

Budrass, Lutz: *Flugzeugindustrie und Luftrüstung in Deutschland 1918-1945*. Düsseldorf: Droste Verlag 1998. ISBN: 3-7700-1604-1; 976 S.

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This voluminous study, based on a 1995 Bochum PhD-thesis, deals with aircraft production and air armament in Germany from the end of World War I until the end of World War II. Its range of methods and the sources relied upon are as encompassing as its subject. The book combines the perspectives of business history, history of technology and political history, and, as far as workers are concerned, social history as well. It is one of the few studies (especially for the years from 1933 onwards) which attain a convincing balance between the analysis of individual enterprises and their industrial sector. Even though this may be partly attributed to the fact that the sample of aircraft companies analysed - among them Heinkel, Henschel, Messerschmitt and, predominantly, Junkers - more or less constituted the aviation industry, it is nevertheless a major achievement. Since it is impossible to represent a thousand densely written pages (or 1.7 kg of paper) to scale in a thousand-word-review, only some of the major points are dealt with, thus leaving aside interesting issues like the social history of the working force or the immense housing problems Junkers was confronted with during its rapid expansion in the Dessau area.

The primary concern of Budrass lies in the area of potential conflict arising from the diverging interests of firms and military procurement agencies. Whereas firms want to decide autonomously about product and production methods, procurement agencies tend to interfere with entrepreneurial autonomy. The various settlements reached between aviation industry and state on how to organise the production of military aircraft provide the key issue of this book. Thus embracing not only the aircraft firms, but the state agencies and other institutions as well as their changing mutual relationships, the author contributes substantially to the debate

surrounding the nature of the relationship between firms and their institutional environment. The study entails a comparative aspect as well, since it examines the development of firm-state relations both within a democratic political system and a dictatorship. The second key theme of Budrass' substantial work addresses whether a „rationalisation“ movement can be identified in the aviation industry, especially in the later years of the war, and to what extent such a „rationalisation“ can be viewed as a „modernisation“ of the industry. The author examines the varying strategies of aircraft companies responding to alternating armament policies, with respect to innovations, methods of production, and the pursuit of the civil market option as an alternative to the armament market.

The study begins with a detailed analysis of the rapid technological progress within the aviation industry from the beginning of the century. This starting point is motivated and justified because the different technological lines followed by different firms contribute to explain their relative positions during the 1920s, notably concerning Junkers dominant position. Budrass follows the development of this aircraft company after 1918 into one of the largest of its kind. He persuasively combines the analysis of entrepreneurial strategies (e.g. diversification into aircraft engines and co-operation with airline companies) with the influence of exogenous factors.

The camouflaged co-operation between the Reichswehr and the Soviet army until 1924, which led to the (ultimately unsuccessful) establishment of an aircraft factory near Moscow, can be identified as the most important of these exogenous factors. In this combination of different angles, taking account of the interests of the enterprises as well as the state (and during the Third Reich: party) interests, lies the specific strength of the book. This methodological approach is, however, combined with such an enormous amount of detailed information that it is difficult at times to follow the line of argumentation. Budrass' comparison between different aircraft firms after the inflation shows a range of attitudes towards production principles, resulting in distinct positions towards armament policy.

The aircraft producer Rohrbach, e.g., was

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far more prepared to accept the primacy of requirements of production compared with the status of construction. The resulting flexibility rendered his firm at times more attractive to the procurement authorities than others. The book gives equal weight to changes in armament policy, where after 1924 a major reorientation took place: from mere stockpiling of planes the policy changed to securing an industrial base which could easily be geared to mass production when necessary - a conceptual innovation with central relevance for the whole industry. During the last years of the Weimar Republic a system of aircraft armament evolved where several firms were led by state agencies like the army armaments branch („Heereswaffenamt“) or the aviation department of the Reich Ministry of Transport. This system resembled in itself a large firm: The relative autonomy of firms within that armament model should be interpreted, according to Budrass, in terms of different units of the multi-unit structure of a large corporation.

This system was rapidly demolished by the new Nazi government and Goering as minister of aviation (since May 1933) and his deputy, Erhard Milch. What next evolved was a system of planned air armament, combined with the aim to establish extensive over-capacities. This „armament into depth“ in the aircraft industry severely limited entrepreneurial freedom; the bureaucratic dirigism spread to a degree that would not have been conceivable even in the controlled economy of World War I. The expropriation of Junkers at the end of 1934 (pictured in great detail) showed that the whole aviation industry had to live with the reservation of proprietary rights.

The basic strategy of those aircraft producers with R&D capabilities during the years of rearmament was to secure as much technological knowledge as possible, in order to lay the pathway for finding civil markets once the rearmament boom was over. Another important result of Budrass' analysis is that „rationalisation“ in the thirties was by no means an economy-wide process: The manifest hesitation of most of the aircraft producers (with the exception of Henschel) to introduce methods suitable for mass production is explained

by the existence of extensive over-capacities and the unwillingness of the firms to dispense with their flexibility of production. A reliance on mass production meant at the same time reliance on semiskilled labour, which, if withdrawn by labour-managing authorities, could endanger the whole process of production.

The rapid acceleration of air armament had led to a mushrooming bureaucracy, to an overstretch of the financial ability of the Reich to finance the expansion any further, and to reduced efficiency of aircraft production. When, as a consequence, this system of procurement reached a crisis in summer 1937, the armament organisation was restored to the hands of the aircraft companies. What now evolved was a new system of armament „... which was based not on the principles of a planned economy, but on organisational capabilities typical of entrepreneurs“ (p. 473, translated by the reviewer). This is an interesting result, given the parallel development of an expanding state sector in the coal and steel industry.

One of the most intriguing chapters of this study deals with the onset of the Ju 88-Programme. There Budrass successfully tackles the difficult task of analysing the strategies of the aircraft producers and the structural change of the whole aviation industry as an outcome of those diverging strategies. The years until 1941 were mainly shaped by the person of Heinrich Koppenberg, the director of Junkers. He was successful in realizing „economies of scale and scope“ in his firm; however, the repercussions of this success reverberating throughout the rest of the economy (e.g. by reducing the amount of labour available) resulted eventually in another crisis. As a consequence, the system of aircraft production and procurement changed again.

But this time, from the end of 1941 onwards, it saw the „decay of air armament“. Budrass devotes his final 200 pages to dealing with this „decay“ (the implicit paradoxon being that output of aircraft actually rose). This chapter is probably belonging to the most illuminating of the book. There Budrass tackles the strategy of „de-flexibilisation“ and the „demodernisation“ pursued by Milch, which increased the output of aircraft at the price of the destruction of the industrial base. This

chapter again persuasively combines business history with the history of the late Nazi political system, and includes a detailed account of the use of slave labour in the aircraft industry, which made the rise of output possible. Budrass concludes this increase was not due to any consistent strategy of „modernisation“, but mainly to predictable effects of „economies of learning“ when using unskilled or semiskilled labour. Hence, he recommends to abstain entirely (for this time span) from the use of concepts like „modernisation“ or „rationalisation“.

In summary, this book provides essential reading on every aspect of aircraft industry and air armament in Germany during the first half of the century. It is to be hoped that it will stimulate further research and discussion on business history and state-industry relationship of other industrial sectors during the years of the Third Reich.

Michael C. Schneider über Budrass, Lutz: *Flugzeugindustrie und Luftrüstung in Deutschland 1918-1945*. Düsseldorf 1998, in: H-Soz-Kult 25.04.1999.