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PEOPLE'S CARS AND PEOPLE'S TECHNOLOGIES

ŠKODA AND FIAT EXPERTS FACE THE AMERICAN CHALLENGE (1918–48)*

Beginning in the 1910s, Europeans began to believe that on the other side of the Atlantic an extraordinarily efficient production model had been developed. *Mass production* and *scientific management* were the keywords denoting the concepts that distinguished this model from all other production paradigms in use on the Old Continent. The United States thus became the model for a growing number of European industries.

Yet, there is a growing literature indicating that until World War II awareness of American production methods did not result in the spread of mass production and scientific management techniques in European factories.[1] It was only after the war, when it seemed that American industry might become overpowering, that European managers and entrepreneurs tried to make up for lost time in narrowing the gap with the United States. Technical personnel once more began to travel overseas with the clear intention of transporting the American *one best way* back to their respective countries.[2]

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[1] DUCCIO BIGAZZI, Modelli e pratiche organizzative nell'industrializzazione italiana, in: Storia d'Italia. Annali, L'industria, ed. by FRANCO AMATORI et al., vol. 15, Torino 1999, p. 895-994.

[2] ALICE TEICHOVA, For and against the Marshall Plan in Czechoslovakia, in: Le Plan Marshall et le relèvement économique de l'Europe. Colloque tenu à Bercy les 21, 22 et 23 mars 1991, ed. by RENÉ GIRAULT/ MAURICE LÉVY-LEBOYER, Paris 1992, p. 107-118.

Studies on Americanization have focused on two major protagonists: the Marshall Plan and the automobile industry. The Marshall Plan was for a long time considered a political and economic 'turning point' that supposedly allowed American methods of technology and management to overcome European resistance.[3] The automobile industry proved most open to innovation; it also had the largest number of 'industrial pilgrims',[4] and it has often been presented in the literature as a 'paradigmatic' case.[5] Historians dealing with Americanization have, however, often disregarded what happened in Central Eastern Europe, which was excluded from the Marshall Plan and instead included in the Soviet sphere of influence.[6] Post-1945 events led historians to underestimate the influence of the American mass production model on technicians working on the eastern side of the Iron Curtain, even though there is evidence that, especially in the automobile sector, they shared with Western European technical personnel the interest for and fascination of the American productive gospel both before World War II and in its aftermath.

The present paper analyses some technical reports written between the first Czechoslovak experts' 'pilgrimages' to Fordist America in the 1920s and the rise to power of the Communist Party in February 1948. It then goes on to compare them with similar reports written by Italian engineers in the same period. The comparison with the Fiat experience primarily serves to demostrate how open the 'socialist-to-be' Czechoslovakia was towards 'Americanization', and to illustrate similarities in Czechoslovak and Italian technicians' approaches to the American model. Indeed, in both cases their attitudes could be summarized as cautious and dictated by the intention of 'piecemeal borrowing'.[7] In this regard, the information that can be gleaned from the travel reports allows us to shed light on the profound differences in the ends the American model served and also in the meaning the technical experts attributed to their own role in these two different contexts. Besides including data about American technology and technical knowhow as well as plant descriptions, these reports also reveal the expec-

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[3] MATTHIAS KIPPING/ OVE BJARNAR, The Americanisation of European business. The Marshall Plan and the transfer of US management models, London 1999.

[4] JAMES WOMACK/ DANIEL T. JONES/ DANIEL ROOS, The Machine that Changed the World, New York 1990, p. 231.

[5] KIPPING/ BJARNAR, The Americanisation, p. 3.

[6] JONATHAN ZEITLIN/ GARY HERRIGEL, Introduction, in: Americanization and its Limits. Reworking US Technology and Management in Post-War Europe and Japan, ed. by JONATHAN ZEITLIN/ GARY HERRIGEL, Oxford 2000, p. 1-50, p. 2; Between Imitation and Innovation. The Transfer and Hybridization of Productive Models in the International Automobile Industry, ed. by ROBERT BOYER, Oxford 1998.

[7] ZEITLIN/ HERRIGEL, Introduction, p. 2.

tations that contact with America created in the technicians, who often felt responsible not only for the efficiency of their companies, but also for the overall development of national industry in their home countries.[8]

Thus, contact with America and its transnational 'best way' can be understood as a projection of dreams and fantasies, utopian ideals mixed with concrete projects for reconstruction that were deeply rooted in the respective national political discourses and in the contexts of postwar reconstruction.[9]

1. Limits and Challenges of Fiat's 'Do it like Ford' in Fascist Italy (1918–43)

Giovanni Agnelli's first trips to America in 1905 and 1913 demonstrate Fiat's precocious interest in the innovations taking place in the motor vehicle sector on the other side of the Atlantic.[10] The Lingotto plant, built in 1916, was the symbol of Fiat's first 'Americanism'. It was based on the assembly line, with a sequential flow of work that much resembled the organization of American factories. For the Italian engineers also, the time seemed right for the introduction of assembly lines. Fiat was so proud of its new plant that it considered the factory not just equal, but superior to its overseas rivals.[11] During the 1920s, Fiat's relations with America were already complex and articulated: Ford was not the only company that attracted the attention of the Italian experts, who carefully studied many other automobile and parts producers. However, the introduction of a mechanized assembly line at Lingotto and the consequent transformation of the organization of work lagged behind expectations. Resistance to mechanization was partly determined by the lack of a production volume sufficiently large to justify the necessary investments, and partly by some mis-

[8] DUCCIO BIGAZZI, Mirafiori e il modello americano, 1936-1960, in: Mirafiori 1936–1962, ed. by CARLO OLMO, Torino 1997, p. 237-326, p. 316; CARLO OLMO, L'ora dei tecnici. Aspirazioni e progetti tra guerra e ricostruzione, in: Pensare l'Italia Nuova. La cultura economica milanese tra corporativismo e ricostruzione, ed. by GIUSEPPE DE LUCA, Milano 1997, p. 377-431.

[9] ANTONIO GRAMSCI, Note sul Macchiavelli, sulla politica e sullo stato moderno, Torino 1949, p. 312; CHARLES S. MAIER, In Search of Stability. Explorations in Historical Political Economy, Cambridge, MA 1988.

[10] VALERIO CASTRONOVO, Giovanni Agnelli. La Fiat dal 1899 al 1945, Torino 1977, p. 21, 222-315.

[11] DUCCIO BIGAZZI, Strutture della produzione. Il Lingotto, l'America e l'Europa, in: Il Lingotto 1915-1939. L'architettura, l'immagine, il lavoro, ed. by CARLO OLMO, Torino 1994, p. 281-336.

givings about the quality of mass-produced American products.[12] Despite these obstacles, the Lingotto plant could still boast of being 'the most advanced factory in Europe, in terms of coordination and the rational planning of the work cycle'.[13] It was not only a question of machinery and systems: Fiat's affiliate in Poughkeepsie, New York (Fiat Motors), and the frequent trips taken by technicians had familiarized many of the company's managers and technical staff with the production technology, the organizational methods and the social climate of the U.S. factory environment.[14] In any case, the limited dimensions of the Italian market, the Fascist regime's policy of discouraging private consumption and the increasingly heavy burdens placed on international trade permitted only sporadic experimentation with new ways of organizing work.

In the 1930s, Fiat reduced the intensity of its relationship with U.S. companies, thus isolating itself from the 'constant flow of technical updates generated by the American automotive industry'.[15] In fact, Mussolini's government had an ambivalent and contradictory attitude towards the United States and the American production model. Admiration for the advanced technical capacities of American industry mingled with misgivings towards 'a lack of spirituality and a tendency to go too far, particularly dangerous because of the absence of core values and established traditions'.[16] The general view of *mass production* and *scientific management* was rather reductive, leaving room for the traditional views on organization and technology of Italian industrialists, who tended to run their factories with a sort of stern paternalism and support the regime's choice for a model of development based on low salaries and reduced consumption.[17] However, the unfavourable social and political climate did not prevent Fiat and a few other big companies from continuing to study and confront themselves with the new American principles and methods of work organization, but in general they did so in their internal offices and research centres.[18]

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[12] Ibid., p. 300.

[13] Ibid., p. 303.

[14] BIGAZZI, Modelli, p. 929.

[15] BIGAZZI, Mirafiori, p. 255.

[16] BIGAZZI, Modelli, p. 940.

[17] DUCCIO BIGAZZI, Mass Production or 'Organized Craftsmanship'? The Post-War Italian Automobile Industry, in: Americanization and its Limits, p. 269-297, p. 269-270.

[18] VALENTINA FAVA, L'ufficio statistica e studi economici scopre l'operaio. Da lavoratore a consumatore, in: La Fiat nel mondo, il mondo della Fiat (1930–1950), ed. by CHIARA CASALINO/ VALENTINA FAVA, Venezia 2002, p. 135-144.

2. The 'Czechoslovak Ford' and Masaryk's Czechoslovakia: Between Ideals and Pragmatism

Tomáš Garrigue Masaryk's humanitarian socialism heavily influenced the reception and reworking of theories of scientific management in interwar Czechoslovakia, inspiring a lively debate on the various components of Taylorism and Fordism, on their characteristic features and on the possibilities of transferring them to the Czechoslovak context.[19]

To an even greater degree than elsewhere in Europe, Taylorist principles and Fordist technologies seemed to offer the nascent democracy and its technicians an opportunity to achieve prosperity and productive efficiency while avoiding class conflict and preserving national unity. Higher productivity would have ensured the survival of democracy – which Masaryk understood as an organization of society based on work, in which the exploitation of one class for the benefit of another could not exist. In this perspective, cooperation between workers and technicians, leading to greater efficiency, could become the foundation of national solidarity and a material and moral starting point for a healthy, independent and democratic society.[20] These principles became the essence of a sophisticated Czechoslovak technocratic movement that maintained close relations with the American and European technical communities.[21]

One of the most active institutions in the spreading of scientific management in Czechoslovakia was in fact the Masaryk Academy of Work (MAP,

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[19] Tomáš Garrigue Masaryk (1850–1937), philosopher, journalist, politician and sociologist, is considered the founder of the Czechoslovak state. Exiled in 1914 after the outbreak of World War I, he travelled in Italy, France, Britain, Russia and the United States advocating the creation of an independent state for the Czechs and the Slovaks. Back in Prague, in 1920 Masaryk became the first president of Czechoslovakia. Among his most important political works are *Česká otázka* and *Naše nynější krize* (1895), *Otázka sociální* (1896), *Světová revoluce* (1925) and the unfinished *Rusko a Evropa*.

[20] TOMÁŠ GARRIGUE MASARYK, Nová Evropa. Stanovisko Slovanské, Praha 1920; ALBERTO BAZALA, Il pensiero di Masaryk, Praga 1935, p. 33; EVA SCHMIDT, Thomas G. Masaryk's Realism. Origins of a Czech Political Concept, München 1984, p. 138-141; for the engineers' revolution: ELISABETH VAN MEER, Engineering beyond Politics? Professional Ideology, Scientific Management, and the Evolution of Czechoslovakia, 1848–1948, University of Michigan Dissertations Publishing, UMI Digital Dissertations 2006.

[21] OTTO SMRČEK, Labor-ethics. A Czechoslovak Analogy of Technocracy, in: Acta Historiae rerum naturalium necnon technicarum 21 (1989), p. 145-161; JAN JANKO, EMILIE TĚŠÍNSKÁ, Technokracie v Českých zemích (1900–1950), Praha 1999; in English: JUDITH MERKLE, Management and Ideology. The Legacy of the International Scientific Management Movement, Berkeley 1980, especially p. 172-208; CHARLES S. MAIER, Between Taylorism and Technocracy. European Ideologies and the Vision of Industrial Productivity in the 1920s, in: Journal of Contemporary History 2 (1970), p. 27-61, especially p. 45-54.

Masarykova Akademie Práce), founded in 1920 in honour of Czechoslovakia's first president. During the 1920s, the MAP played an important role in promoting contacts between young Czechoslovak engineers and the Ford Motor Company's factories. It sponsored and organized their trips and published accounts of their visits.[22] In these reports, the young engineers, who had personal experience in working on the assembly line, seemed especially interested in the issues of 'work' and its 'humanity'. What was immediately understood and endorsed – more than merely 'moving the metal' or the mechanization of the production process – was the Fordist system, which reached outside the factory and contributed to the creation of a new workforce that could share in the goals of the company and provide consumers.[23] However, discussions on scientific management tended to remain restricted to speculations within the engineers' communities. With few exceptions, Czech entrepreneurs did not prove very receptive to the new principles. Among these noted exceptions was the 'Czechoslovak Ford' – the newborn Škoda Auto.

Škoda Auto was founded in 1925 as a result of the merger between the Škoda Works Engineering and Armament Combine and the Mladá Boleslav automobile producer Laurin & Klement (L&K).[24] The merger was immediately followed by the modernization of the L&K plants in Mladá Boleslav.[25] Between 1926 and 1928, new plants were added to the old factory and the

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[22] The reports are in: Archive of the Academy of Sciences of the Czech Republic, henceforth AVČR, fond Masarykova Akademie Práce, 95, 99, 100; Život a práce u Forda. Zápisky československých inženýrů z Ameriky, ed. by STANISLAV ŠPAČEK, Praha 1927; Ford a My. Zkušenosti československých inženýrů z americké prakse u Forda s ohledem na naše poměry, ed. by STANISLAV ŠPAČEK, Praha 1928; JAN PAĎOUREK, International Contacts of the Czech Technical Academy. The Masaryk Labour Academy and the World inbetween the Two World Wars, in: Studiae Historiae Academiae Scientiarum Bohemicae, serie C-2, Praha 1993, p. 35-50.

[23] VACLAV MUŽÍK, Z prakse ve Fordových závodech v Detroitu, in: Nová Práce 3 (1925), p. 44-45; ANTONIO GRAMSCI, Americanismo e Fordismo, Roma 1991, p. 42-43; KAREL ČAPEK, RUR e L'affare Makropulos, Torino 1971.

[24] The Škoda Works were controlled by the French company Schneider et Cie through a holding company, the Union Européenne Industrielle et Financière, created in 1920 in order to control industrial and banking participations in the former Austro-Hungarian Empire (73 per cent of the joint stock capital in 1918, declining to 46.49 per cent in 1937). See ALICE TEICHOVA, An Economic Background to Munich. International Business in Czechoslovakia, 1918-1938, London 1976, p. 203-217; CLAUDE BEAUD, Investments and Profits of the Multinational Schneider Group, 1894-1943, in: Multinational Enterprise in Historical Perspective, ed. by ALICE TEICHOVA/ MAURICE LÉVY-LEBOYER/ HELGA NUSSBAUM, Cambridge 1986, p. 87-102.

[25] The details of the merger can be found in the company's histories: VLADIMÍR KARLICKÝ et al., Svět okřídleného Šípu, Koncern Škoda Plzeň 1918-1945, Plzeň 1999; PETR KOŽÍŠEK/ JAN KRÁLÍK, L&K–Škoda, The flight of the winged arrow, Prague 1997.

buildings were equipped with imported German and American machinery – with the result that at the end of the 1920s, the Czechoslovak press considered Škoda to conform to modern standards of layout and machinery, and ready to offer its workers the expected extra-factory services.

However, an analysis of the reports written by those who visited the American production facilities that served as the models for the renovation of Czechoslovak plants reveals a cautious attitude towards the American model of mass production on the part of Škoda's management and technical personnel. While they studied this model and were fascinated by it, they seemed to favour its overall 'redimensioning', thus adapting it to the market conditions in their small Central European nation.

The most interesting account of a trip to America was written by Václav Klement,[26] a member of Škoda's board of directors and founder of L&K. In 1927, Klement left for the United States to select the equipment for the new body plant. Klement's evaluation of the American situation was at once critical and pragmatic. In fact, although he devoted much space to the necessary equipment, the mechanization of the assembly line and the enormous productivity of single-purpose machines, he did not fail to notice that these attributes were prevalent only among the giant automobile makers like Ford, Chevrolet, General Motors and Dodge. In contrast, manufacturers with limited production capacity only used the new hardware – conveyors and single-purpose machines – at certain stages of the production and assembly process. Klement's report focuses on various aspects of the American factories, often showing great interest in the smaller car makers or suppliers, which had more in common with the Mladá Boleslav plant in terms of type of production and machinery. Specialization was, in his view, the most distinguishing characteristic of the American automotive sector, and the most interesting examples were the producers of components and machinery that supplied the big auto manufacturers.

Furthermore, instead of recommending that a new workforce be forged to avoid the problems posed by Czechoslovakia's skilled and unionized personnel, Klement saw the substitution of manual labour with machines and the deskilling of tasks as an ingenious and inevitable, though perhaps not entirely desirable, solution to a problem specific to American industry. Indeed, while in the United States there was a lack of skilled and experi-

[26] Mýtus a realita hospodářské vyspělosti Československa mezi světovými válkami, ed. by EDUARD KUBŮ/ JAROSLAV PÁTEK, Praha 2000, p. 383-384. The reports are in Škoda Auto Historical Archives, henceforth AŠA, fond Akciová Společnost pro Automobilový Průmysl, henceforth ASAP, 93, especially: Resumé Zprávy o studijní cestě gen. rady V. Klementa do Spojených Států, vykonané spolu s Ing. J. Hauserem v době od 8-7 do 5-11-1927 ku zjištění výrobních poměrů v automobilovém průmyslu americkém, Mladá Boleslav, 5 February 1928.

enced workers, at Mladá Boleslav such workers were in oversupply. Even the social benefits offered to American factory workers – housing, cafeterias, medical care and disability insurance – seemed to him an expression of the attempt to reduce the high rate of employee turnover, which was damaging to American manufacturers. The same could be said for distribution systems, advertising and instalment plan purchases, which grew out of the specific American context. These observations are mirrored by the technical and production characteristics of the Škoda workshops, which, although equipped with some U.S. machinery, neither had nor planned to attain the dimensions or the production capacity typical of plants more closely modelled on American factories.[27]

Although written from different perspectives, both Klement's reports and the contributions of young engineers from the MAP seemed to agree with the national political discourse inspired by Masaryk's humanitarian socialist and small-nation rhetoric. American factories were undoubtedly a model of efficiency, but what the Czechoslovak technicians were looking for was a 'national' model that could incorporate the country's tradition of artisanship, preserving and making the most of its highly qualified workforce and the high qualitative standards of its mechanical industry. Even more so than in the accounts of Fiat engineers, in their reports the productive practices observed in American factories seemed to loose their technical actuality to become functional to the national political discourse and the aims of Masaryk's democracy.

The Czechoslovak perspective was not a 'revolutionary' one: The experts seemed convinced that only a careful selection of foreign management systems, single practices and machinery could serve as valuable instruments to help the national industry survive and compete on the increasingly demanding markets of South Eastern Europe and parts of Western Europe.[28] For this reason, in their search for efficiency they considered not only the new American theories, but also practices and principles emerging elsewhere in Europe at the time: in France, Switzerland or Germany.

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[27] JAMES LAUX, The European Automobile Industry, New York 1992, p. 101.

[28] Some travel reports can be found in the Archive of the Academy of Sciences of the Czech Republic (AVČR), fond MAP (Masarykova Akademie Práce), 95, Návštěvy technických odborniků v ČSR; AVČR, MAP, 100, Zprávy; AVČR, 99, Stipendium Václava Klementa: see in particular travel reports written by: J. Černík, 1922; V. Čechura, 1926; S. Malec, 1927; E. Kratochvíl, 1928; J. Hanuš, 1928; L. Cigánek, 1929. Some of these reports were published in the 1920s, see for example the collection ŠPAČEK, Ford a My, and the different issues of Nová Práce of the years 1927-1928. More information about these trips can be found in JAN PAĎOUREK, Snahy o organizování praxe Československých inženýrů v USA (20 a 30 léta 20 století), in: DVT. Dějiny vědy a techniky 3 (1992), p. 129-139.

Especially at the workshop level, the variety of industrial models the Czechoslovak industrial milieu had experienced since the end of the nineteenth century had left its mark, influencing the reception of the American mass production model and adding a specific feature to Czechoslovak managerial Americanism.[29]

3. Fiat's 'American Engagements' in the Postwar Era

Even before the end of the war, Fiat had already resumed its relationship with the American automotive industry. Fiat's president Vittorio Valletta seemed to have had no doubts about the rapid recovery of the Italian economy.[30] He was convinced that, having brought production up to date, the economy was now headed towards a period of intense development in which Fiat would play a fundamental role. Valletta was certain that Italy would align itself with the capitalist world and that any necessary modernization should take place in the context of an Italian-American alliance and cooperation.[31] As he stated in a 1948 lecture to Turin's entrepreneurs, the 'modernization of the plants' and the 'requalification and reconversion of the human factor in the productive process […] are the first objectives to be attained'. He intended to achieve these goals by following the 'policies that Fiat has always followed on the topic, according to the principles dictated by the founder Giovanni Agnelli'.[32] This was a strategy based on export

[29] Yves Cohen has suggested shifting the research focus from the history of the 'transfer' of the 'American model' towards the history of 'industrial practice' as realized at the local level. This would allow historians to better appreciate the multiple influences and knowhow embedded in an industrial practice as it is applied in a specific context. This approach seems particularly useful for Central Europe as it allows us to distinguish the manifold and diverse components that constitute an industrial practice without immediately determining its origin (be it American, Soviet or even Swiss or German). It moreover helps to clarify what was in many cases the primary motive of the historical actors behind the choice to import or introduce a machine or an organizational practice into the production cycle: the search for efficiency, for the certainty of continuity in the flow of production and the 'success' of the final product. See YVES COHEN, Organiser à l'aube du taylorisme. La pratique d'Ernest Mattern chez Peugeot, 1906-1919, Besançon 2001, especially p. 9-15.

[30] BIGAZZI, Mirafiori, p. 258.

[31] PIERO BAIRATI, Valletta, Torino 1983, p. 86-87, 171-184; VALERIO CASTRONOVO, Fiat 1899-1999. Un secolo di storia italiana, Milano 1999, p. 760-796.

[32] VITTORIO VALLETTA, Ripresa della produzione nazionale e in particolare di quella del Piemonte. Conferenza tenuta dal professor Valletta presso l'Unione industriali di Torino giovedí 13 maggio 1948 and Appunti per i futuri orientamenti produttivi italiani and Preminenza dell'Industria automobilistica, internal Fiat document published in: CASALINO, FAVA, p. 19-34 and 225-235. Vittorio Valletta (1883–1967), a business consultant and

and on the introduction of the most modern American organizational and technical practices.

Even during the war, Fiat had never completely broken off personal contacts with top executives of leading American companies. Some of its directors had met with British and American representatives, not only in Switzerland, but also in Rome and Turin. In 1943, a document attributed to the company's director of foreign affairs, Miran Pechdimaldij, suggested a possible basis for renewed collaboration between Fiat and American industry: The Turin company would specialize in compact cars with small engines, exploiting its knowhow and its relatively low cost of labour, and would in addition assemble American-style cars to be sold on the Italian market or within its sphere of influence.[33] In 1944, this proposal for a division of labour was confirmed during a meeting between Giancarlo Camerana, a Fiat vice-president, and Allen Dulles, then head of the American intelligence services in Switzerland. In 1946, Valletta reformulated the nature of Fiat's relations with American industry before the Economic Commission of the Italian Constituent Assembly, making clear that these relations were to be characterized by mutual assistance or even partnership rather than competition. Fiat would produce small cars with engine sizes ranging from 500 to 1,100 cc, taking advantage of mass production and economies of scale. This way, it would not compete directly with U.S. products.[34]

So it was with the intention of reforging their old ties that Fiat's technicians left for the United States in 1946 – for the first time after World War II – to visit the Chrysler plants. It was to be a brief visit, an initial step to prepare the lengthier ones by design teams and plant managers carried out a few months later.[35] Valletta signed a formal agreement covering the

university professor of accounting, joined Fiat in 1921, and in 1939 became the company's CEO. In 1946, he succeeded Giovanni Agnelli, Fiat's founder, as the firm's president. In 1966, Valletta, aged eighty-three, retired and Gianni Agnelli, Giovanni's grandson, took over his position. See BAIRATI, Valletta.

[33] BIGAZZI, Mirafiori, p. 256.

[34] Ibid., p. 287.

[35] Taylorismo e fordismo alla Fiat nelle relazioni di viaggio di tecnici ed ingeneri (1919-1955), ed. by PIER LUIGI BASSIGNANA, Torino 1998, especially the reports therein by ARMANDO FIORELLI, Relazione della visita a stabilimenti Chrysler (16-26 December 1946), p. 240-261 and ALESSANDRO GENERO, Impressioni riportate dal sottoscritto, as well as Proposte per il programma di modernizzazione nei nostri mezzi di lavoro (from 23 May to 18 July 1947), p. 265-278. The technicians sent to the U.S.A. in 1947 were among the most influential managers at Fiat: Alessandro Genero, originally a worker, was an expert in workshop issues. In 1929, he was appointed director of the plant at Lingotto. After the war, he entered Fiat's board of directors. Armando Fiorelli was an industrial engineer hired by Fiat in 1920, aged twenty-four, to supervise the equipment of the new machine tools. After

technical cooperation between Fiat and Chrysler in 1947. This agreement was 'reciprocal and exclusive', although that same year Fiat's technicians had also visited the General Motors plants, especially those producing components or parts like Budd in Detroit.

4. The Postwar Years: The Czechoslovak Path to Socialism and the American Model

The nationalization of key industries was decided upon by the first National Front government of Czechoslovakia. Under the considerable political influence of the Communist Party, the government declared its intention to implement a 'socializing' programme of reforms known as the Košice Agreement.[36] Škoda was nationalized on 7 March 1946 and divided into several independent companies. The Škoda Factories in Plzeň (in Czech: *Škodovy Závody*) were responsible for heavy engineering production, while national automobile production was to be concentrated in the Mladá Boleslav Kvasiny and Vrchlabi plants. The former Škoda Auto was thus renamed Automobile Factories, National Enterprise (in Czech: *Automobilové Závody, Národní Podnik* [AZNP]).

In this new context, it is interesting to note the creation of a plan for the growth and development of the Czechoslovak automobile industry which, while destined to remain only on paper for a long time, nevertheless gives an idea of how Czechoslovak experts faced the challenges posed by changes in the political and institutional framework, and how they imagined their role in the new Czechoslovakia. In the initial stage of reconstruction and the first formulation of an economic plan, the experts of the motor vehicle industry again examined the American model with renewed attention.

World War II, he was named director of Fiat's most important factory, Mirafiori. Further information can be found in FRANCO AMATORI, Gli uomini del professore. Strategia organizzazione e management alla Fiat tra anni Venti e anni Sessanta, in: Grande impresa e sviluppo italiano. Studi per i cento anni della Fiat, ed. by CARLO ANNIBALDI/ GIUSEPPE BERTA, Bologna 1999, p. 257-342. Another expert who participated in the trips o America was Dante Giacosa (1905–96). As the designer of the Fiat 600 and 500 (1936), he received a degree in mechanical engineering in 1927 from Turin's Politecnico and commenced his activity at Fiat in 1928. In 1933, he became head of Fiat's technical department (Ufficio Tecnico Vetture). In 1955, he was named director of Direzione superiore tecnica autoveicoli and, in 1966, director of the automobile division and became a member of the board of directors. His reports have been collected in DANTE GIACOSA, Il mestiere di progettista. Antologia degli scritti, ed. by PIER LUIGI BASSIGNANA, Torino 2000.

[36] ALICE TEICHOVA, The Czechoslovak Economy, 1918–1980, London 1984, p. 119-121.

'Collaboration with the United States of America' – to use the term employed in the Škoda archives – was a project for restructuring the entire Czechoslovak automotive sector. It was planned in 1946-47 and included repeated visits by Alexander Taub, an American consultant, to the Škoda Factories, as well as a number of training visits by Czechoslovak technicians to the United States. Working with them, Taub tried to design a project that would emulate the American experience while taking advantage of the rich Czechoslovak tradition.

Unfortunately, we know very little about Taub. While the backing of František Fabinger,[37] general director of the central directorate of the Czechoslovak Engineering and Steel Factories (in Czech: *Československé Závody Kovodělné a Strojírenské, Národní Podnik*, [ČZKS]) is clear, the direct involvement of the American government or any of its organs cannot be established: Taub had worked for General Motors and for the American War Administration, had travelled widely, and had also worked in Brazil and Chang Kai-shek's China.[38] The technical assistance project he coordinated in Czechoslovakia did not appear to depend on financial contributions or transfer of materials and machinery from the United States to Czechoslovakia, nor did the American authorities seem to have been involved at all (at least directly). However, after February 1948, Czechoslovak security authorities emphasized the political nature of the cooperation. Taub was 'invited' to leave the country after being charged with illegal transfer of money. A few years later, Fabinger was involved in the political trial

[37] There is not much biographical or professional information on the Škoda technicians who were involved in the Taub consultancy due to the lack of personnel records in the archives. Most of the technicians were trained at the Prague Technical University (ČVUT) and came from the various factories which had been consolidated into the AZNP in 1946, after nationalization. František Fabinger, an engineer, was the man who solicited Taub's consultancy and one of the staunchest supporters of collaboration with the United States. He was general director of the ČZKS, the central directorate controlling the national steel and mechanical industries until 1948.

[38] According to Czechoslovak sources, he was an American engineer who had been working for General Motors: FRANTIŠEK H. ŽALUD, Přežili jsme. Zkušenosti z mého života 1919–1993, popsané pro má vnoučata a jejich generaci, Praha 1996, p. 60-62 (I want to thank Elisabeth van Meer for alerting me to this book). I received some additional information about Alexander Taub from Dr. Jennifer Taub: Taub was born in Great Britain. During the 1920s, he worked for General Motors and later was nominated chief engineer of the engineering service of the Office of Production Management (OPM) and the Office of Emergency Management (OEM). He was connected with the Foreign Economic Administration (FEA) and with the War Production Board, bodies created by the Roosevelt administration to deal with the war and reconstruction. After the war, he founded his own consultancy, Taub and Associates, and tried to collect money and loans for the reconstruction of Central Europe (Poland and Czechoslovakia).

against the former Party secretary Rudolf Slánský and sentenced in the process.[39]

The 'collaboration' between the United States and AZNP began on 10 June 1946, when Jaroslav Frei, former director of the motorcycle producer JAWA, and since 1946 in charge of a programme for the development of the Czechoslovak automotive industry, visited the United States and negotiated an agreement that provided for the arrival of an American technical consultant to assist in the drawing up of a plan for the reconstruction of the Czechoslovak transportation industry. The consulting work was to focus on an in-depth assessment of the Czechoslovak economic situation and the European scenario in general.[40]

Taub held that AZNP should attempt to penetrate the European automobile market, taking advantage of Germany's weakened position and England and France's difficulties in quickly reattaining their prewar production levels. Czechoslovak production was to replace German products on the market. In order to achieve this goal, it was necessary to identify on the one hand the weak points of the Czechoslovak automobile industry and on the other the technological and organizational innovations that were best suited for adoption by AZNP.

One of the effects of Czechoslovak-American collaboration was the introduction of the concept of a 'people's technology',[41] manifested in the decision to prioritize the production of a low-cost, small-engine car that the masses could afford with the aim of expanding a market that was still too limited. In fact, it was considered fundamental that the market absorb at least 125,000 automobiles per year. To reach this goal, a car should cost no more than 23,000 crowns, the equivalent of six months' salary of an average factory worker.[42] According to Taub, changes should be introduced in two areas: reducing production costs and designing a low-cost 'people's car'.[43]

But apart from this, what distinguished 'people's technology' from similar attempts to create an innovative product and expand the national

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[39] EVŽEN LŐBL, Il modello simmetrico. Questa volta in un diverso rapporto [first appeared in Literární Listy, 20 June 1968], in: Praga 1968. Le idee del 'nuovo corso', ed. by JAN ČECH, Bari 1968, p. 261-270. Lőbl refers to the political dimension of Taub's consultancy.

[40] AŠA, AZNP/p, 4, ALEXANDER TAUB, A People's Technology. A Report to F. Fabinger, General Director of Kovo. Praha, September 1946, p. 8 and AŠA, AZNP/p, 4, ALEXANDER TAUB, Zpráva I. Program vyrobků; Zpráva II, Závody a zarizení, 1947.

[41] AŠA, AZNP/p, 4, TAUB, A People's Technology, p. 9.

[42] Ibid. p. 16.

[43] Ibid. p. 1.

market – aspects that were being considered by many European car makers at the time – were the specific economic conditions of reconstruction in Czechoslovakia. AZNP was, in fact, a nationalized industry, and virtually the only producer of automobiles in the country. Restructuring it meant reorganizing the entire automotive sector, as it was fundamental for the national economy and represented a vital part of the 'national undertaking'.[44] The solutions proposed for the automotive sector inevitably grew into proposals for the reorganization of the entire national economy, including agriculture, mining and other sectors. According to Taub, AZNP's task was not limited to the construction of the plants and machinery needed to produce automobiles. Rather, it played an overarching role in promoting the industrialization of a large part of the country. Productive efforts should thus not only be concentrated in the pre-existing large industrial plants; it was also important to promote the development of smaller factories dedicated to the production of components or accessories in locations other than the traditional industrial areas. This way, in accordance with the Košice programme, the groundwork would be laid for a geographically balanced national production.[45]

More than once, Taub tapped the nationalist and anti-German sentiments of the Czechoslovak population in his report. For example, he noted: 'We appreciate that for centuries the Germans were masters and wherever they master, they teach that only they can be masters.'[46]

Reading Alexander Taub's reports, one can sense an echo of the special climate that led to America's decision to launch the Marshall Plan. As the rich literature on the Americanization of European industry has shown, there was general agreement between Europeans and Americans at the time that Europe's economic reconstruction must follow the principles of the American 'one best way'. Furthermore, the productivity ideology was part of America's answer to the promises of communism. It was a question of contrasting the 'Communist Party line' with the 'American assembly line'.[47] Taub's consulting activities were thus of particular importance to Czechoslovakia at a time when it was searching for a national approach to

[44] Ibid. p. 4.

[45] AŠA, AZNP/p, 4, TAUB, Zpráva, p. 2.

[46] AŠA, AZNP/p, 4, TAUB, A People's Technology, p. 41.

[47] Among others: CHARLES S. MAIER, The Politics of Productivity. The Foundation of American International Policy after World War II, in: International Organization 31 (1977), p. 607-633 and JACQUELINE MCGLADE, Americanization. Ideology or Process? The Case of the United States Technical Assistance and Productivity Programme, in: Americanization and its Limits, p. 53-75; ROBERT LOCKE, The Collapse of the American Management Mystique, Oxford 1984, p. 39.

socialism and nearing a heated political controversy over adherence to the Marshall Plan.[48] In this perspective, one can only wonder how Taub's message was received by the Czechoslovak experts and how much actually remained in post-World War II Czechoslovakia of the sophisticated inter-war debate on production practices and managerial principles.

5. Diverging Paths: Comparing the post-1945 Technical Missions of Fiat and Škoda

As had been agreed with Taub, Škoda's technicians also visited the United States. The purpose of these trips was to close the gap in technological and organizational knowhow that Taub had so vehemently underscored.[49] They systematically visited not only the main American automobile companies, but also the most important suppliers of components and producers of machine tools. They also did not neglect cultural institutions, including museums, technical schools and universities. Upon their return from the U.S.A., the Czechoslovak technicians brought with them a deeper understanding of the meaning of American 'modernity' in the production of automobiles and how it could be adapted to Czechoslovak plants.[50]

The main thrust of most of the reports concerned descriptions of the machines and the way they were used in continuous production. Pages upon

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[48] TEICHOVA, For and Against the Marshall Plan, p. 108.

[49] The following reports were examined: AŠA, AZNP/p, 4, VÁCLAV KREMAR, Automobilové tovarny v USA. Zpráva z cesty konané v cervenci-zaři 1947. Mladá Boleslav v lednu 1948; FRANTIŠEK FABINGER, Zahájení přednášek automobilových odborniků po navrátu z USA v AKRC dne 2. unora 1948; JAROSLAV FREI, Zpráva o prohlidce amerických automobilových a motocyklových závodů v době od 10 do 22 června 1946; VLADIMÍR MATOUŠ, Cestovní zprávy z USA, Výtah z cestovních zprav od 31. srpna do 12. listopadu 1947. As in the case of Taub, it is not easy to find information about the technicians who were involved in Taub's consultancy. However, some of them were among the best technicians working in the automotive industry in Czechoslovakia: Vladimír Matouš (1896–1963) graduated from ČVUT in 1920. He worked at Walter Jinonice before being employed at Škoda Plzeň, where he participated in the production of the Hispano Suiza. In 1928, Matouš began his activity in Mladá Boleslav: He held different positions with technical responsibility (head of construction and vice-director of the ASAP, after 1947 technical director), and he ended his career as head of technical development in 1959; Zdeněk Kejval (1905–88) graduated in 1926 from the Višší průmyslová škola strojní in Plzeň and became an expert in the processes of body construction. He worked at PRAGA from 1926 to 1935 and in 1936 went to Kvasiny, where he designed bodies for JAWA. In 1947, he was sent to Germany and the United States, and in 1947 became technical director at PRAGA. From 1955 to 1970, he was in charge of the renovation of the Mladá Boleslav plant. See JAN KRÁLÍK, V Soukolí Okřídleného šípu, Praha 2008, p. 19, 48.

[50] AŠA, AZNP/p, 4, FREI, p. 3.

pages were devoted to single-purpose machines on automated assembly lines, which carried out a series of operations without any input from the worker, who merely turned the machine on and off.[51]

Fiat's technicians also admired the Americans' new multi-station transfer machines, though there was a certain coolness in their attitude towards them.[52] They were impressed by Buick's first cylinder line in Flint, Michigan, composed of a succession of transfer machines which required only that an operator placed the piece at the beginning of the line and pushed a button.[53] Yet they remained somewhat aloof, keeping their distance from the technological mirage of the automatic machines. This kind of equipment was part of a world that differed substantially from Fiat's postwar reality, and continuous production was regarded simply as something to report. It was not worth the trouble to examine these technological innovations in greater depth, according to the Fiat technicians, because of the tremendous gap between the operation of Fiat's Mirafiori plant and real mass production.

To the Fiat technicians it seemed absurd to purchase machines that were too advanced and designed for enormous volumes and continuous production. In Italian reality, they would not have been exploited to their maximum capacity, nor would they have initiated a virtuous circle that would compensate for their astronomical cost. The American model provided a choice between several options. The technicians' goal was to find a way to improve efficiency and update their plants, not to reorganize the operation of the Mirafiori plant from the ground up.[54]

In contrast, Škoda's technicians were more fascinated by these powerful and highly efficient machines, and the space devoted to them in their reports was decidedly greater than the mere 'documentary interest' of Fiat's personnel.[55] None of the reports filed by Škoda's technicians contained criticism, while the Fiat technicians underlined more than one example of backwardness in the highly modern productive cycles they had the chance to visit.[56] When looking at the transfer machines, for example, Škoda technicians seemed to consider them the epitome of modernity, and they seldom mentioned a possible incongruity with the production cycle they were utilized in. For the Czechoslovak experts, the main problem was not

[51] AŠA, AZNP/p, 4, KREMAR.

[52] BIGAZZI, Mirafiori, p. 258-268.

[53] GENERO, Impressioni, p. 267.

[54] BIGAZZI, Mirafiori, p. 266.

[55] Ibid., p. 268.

[56] Ibid., p. 267.

having them.[57] Apart from machinery, the innovations that most impressed the Europeans involved body work techniques. Even in this case, Fiat's technicians carefully studied the American solutions, evaluating their relative cost and adaptability to the situation at Mirafiori, including the machines already in place there, and sometimes even proposing alternatives.[58] There seems to have been a difference of opinion between the American consultants and the Italian technicians regarding the transport mechanisms in the body work section. The Americans used carts, which gave them greater flexibility, while Fiat's specialists preferred aerial conveyor belts mounted with hooks, which were cheaper and required less maintenance. The Americans won out in the end, but they could not prevent the Mirafiori factory's body work section from being equipped with aerial conveyors and hooks from the 1950s onward.[59]

The Italian technicians were also disappointed by the dirtiness of the American plants and a lack of discipline that had not been apparent during their 1936 visit. The workers wasted time at the beginning of their shift, they stopped working before the bell rang, and they actually smoked inside the plants. Although at first reading these may appear to be irrelevant details, Alessandro Genero's observations illustrate the degeneration of the social climate in postwar Detroit and hinted at the new problems that American industry would have to face in the area of industrial relations.

In the reports contained in the Škoda archives, there are no observations on the American social or political context. The American system of industrial relations was completely ignored, despite the fact that the technicians repeatedly mentioned not being able to visit plants because of strikes. The lack of attention to social and disciplinary aspects, working conditions and management-worker relations could be the result of the preeminently technical mission the Czechoslovak technicians were charged with. However, it could also be the result of a particular attitude towards the American model and a certain scepticism towards a socio-political system so different from the one considered suitable for Czechoslovakia on the threshold of the institution of a socialist system and a planned economy.

6. Conclusion

There are numerous similarities between the observations of the Czechoslovak and Italian technicians who visited the United States in 1946-47. Both

[57] AŠA, AZNP/p, 4, KREMAR, p. 2.

[58] Ibid.

[59] Ibid.

groups shared a strong desire to understand the American model and a great curiosity. The model was broken down and analysed in its single elements, some of which were felt to be applicable to the Czechoslovak or Italian situation, respectively, and therefore studied in detail, while others, seen as either less applicable or even as undesirable, were put aside as 'cultural peculiarities'[60] or social ones. The technicians seemed to realize that the effectiveness of the model depended on its context and that it would not yield the same results in Czechoslovakia or in Italy, given their different industrial histories and local institutions.

The case of Škoda seems to confirm the possibility to extend to postwar Czechoslovakia an interpretation of Americanization that stresses the role played by European experts as actors who actively and selectively appropriated components of the American model to fit domestic European practices. In 1946-47, as in 1926, the Czechoslovak technicians had a distinct awareness that the techniques observed in America would have to be translated into a different context, at least as far as production volumes were concerned. They took into consideration their country's poorer market and the relative backwardness of its support industries. Jaroslav Frei wrote:

> 'We must not let ourselves be intimidated by the enormous American production, nor must we think that everything they have in America should be applied in our country. Our friend Taub says that the grass is always greener on the other side of the fence, but when you take a closer look, you can see the bare patches that were not visible from a distance [...]. We should not be discouraged by America, nor should we underestimate it. The road that will lead our automotive industry out of its difficulties exists: finding the right way to apply American knowhow to the Czechoslovak situation, in order to rapidly construct a European model.'[61]

In their reports, the Czechoslovak technicians often referred to a 'Czechoslovak model' that could utilize the American production model to reach 'European standards', but they seemed to regard Czechoslovak specificities as weaknesses and not as strengths, as they had before the war. In most of the reports there was palpable bitterness over the inadequacy of Czechoslovak plants and dissatisfaction with the limitations imposed by their lack of equipment. Criticism of inadequate bureaucrats and the delays they caused were coupled with complaints about the lack of investments. The experts wrote that they wanted to adapt the American model to the Czechoslovak tradition, but it is not clear which aspects of the latter they valued, nor is it clear what they meant when they used the term 'European'. While they

[60] LOCKE, The Collapse, p. 1.

[61] AŠA, AZNP/p, 4, FREI, p. 2 (author's translation).

kept stressing their fundamental role in laying the basis for the survival of the Czechoslovak state and their loyalty to it, the Czechoslovak experts seemed to have lost their awareness of the nation's natural 'borders' and their sense of continuity with the country's industrial past. In this sense, the reports' content and approach to the American model reveal a marked discontinuity with the interwar years. Despite calls for an adaptation to the Czechoslovak tradition, in practice Taub's project was intended to completely revolutionize production plants and techniques, as well as the organization of labour Škoda had relied on until then. Everything had to be created anew in Czechoslovakia, from machine tools to research institutes. The American model would be delivered to Škoda as a complete package ready for use, a cure-all for the problems of Czechoslovak industry.

Furthermore, the Czechoslovak case reveals the ambivalent nature of the 'American engagements' in Central Europe in the aftermath of the war: It would be naive not to notice that most (although not all) of the features of the American model that both Taub and the Czechoslovak experts stressed were more in line with the Soviet version of mass production than with the ideas of Klement or of the MAP engineers on how to modernize Czechoslovak production facilities and society. When imagining the future of nationalized big business, Czechoslovak experts began to show some of the symptoms of the 'gigantomania' that affected Soviet industry.[62] In their search for productive efficiency, the Czechoslovak technicians, in 1946, seemed to praise especially the modernity of the machines and the extraordinary dimensions of U.S. and Soviet plants. However, between 1945 and 1951, the Czechoslovak experts were drawing their plans concerning the development of the automotive sector in their country without empirical knowledge of what was taking place in Soviet factories – the first Czechoslovak automotive engineers visited the U.S.S.R. only in 1951.

Finally, while in the interwar period the technicians had referred to a variety of industrial and productive practices worth being imported, between 1946 and 1949 the Czechoslovak technical debate on the development of the automobile industry mainly focused on two alternative forms of 'engagement' to mass production. Firstly, the 'American engagement' was the result of the direct experience from visits to U.S. factories that local technicians had accumulated in the 1920s and on their 1947 trips. The second kind of 'engagement' came via Soviet 'exaggerated Fordism' – the Soviet interpretation and its propagandistic representation of the Taylorist

[62] VALENTINA FAVA, Between American Fordism and 'Soviet Fordism'. The Czechoslovak Way towards Mass Production, in: The Sovietization of Eastern Europe. New Perspectives on the Postwar Period, ed. by BALÁZS APOR/ PÉTER APOR/ E. ARFON REES, Washington, D.C. 2008, p. 47-64.

and Fordist practices imported in the 1930s from the United States to the U.S.S.R. and, after 1945, exported from there to Czechoslovakia and the other satellite states. The result was that in the debate on the development of automotive production that took place among experts at the level of both central directorates and shops before 1951, the Soviet model and the American model often superimposed and blended into one another.[63]

In the climate of insecurity and mistrust created by the Munich Agreement – regarded as an unjust exclusion of Czechoslovakia from Europe – these engagements, which shared an emphasis on the mass dimension of production in terms of the size of the enterprise, the modernity of equipment and production volumes, seemed to represent a ticket to modernity to the Czechoslovak experts. It was evident that the economic wellbeing and the productivity of the Czechoslovak plants would play the most important role in the country's being recognized as a *bona fide* European state.[64]

In contrast, continuity and loyalty to the company's strategy were the keywords in the Fiat reports. The Fiat missions were organized to become acquainted with postwar innovations and to renew a long-standing collaboration with American firms. The prevalent approach was critical, alternating admiration with negative observations and realistic evaluations regarding the quality and cost effectiveness of American solutions in the Fiat context. Fiat had no intention of revolutionizing its production methods. The company was exceptionally proud of its record, and adherence to the American model was interpreted in terms of perfecting its organization and plants, not in replacing them. In those years Fiat, whose development had been progressing along specific lines since the 1920s, refused to be distracted by the American dream. 'Besides unfolding over a longer period of time, the transfer of the Fordist production model was selective rather than merely imitative: At least during the initial stage, "mass production" was introduced soberly and patiently in Turin.'[65] For Fiat technicians, the American model was the natural productive ideal, but it was mainly regarded as an additional opportunity to improve and perfect the established Fiat tradition, which had been developed through ongoing comparisons with American techniques.

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[63] ZEITLIN/ HERRIGEL, Introduction; BORIS SHPOTOV, Ford in Russia from 1909 to World War II, in: Ford, 1903–2003. The European History, ed. by HUBERT BONIN/ YANNICK LUNG/ STEVEN TOLLIDAY, Paris 2003, p. 505-529; YVES COHEN, The Soviet Fordson. Between the Politics of Stalin and the Philosophy of Ford, 1924-1932, in: ibid., p. 531-558.

[64] Some important insights on the cultural and political climate of postwar Czechoslovakia can be found in BRADLEY ABRAMS, The Struggle for the Soul of the Nation. Czech Culture and the Rise of Communism, Oxford 2004, p. 88-138 and 156-177.

[65] BIGAZZI, Mirafiori, p. 269 (author's translation).