observer, the solutions adopted by the three firms to pull out of the crisis have a strikingly modern look:

- **Refocusing on the auto business:** Peugeot separated its automobile business from bicycles and steel; Michelin, which took over Citroën, sold all the latter's service units and several of its subsidiaries; Renault—a highly integrated company from birth—hived off non-essential operations to subsidiaries in order to refocus, like its two rivals, on its core business.
- **Strategic refocusing on France:** The economic depression closed off the foreign markets, forcing auto-makers to abandon international positions and refocus exclusively on the French market. This led to the shutdown of plants and the divestiture of subsidiaries abroad.
- **Lowering the break-even point:** The crisis caused a break with the

U.S.-style Fordist approach, based on the notion that profitability depended on a steady increase in output volume. Peugeot and Citroën abandoned the volume race and reorganized their plants to make them profitable at output rates of 300-400 cars/day as against 600 or even 800 previously.

- **Productivity gains:** The crisis spurred Citroën and Peugeot to revamp their productive base and make it more automated. The auto-makers' missions to the U.S. now sought high-yield machinery requiring minimal labor. The concept that emerged can be summed up as "the dollar is cheaper than French labor."
- **Downsizing:** All three leading auto-makers slashed their workforces. Citroën did so the painful way, shedding 50% of its employees between January 1935 and June 1936. Peugeot preferred to pay its workers' pension contributions, enabling all workers with more than 30 years' service to retire. Renault relied heavily on seasonal employment, hiring and firing in step with market demand.
- **Innovation:** Auto-makers realized the need for innovation as a means to pull out of the crisis. A new breed of car emerged. The Traction Citroën, Peugeot 202, and Renault Juvaquatre were all innovative in terms of weight and consumption—which meant they were cheaper to manufacture and

use. For the first time, market surveys were used to define the first mass-market car: the Citroën TPV, which eventually became the famous "Deux Chevaux" (2CV).

Was this "restructuring"? At the time, everyone talked about "modernizing the auto industry"!

The Great Depression of the 1930s hit the French automotive industry hard. The first to feel the impact were the small enterprises, ruined by the closure of foreign markets before being faced with problems at home. Peugeot fell victim to the Oustric bank failure in 1930 and was in trouble even before the depression reached France as *la crise*. Citroën filed for bankruptcy in 1934. The only survivor was Renault, saved once again—it would seem—by diversification and integration. Actually, if Renault became France's number-one auto-maker in 1934, it was thanks more to Citroën's collapse than to its own performance. Renault weathered the storm by battening the hatches. But the slump was so long that it eventually caught up with Renault: the company reported losses of almost FRF12 million in 1936 and 1937, as its share of the passenger-car market tumbled. In short, no one was spared, and auto-makers were thus forced to react. However, their response was disorganized because of time lags, differing motives, and—above all—the pervasive discord of an industry that could not reach consensus. This was a far cry from the hopes of the president of the trade federation—the *Chambre Syndicale de l'Automobile*—who dreamed in 1936 of the establishment of "a [French] consortium similar to General Motors or Germany's Auto-Union."¹ The dissonance was also a far cry from the recommendations of the Schwartz Report, issued by the *Conseil Économique et Social* (an official consultative body):² consolidation of technical facilities, establishment of a common statistics office, and—most important—arrangements to reduce the number of models manufactured and to specialize each auto-maker in distinct products. None of these ideas ever got off the ground, and each company fended for itself. But while the slump led some auto-makers to adjust, it also enabled others to make a fresh start through restructurings so profound that they reshaped the entire French automotive industry.

1. New leadership

Reorganization of the automotive industry started at the top. The depression provided an opportunity to replace executives in companies that had hitherto experienced little change in their leadership. At Renault, the slump did not force Louis Renault into retirement, but the "absolute boss" (*patron absolu*) did bring in new aides including François Lehideux and René de Peyrecave. Lehideux, a graduate

1. *Chambre Syndicale de l'Automobile* board meeting, February 20, 1936.

2. Maurice Schwartz, "Rapport sur l'industrie automobile," *Journal Officiel*, August 26, 1936.

of the Institut de Sciences Politiques³, had been in charge of the Manufacturing, Procurement, and Personnel Department since 1930. In 1931 he was appointed to the board and became the chairman's trusted advisor, as a temporary measure until Renault's son would be old enough to succeed his father at the head of Société Anonyme des Usines Renault (SAUR). René de Peyrecave—a graduate of the École des Hautes Études Commerciales (HEC)—was hired in 1934 to run the External Relations Department. At the Citroën headquarters on Quai de Javel in Paris, the departure of André Citroën ended the one-man-rule system. Édouard Michelin appointed a triumvirate consisting of his son, Pierre—who became chairman of Société Anonyme André Citroën (SAAC) in 1935—and two members of Michelin's inner circle from Clermont-Ferrand.⁴ Pierre Boulanger and René Marais. Pierre Michelin's accidental death in 1937 propelled Boulanger, manager of the Michelin tire company since 1922, to center stage. Trained both at the École des Beaux-Arts and in Michelin methods, Boulanger was always flanked in his executive positions by "two gentlemen from Clermont-Ferrand." Meanwhile, the Peugeot family had dropped the "absolutist" system since its reunification of 1910, but had opened the company's management to outsiders for even longer. Admittedly, the depression strengthened the family's dominant role with the appointment of Jean-Pierre Peugeot alongside his father and uncles, but it also hastened the arrival of a new generation of trusted outsiders as board members. They included Pierre Fallot (1929), son of the co-founder of Société Anonyme des Automobiles Peugeot (SAAP), and Roland Gadala, a financial specialist at Pont-à-Mousson, son of a leading stockbroker who came to the Peugeots' rescue in 1930. This opening was strengthened by the hiring of young managers such as Édouard Arnaud (an engineer trained at École Centrale), who joined SAAP in 1922 and was appointed corporate secretary in 1935, and Maurice Jordan (a graduate of École des Mines), who joined in 1924 and was promoted general manager in 1933, at age 34. These differences in the "oxygen intake" at senior management level between Renault on the one hand and Peugeot and Citroën on the other are a possible explanation for the half-measures taken by Renault and the bolder changes implemented by its two rivals. But we should not forget the importance of timing: Peugeot hit bottom in 1930, Citroën in 1934, and Renault in 1936. Was the depression the true engine of change?

2. Broadening the enterprise

The first concern of Peugeot and Citroën was to put their businesses back on a sound financial footing. After their respective troubles, each developed closer ties with banks, which came to play a far more central role in their operations. Lazard and, to a lesser extent, Paribas were instrumental in Citroën's recovery. Peugeot forged

3. Translator's note: "Sciences Po," one of the training schools for the élite.

4. Translator's note: Home to the Michelin tire-making firm.

links with Société Générale and Crédit Lyonnais, which became its leading banks. But Peugeot now played its cards carefully, working in parallel with the Bank of France⁵ and several renowned Swiss institutions. Citroën and Peugeot also sought more backers. Citroën turned to Michelin; Peugeot, to its affiliates (Peugeot-&-Compagnie, Cycles Peugeot, Fils de Peugeot Frères), which—by arranging financial support in the wake of the Oustric bank failure—acted as a family holding company. In this quest for new financial links, both Citroën and Peugeot sought to make the most of their dealer networks. These played a crucial role in battling the slump by ordering cars, paying for them in cash, and—in some cases—even lending money to the manufacturer. The depression gave the dealerships an essential role. Peugeot was the first to ask its dealers to secure their orders not with cash deposits but by purchasing shares. This enabled Peugeot to stabilize SAAP's capital and enlist like-minded shareholders alongside family members. At Citroën, Michelin went even further by developing a way for dealers to finance production. Each dealer was bound by contract to take a specified number of vehicles a year; each car had to be paid for in cash, out of the dealer's own pocket, at the factory gate. Both the Citroën and Peugeot dealer networks grumbled, but eventually accepted. The final aspect of this financial response was debt reduction and the redefinition of relationships with suppliers. In the midst of their respective woes, Citroën and Peugeot constantly asked for "extensions for settling their contracts."⁶ Renault did not suffer such a constraint. On the contrary, with its downswing still a long way off, it was Renault that drove its suppliers to lower their prices, driving a hard bargain by forcing them to deliver the goods in Renault trucks! But Citroën and Peugeot did not remain at their suppliers' mercy for long. Michelin cleaned up Citroën's situation by signing a creditors' agreement in 1935. This wiped out a large chunk of old debt at the stroke of a pen by offering SAAC bonds and shares in the company's profits. Louis Renault disapproved: "To wipe more than a billion francs off its liabilities, [Citroën] has only had to pay a few million a year to its creditors and suppliers. [Its competitors] are disadvantaged by the rock-bottom selling prices that [Citroën] can charge [because it] now operates a very modern plant without paying any interest to speak of [and with no need for investment for a long time to come]."⁷ While cashless in December 1930, Peugeot was fortunate to have little long term debt. The company repaid its suppliers and lenders thanks to the tremendous overnight success of the 201 model. By 1933, the situation was reversed: Peugeot was now so cash-rich that it paid its suppliers on delivery, discounting its bills more than 2% in the process. Discounted bills melted from FRF100 million in 1930 to FRF12 million in 1932. After hovering on the verge of collapse in 1930, Peugeot had the paradoxical experience of entering the Great Depression with its finances totally cleaned up. Indeed, in 1934—i.e., at the bottom of the slump—it was busy trying to buy back the shares it had relinquished after the Oustric bank failure.

5. Translator's note: Then a private institution.

6. SAAP board meeting, March 2, 1931.

7. Louis Renault, quoted in Fridenson (1972), vol. 1, p. 320.

3. The search for profitability

While they were reorganizing their finances, French auto-makers were also reappraising their profitability. There could be no salvation without stringent inventory management. Peugeot was the first to react by slashing its stocks of new vehicles. In March 1931, the company had 13,000 cars in stock. By August 31, 1933, only 1,000 remained—not enough for its dealers! Michelin did the same by aggressively selling off the 7,300 cars left in stock in 1934. But the depression highlighted problems of a more structural kind: higher production volume—a vital factor for ensuring productivity gains—could no longer be maintained in limp markets. While Citroën was planning a rate of 600-800 cars per day, Michelin set its production at a level compatible with its order book, i.e., 300 cars. To make the business profitable at such a reduced output volume, Michelin chose to streamline production and lower the break-even point. SAAC was therefore to concentrate on the "Traction" (forward-drive) models. Peugeot had harbored the same idea since 1930—"fewer models"⁸—and it's easy to understand why. When SAAP produced four different models (5-, 9-, and 11-hp⁹ and a 6-cylinder), its plants were turning out 76 cars with 9,600 workers, a ratio of 126 workers per car and per day. By cutting the range to two models, the ratio fell to 85. Now, as Jean-Pierre Peugeot explained, "with 14,500 workers we know we can build 240 cars a day, i.e., 60 workers per car and per day if we make a single model [...] We must therefore aim for the single model."¹⁰ At the very same time, Louis Renault was widening his product range from seven models in 1929 to nine, then ten in the 1930s, not counting utility vehicles. Here we can take the full measure of the distance between two enterprises that did not yet see the same crisis ahead.

With their markets in the doldrums, the auto-makers turned to job cuts as a way of boosting productivity. In 1932, thanks to new tooling, the single 201 model required only 500 man-hours as against the 1,500 needed for cars made in 1930! The 201's production cost was trimmed from FRF13,500 in 1930 to FRF10,900 in September 1933. Allowing for technical improvements, the price per kilogram fell from FRF14.70 to FRF10. Michelin followed the same path. By retooling, Citroën slashed the man-hours needed for its "Traction" from 950 in 1934 to 425 in March 1937. In other words, Citroën's earlier efforts dampened the financial impact of the new labor laws introduced by the socialist-led Popular Front. In 1938, Peugeot announced that it was vital for the company to "invest in new, high-efficiency equipment, because labor and related costs are more expensive than buying [American] machinery in dollars."¹¹ By contrast, the head of Renault's Methods Engineering Department regretted that

8. SAAP board meeting, March 21, 1930.

9. Translator's note: "hp" in this text denotes the continental horsepower unit (*cheval vapeur* or CV), equal to 735.5 W, as distinct from the U.S./U.K. unit, equal to 745.7 W.

10. Jean-Pierre Peugeot, SAAP board meeting, March 21, 1930.

11. SAAP board meeting, July 29, 1938.

"there has been practically no new equipment purchased [at Renault] since July 1937. A policy of machine-tool purchases is needed, and only a steady effort over several years can pull us out of our current predicament."¹² But Louis Renault stuck to his guns: "There are no machine-tool manufacturers left in France. We depend on external suppliers, and with our depreciated currency the new machines are disproportionate to our planned car output."¹³ The gap was widening between Renault, which saw nothing coming, Peugeot, which had been revising its methods since 1930, and Citroën, which benefited from the excess capacity of the Quai de Javel plant. Having downsized its workforce from 25,000 in January 1935 to 11,500 in June 1936, and cut wages by 530%, Citroën weathered the Matignon Accords (between the unions and the Popular Front government) more easily than Renault, stuck in its wait-and-see attitude. Peugeot was unaccustomed to massive layoffs because of the fragile social conditions in its employment catchment area. It accordingly chose to hire younger workers in order to cut its labor costs and lift productivity. In 1932, the Peugeot plants in the Doubs (eastern France) changed their pension systems. As "an incentive for older workers with very low productivity to leave plants,"¹⁴ Peugeot decided to pay the balance outstanding on pension contributions so that all employees aged 60 having worked for at least thirty years could retire from 1935 on. As for the foremen—who were now too numerous as a result of the fall in output—Peugeot offered to appoint them as dealers, with a financial and technical aid package that would help them start their own garage businesses and thus strengthen the brand's distribution network.

4. Refocusing on the home market and the core business

Profitability did not depend solely on the single model, job cuts, or trimming labor costs. For Peugeot and Citroën, it would not be achieved unless they "stopped scattering their efforts."¹⁵ Both enterprises refocused on France. Gone were the dreams of conquering the foreign markets. Peugeot mothballed its subsidiaries—even the top-performing ones such as its unit in Argentina. Michelin closed and sold off several Citroën plants across Europe, none of which showed a profit. He did the same with Citroën sales subsidiaries, which could not make a profit in protected markets that increasingly relied on barter.¹⁶ This was a decisive moment: the French auto industry was to turn its back on foreign markets for over a decade. The shift had dramatic consequences not only for foreign dealers, but also for French trade. France

12. Émile Tordet, memo to François Lehideux, May 21, 1938. SHGR archives.

13. Notes by Louis Renault "for a letter to Jacques Level," June 16, 1938. SHGR archives.

14. SAAP board meeting, November 29, 1932.

15. SAAC board meeting, March 12, 1936.

16. Especially in central Europe.

was the world's number-two automobile exporter until World War I, then steadily lost ground. By 1934, it had fallen to the fifth rank, behind the United States, Britain, Canada, and Germany. In August of that year, the government introduced an export subsidy of FRF1.5 franc per kilogram,¹⁷ but this did nothing to reverse the auto-makers' decision. Sales abroad stalled at 22,000-25,000 cars per year, or 10-11% of total output; half of those vehicles went to French colonies!

The end of these "scattered efforts" abroad was also consistent with another choice: specialization. Peugeot had taken the lead in 1929, before the depression, by separating its automotive, cycle, tooling, and steel businesses. Michelin did the same by divesting Citroën's taxi, transportation, and insurance units. This was another stone cast in the garden of its competitor Renault, convinced that diversification would always protect it from slump. For many years, Renault offset its poor performance in auto-making with the income from its tractor and railcar businesses. From 1934, it benefited from French rearmament, both in tanks and airplanes. To expand its aviation business, it took over Caudron in 1933 under pressure from the Air Minister, intent on restructuring the industry. That same year, Renault acquired a stake in Air France, which was already its customer. In 1934, Renault founded the airmail carrier Air-Bleu in partnership with Messageries Hachette and Chargeurs Réunis. All these moves illustrate Renault's immutable "market-harvesting" strategy. "We're going to have to manufacture tanks, aviation engines, trucks, buses, and diesel engines. During this crisis, we'd better manufacture everything we can."¹⁸ The company's financial loss in 1936 was a sign that diversification no longer sufficed. The Renault system was worn out. In 1938, the company crossed the bridge, deciding to "get rid of its various manufacturing operations in order to focus entirely on automobile production."¹⁹ Renault did pull out of several businesses: it hived off Caudron into a "separate entity,"²⁰ set up Société de Moteurs Renault Aviation (SMRA) as an aircraft-engine company in 1938, Société de Pontlieue as an operating company for the plant in Le Mans, and Société Franco-Américaine de Métallurgie (SOFAM) for metal trading in 1939. All these units were empowered to "take their own initiatives, manage their own operations, and run their own business."²¹ This was a major turning-point, a sign that the slump was forcing industrialists to refocus on their core businesses.

17. Raised to FRF1.90 in 1936. CCFA archives.

18. Memo by Louis Renault, November 1931. SHGR archives.

19. Annual meeting of SAUR shareholders for 1938, June 27, 1938.

20. *Ibid.*

21. *Ibid.*

5. A different product for a different market

There is no restructuring without a new product policy. Citroën recaptured the number-one position in the French market in 1937—at the same time as it swung back into profit—while Peugeot rose to number two in 1938.²² Both brands clearly owed their gains to new, attractive, and profitable models: the "Traction" front-wheel-drive sedan for Citroën, the 201 and its successor the 202 for Peugeot. The "Traction" and 201 had much in common. First, they marked a departure from the traditional 10-hp niche: the "Traction" was offered in 7-hp and 11-hp versions, the 201 with a 6-hp engine—in other words, a new approach to market segmentation. Second, both cars were "crisis-exit" models. They were cheaper than their rivals because of their size, weight, production methods, and running costs: a 201 cost 35% less to run than a 10-hp vehicle. Third, the "Traction" and 201 were innovative, demonstrating that their manufacturers were turning technological progress into a differentiation factor. The "Traction" was instantly hailed as "twenty years ahead of its time." While older (1931), the Peugeot 201 featured the "block-tube" chassis, a Bugatti-type rear suspension, and the first-ever independent front suspensions. These advances were so striking that, for the first time since World War I, U.S. auto-makers took an interest in French cars. In 1931 and 1934, they tried to purchase the licenses to assemble the 201 and "Traction" models—proof that the French auto industry was moving toward technological autonomy. Renault was slow to respond to these successes: it did not introduce independent suspension and a monocoque chassis until October 1937; hydraulic brakes were shunned until late 1939, and front-wheel drive was never contemplated. As for an economy car, Renault did not launch the 6-hp Juvaquatre until 1937. Its success was modest. The car suffered from its two-door design, unusual for France. Competition from the Peugeot 202 was stiff: for every Juva sold, Peugeot sold two, then three 202s. The Renault sales management did not believe in the Juva, and had to be shaken up by hiring a new boss in 1939. But did it make any sense to wage this battle in the 6-hp segment when British, German, and Italian auto-makers were pulling out of the slump thanks to a new model: the people's car?

If Louis Renault was to be believed, there was no reason for optimism. "The small car," he wrote, "is the entry-level car that everyone dreams of [...] but its growth potential is slim and its price [brings] no profit. In fact, there's only one car that sells: the 1,000-kilogram car [...] It's the sturdy, spacious car that carries four people. It's the mainstay of the entire car business. It has resale value because, basically, it's a normal car that's compatible with human dimensions and conditions."²³ Was Renault hostile to the people's car? "No, I'm not against it [...] I even proposed that the three leading auto-makers should appoint engineers [to design] a people's car [whose

22. For passenger cars, the respective French market shares that year were: Citroën 30%, Peugeot 22%, and Renault 15%.

23. Notes by Louis Renault "for a letter to Jacques Level," June 16, 1938. SHGR archives.

manufacturing would then be apportioned between them]. This suggestion hasn't had much impact."²⁴ That was hardly surprising. Renault was skeptical because he feared a cheap car would lure his customers away from his 6hp models. The dealerships would never recover from the blow, as they would have to sell cars at low profit margins for which they would need to invest in after-sales service. But Renault's doubts were also motivated by his inability to manufacture a small, profitable car. The Juvaquatre, which weighed 760 kilograms, was merely a copy of the Opel Kadett, sold "at a very low price and without profit."²⁵ Accordingly, when Louis Renault returned in February 1939 from the Berlin car show, which celebrated Ferdinand Porsche's KDF-Wagen—the future Volkswagen Beetle—he ordered his technical staff to "replicate it."²⁶ That was the first step toward Renault's 4 CV model.

The "people's car" was a very fashionable idea. In 1936, the Conseil Économique et Social once again issued a recommendation to the auto industry, this time urging manufacturers to produce a "simple, sturdy, and cheap" car for "rural customers, the colonies, and the new countries."²⁷ Two years earlier, the president of the Auto Engineers' Association (SIA) launched a competition with a substantial prize of FRF200,000. Contestants were invited to submit engineering proposals to auto-makers for the production of a small car with just four specifications: two seats, consumption of 5 liters per 100 kilometers, speed of 75 km/h, price of FRF8,000,²⁸ at an assembly-line output rate of 20 vehicles a day. No fewer than 102 creative professionals took up the challenge, including the architect Le Corbusier, the engineer Jean-Albert Grégoire, and the designer Flaminio Bertoni. Front-wheel-drive cars, rear engine, three- or four-wheel cars, rear-wheel steering—the proposals were so varied that the jury picked five winners in 1935! But did all the leading auto-makers need ideas? In the secrecy of its engineering department, Peugeot had already given the issue considerable attention. In 1934, it realized the value of a "light, economical vehicle."²⁹ The plan was to develop, by 1935-36, a "differently designed and produced"³⁰ car that would be cheaper than the 201 but share "as many parts as possible"³¹ with it. Because of the engineering department's scope of competencies but also the project's specific requirements, SAAP decided to join forces with Cycles Peugeot. The aim was not only to exploit the affiliate's know-how in "small engines," but also its parts- and engine-production capacity so as not to "complicate manufacturing arrangements at [the] Sochaux [plant]."³² However, the project never materialized, because a small car would have been profitable only in high-volume

24. *Ibid.*

25. Louis Renault, letter to Jacques Level, June 21, 1938. SHGR archives.

26. Hatry (1981), p. 393.

27. Maurice Schwartz, "Rapport sur l'industrie automobile," August 26, 1936 (see note 2).

28. The Peugeot 201 was priced at FRF17,900.

29. SAAP board meeting, December 19, 1934.

30. *Ibid.*

31. *Ibid.*

32. *Ibid.*

production—at least 60,000 units a year—which Sochaux lacked the capacity to handle.

6. Innovation

Citroën thus took up the challenge of developing the people's car, thanks to Pierre Michelin, who initiated the "very small car" (*toute petite voiture*: TPV) project as soon as he was named chairman. This move was consistent with the philosophy of a firm that had launched a "national survey on the people's car" (Enquête Nationale de l'Automobile Populaire) back in 1922.³³ Michelin set up a market research unit at the Quai de Javel headquarters under the leadership of one of his engineers, Jacques Duclos—the first such unit ever created in the French automotive industry. The teams of "traveling researchers" (*voyageurs sur route*) soon realized that 60% of buyers could spend no more than FRF10,000 on a car, whereas the 7-hp Citroën cost almost twice as much. "If the product offered to customers is too expensive for them, they'll stop buying and a new crisis will erupt."³⁴ Who would be the potential customers? According to Jacques Duclos,³⁵ they would be the persons who did not yet own a car, who knew nothing about automobiles, but who saw them as a "working asset." The "automotive minimum" was defined as "a four-seat bicycle that keeps out rain and dust, traveling at 60-65 km/h on a flat road. It must go 50,000 km without having to change any parts. The customer can spend only FRF10 a month on it³⁶ and FRF10,000 for its purchase, or one-third of the price of an 11-hp model."³⁷ The TPV should be affordable by all—by people in rural areas, who were the hardest-hit by the depression, and blue-collar workers, whose "real income is expected to rise with the Popular Front's pro-labor measures."³⁸ The small car, therefore, had to be invented from scratch. One could not simply scale down the mid-range car, or—worse yet—produce a mini-car (*voiturette*), since the TPV was aimed as much at families as at farmers and small entrepreneurs. For the design engineers to whom Pierre Michelin described the project as "a matter of imagination, technical competence, and hard work,"³⁹ the TPV entailed a radical rethink of the automobile and its manufacture. The first TPVs were rolling off the line by 1937. The car was a four-seater weighing under 450 kilograms. The body was made of thin metal sheeting, with a canvas roof. It had a single headlight, no starter, no fuel gauge, and no electric windshield wiper. Its seats, heavily inspired by the Bauhaus school, combined

33. The questionnaire was distributed by cycle retailers. The questions were simple, and concerned the price, use, number of seats, and speed.

34. Jacques Duclos, "Les perspectives du marché français," December 1937.

35. *Ibid.*

36. "Projet TPV," memo by Pierre Boulanger, May 23, 1938.

37. Jacques Duclos, "Les perspectives ...," *doc. cit.*

38. *Ibid.*

39. Pierre Michelin, quoted by Loubet (1999a), p. 223.

spareness and economy—metal tubes and rubber straps. One could feel the influence of Pierre Boulanger, the architecture graduate of the *École des Beaux-Arts*. For a long time, the engine was a twin-cylinder air-cooled motorcycle engine, supplied by Gnome-&Rhône. The suspension and platform were developed by André Lefebvre; they were models of ingenuity, making liberal use of light materials such as aluminum, and taking full advantage of aeronautical know-how.⁴⁰ With such a plethora of ideas, the design work fell behind. The tooling—installed in Levallois (outside Paris) in early 1939—was temporary. In January 1939, the Citroën board outlined plans for "a very low-key, almost experimental launch [based on] FRF20-million-worth of tooling, which should be enough to turn out 150 vehicles a day."⁴¹ Citroën did not officialize the model until August 23, 1939, under the more commercial name of 2 CVA (*deux chevaux*). But the declaration of war brought the entire program to a halt.

7. Social tensions also helped pull the industry out of slump faster

The depression also witnessed severe labor unrest. The June 1936 strikes were widely followed in the auto industry, where, for the first time, workers occupied plants. For the French working class, the events of 1936 may be described as a conquest of dignity, enhanced by the landmark measures set out in the Matignon Accords: wage increases of 7-15%, the 40-hour work week, 15 days of paid annual leave, and recognition of union rights. For employers, 1936 was a catastrophe: the increase in social contributions dragged them even deeper into slump. Companies like Citroën or Peugeot—which had embarked on a long-term program to boost productivity in order to pull out of the crisis—were now forced to intensify what they had believed would be a one-time restructuring. In the wake of the Popular Front victory, both manufacturers decided to counter-attack by installing a more automated production plant, and by reversing the trend (especially at Peugeot) toward greater product variety. The number of models in the Peugeot catalogue went from five in 1935 to four in 1938 and three in 1939, with only two types of engine.

The persistence of the crisis, the narrowness of the French market, and the closure of export markets prompted Pierre Michelin to undertake a highly critical review of the auto industry. He voiced his doubts about a production system that, in his view, had nearly reached its limits—hence his notion of steering Citroën production methods away from the principles of Ford toward those of Taylor. The TPV was launched at a production rate of only 150 units per day, a small quantity for a mass-market car. The

40. Loubet (1999a), pp. 234-35.

41. SAAC board meeting, January 26, 1939. In 1930, special tooling for the 201 cost FRF12 million.

facilities were set up in Levallois to keep the project on a "human" scale and to avoid complicating the organization of the Quai de Javel plant. Michelin rejected high-volume mass production in favor of the quest for quality and better working conditions. He stated clearly that "to halt the constant rise in prices, we also need to improve working methods."⁴² From his earliest days at Citroën's helm, Michelin welcomed suggestions from employees⁴³ and advocated worker participation; he organized the workshops with a view to matching workers with their tasks; and he improved quality through defect-prevention procedures. These included allowing workers to halt the assembly line, and setting up "off-line" workshops for operations that were regarded as too complex for assembly lines. Consistently with these principles, Michelin arranged—as early as 1937—the first individual workstations for manufacturing such complex sub-assemblies as a steering system and, later, a front-running gear set and even a complete engine: indeed, the TPV engine was designed for assembly by a single worker. In short, the Citroën approach revolutionized the old assembly-line methods—a sure sign that crises always offer opportunities for the most innovative enterprises to prove their resilience ever more forcefully.

42. Pierre Michelin, memo to Pierre Boulanger, December 1937. Citroën archives.

43. Already implemented by Peugeot and Renault.

References

- Jean-Louis Loubet:
 - *Citroën, Peugeot, Renault et les autres. Histoire de stratégies d'entreprises*, ETAI, 1999a.
 - *L'industrie automobile, 1905-1971, Archives économiques du Crédit lyonnais*, Droz, 1999b.
 - *Renault, cent ans d'histoire*, preface by Louis Schweitzer, ETAI, 1998.
 - "Citroën et l'innovation," *Vingtième siècle, revue d'histoire*, no. 57, January-March 1998, pp. 45-56.
 - "La traction-avant Citroën: un modèle de sortie de crise," *Automobilia, l'histoire automobile en France*, no. 27-28, July-August 1998, pp. 10-16.
 - "L'industrie automobile française d'une crise à l'autre," in *Les crises économiques du vingtième siècle*, ed. by Jacques Marseille, *Vingtième siècle* no. 52, October-December 1996, pp. 66-78.
 - "Citroën dans les années trente ou comment restructurer une entreprise," *Histoire, Économie et Société*, April-June 1996, pp. 281-97.
 - *La Société Anonyme André Citroën, 1924-1968, étude historique*, doctoral dissertation in history, 1979, University of Paris X Nanterre.
- Patrick Fridenson, *Histoire des usines Renault*, vol. 1, Le Seuil, 1972.
- Gilbert Hatry, *Louis Renault, Patron absolu*, Éditions Lafourcade, 1981.