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Commentary \ **Exhausts to respirators? Experiences in the conversion of production sites help to avoid misleading simplifications**

In the coronavirus crisis, bottlenecks in urgently needed protective equipment are leading to the perception that the conversion of production sites is a 'quick and pragmatic' solution. In his Commentary, Professor Herbert Wulf, founding director of the peace and conflict research institute BICC (1994–2001) warns of such simplifications. In fact, the experiences made in the conversion of the arms industry in the 1990s suggest that industrial conversion processes are both complex and time-consuming and must follow a strategy.

In the Covid-19 crisis, we hear on a daily basis that breathing aids, intensive care beds, personal protective equipment, face masks and all kinds of laboratory equipment are urgently needed. As the stocks of such products are low or not existent and deliveries from abroad, particularly from China, are slow to arrive, governments in many countries, and also in Germany and particularly in the United States, want manufacturers to switch production over to urgently needed devices, parts or simple protective gowns—if necessary by imposing coercive measures. These bottlenecks in equipment greatly exacerbate the Covid-19 crisis, as the situation in Italy but also in the United States shows. This crisis is often associated with a war-like challenge.

How complicated, time-consuming and expensive is it to change production to manufacture the goods needed? What is the current problem? The technical term for such a process of change is conversion. In Germany and other countries, we have a wealth of historical experience with conversion, primarily in the context of the conversion of arms production to the manufacture of civilian products. Before World War II, conversion took place from civilian to military production, and immediately after the War, the process was abruptly reversed.

This radical change cannot, of course, be directly compared with the situation today; after the War, the aim at that time was to supply the population with everyday products

as quickly as possible. The need was so great that companies could hardly do any wrong. They sold their goods anyway.

The experiences with conversion after the end of the Cold War when defence expenditure declined, demand for weapons systems fell, and many companies were faced with the option to curb or even stop production or to manufacture other products, are more interesting for the situation to date. The Bonn International Center for Conversion (BICC) was founded in the early 1990s to study the effectiveness of conversion and to provide advice on a global scale for companies, authorities, international organisations and many others.

From the experiences until the early 2000s, some important factors for today's discussion can be drawn:

First, the **complexity of production**: It is a truism that switching one's production is easier when products are less sophisticated in technological terms. Today, it is relatively easy for a textile manufacturer to switch over to producing protective gowns and simple cloth face masks. However, the production of respirators or even ventilators by a car - or vacuum cleaner manufacturer requires a whole string of technical prerequisites that range from the purchase of materials, the procurement or conversion of machines to the training of employees. Furthermore—at least in the case of more complex products for medical use—the many and varied quality and safety standards in the health sector must also be met. In terms of engineering, this is also possible, but it requires up-front (high) investments and time. Each step in the production of breathing aids is a technological and organisational challenge when the manufacturer does not have any previous relevant experience in this field.

Conclusion: If one wants to take such a step towards conversion, it is necessary to take a close look at which production capacities are sufficiently close to the profiles and requirements of the product to be manufactured.

Second, the **time factor**: Conversion processes are generally not possible from one day to the next. It takes time until the conditions for stable production are in place and until the products can be manufactured in sufficient quantities, as we are currently experiencing in many areas where there is short supply. And even though the demand must be urgently met to save lives, the conversion process usually takes more time than outside observers believe.

Third, **active intervention by the state** is needed, which must send clear signals to companies. It is important to understand that in situations of crisis (as in the 1990s for the defence industry and today for the health sector), the market's adjustment mechanisms take too long. The market does not regulate everything. On the contrary: It is indeed the failure of the market that to date, we are experiencing shortages in different areas. As a consequence, state supportive measures, regulation or, in individual cases, nationalisation are necessary to overcome such bottlenecks. In the 1990s, the US administration under President Clinton deliberately relied on an Office of Economic Adjustment to support the conversion process. This federal agency supported arms manufacturers (such as Boeing that set up a division for trams) not only financially but also with advice. In Germany, there was no such agency. Only the federal state of Bremen created the post of a conversion officer at the Ministry of Economics to support the local arms manufacturers that were experiencing great difficulties. EU subsidies were mostly for the conversion of former military sites but not for the arms industry. Today, if one wants to be successful in the conversion of production capacities or in creating new capacities within a short period of time, it is necessary for state bodies to intervene to coordinate and support these companies.

Fourth, the often-quoted **conflict of interests between employers and employees in conversion processes** only plays a marginal role in the context of the coronavirus crisis. With the support of the Job Office ('furlough'), the majority of German employers are currently intent on securing jobs and not to make employees redundant so that they are

operational again as soon as the crisis is over. Employees are unlikely to refuse such initiatives.

On the contrary, past experience shows that in the conversion processes of the 1990s, the "working groups on alternative production" that were initiated by works councils and unions in Great Britain and Germany, themselves offered suggestions of what could be done alternatively with the machinery and the qualifications of the staff. Many of these initiatives failed, however, for two reasons: For one, the management in many companies resisted the idea that the workforce would now have a say in production. This was essentially an ideological debate that should be insignificant today. For the other, many of the products that they suggested were not totally new and offered only uncertain perspectives on the market; in other words, these products were already offered by other manufacturers, which meant that managers were risking a lot to gain corresponding market shares.

This problem does not exist in the present situation. The demand for products that are manufactured by alternative means is huge and if, as announced by the German federal government, the companies are offered sufficient sales guarantees, then the entrepreneurial risk for such a conversion is limited.

Fifth, another experience from the discussion on defence conversion is worth considering: In times of crisis, it is expedient to prepare for the next crisis. It has been shown time and again: As a rule, crises are not predicted in time; there is a lack of foresight, such as having sufficient stocks or aligning production capacities in the long run. We must, therefore, ask fundamental questions about global dependencies in production- and supply chains to be properly prepared for the next crisis, which is bound to come.