THE IMPACT, TIMES AND RESILIENCE OF OBJECTS

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The impact, times, and resilience of objects

Bringing together materiality studies and business history in an empirical exploration of a cutlery factory

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ON THIS PAPER

How do objects influence a business and the possibilities for change? In light of the current focus on sustainability, I have found it relevant to republish this article, because it shows our dependence on the material world and adds to our understanding of the entanglement of humans and non-humans. In business as well as elsewhere.

When the article was published in Danish in 2017, my aim was to bridge between material studies and business history and empirically bring more flesh and blood to the debate about non-human actors. I was a bit fed up with debates often centred around philosophical considerations, e.g., about the difference between a thing and an object, and not least with discussions about the relevance of taking seriously non-human actors. A debate that tended to divide into two camps with very little mutual understanding. Instead, I wanted to show empirically what an eye for non-human actors can bring to business history. Regardless of view on the status (the 'actorness') of non-human actors, what would an analysis with an outset in the material world instead of humans bring to the table?

Concretely, I explored the history of a medium-sized cutlery factory from the perspective of its products, machinery, and raw materials and tried to investigate what role these things played in the history of the factory. What came out of the experiment was a processual view on business where the focus is more on small everyday changes than on conscious strategic decisions. On the many small everyday changes that are decisive for a business to flourish or falter. In that way, the article added to the literature on business as a mundane everyday activity constantly in the making, as a response to external changes but also as a response to slow internal changes like machinery becoming worn out.

KEYWORDS

Materiality, temporality, non-human actors, business history, slow innovation

ABSTRACT

Instead of using a more traditional business history approach, this working paper analyses the history of the company Alfenide Ltd. (referred to as DFA) focusing on its products (spoons), machinery (presses), and material (stainless steel). DFA was a typical Danish family-owned, medium-sized company that existed for almost 100 years, from 1880 to 1972. However, it failed to adapt when international competition intensified in the decades after World War II. Many Danes have used DFA products in restaurants, on ferries, and in their homes. In my analysis, I consider the materiality of the enterprise to investigate whether focusing on the *doing* of objects inspired by *the material turn* can supplement more common analytical strategies and models of explanation in business history. The history of DFA shows that a focus on materiality supplements more traditional approaches by clarifying how the many daily micro-processes that involve both human and non-human actors are essential in determining a company's success or failure. Instead of a story of DFA's overall strategy and deliberate decision-making, the history of DFA told from the perspective of the products, machinery, and raw material becomes an account of the messy everyday, where changes happen slowly over a longer period, and where it can be difficult to separate one day from the next.

WORKING PAPER

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Can one write business history by focusing on material objects? I decided to investigate this question in my research on Alfenide Ltd., a Danish company consisting of Dansk Forniklings Anstalt (Danish Nickel-Plating Institute) and Dansk Forsølvnings Anstalt (Danish Silver-Plating Institute) (jointly, DFA). DFA was a typical medium-sized, family-owned firm in business for almost 100 years, from 1880 to 1972, and it produced cutlery, among other objects. Today, few have ever heard of the factory, but historically, many have eaten with its products. The shipping company DFDS and many restaurants were among DFA's customers. Anyone who sailed across the Great Belt on the ferry Halsskov from

1956 or took a trip to Oslo on the ferry Princess Margrethe from 1968 ate with cutlery from DFA.[1] Many Danes have thus used DFA's products while remaining unaware of the company.

Business historians have often been concerned with analysing an enterprise's story from an economic and managerial perspective. In recent years, this concern has been supplemented with a focus on narratives.[2] Objects, however, have generally not been central to the analysis and have been left to historians of technology who study machinery or to design historians who study products.[3] However, what would happen if the history of enterprises was analysed by focusing on material actors, such as machines and products, rather than based on economic indicators, strategies, and outstanding leaders? In other words, can a focus on the *doing* of objects[4] inspired by *the material turn* complement the usual analysis strategies and explanatory models in business history? I began with those questions in mind when I started researching the history of DFA and the remaining records and artefacts. In this way, I deliberately sought objects with an extraordinary impact on the company's history.

After my preliminary reading of the sources, three types of material objects stood out. The first was the products, especially the spoons. The second was the production machines, particularly the presses, while the third was the raw materials, especially stainless steel. Therefore, I chose to put these objects at the centre of my study instead of telling the company's story based on the actors a historian would typically centre, such as the owner-managers and the company's award-winning industrial designer, Aage Helbig Hansen. As a result, in this article, I tell the company's story from four angles. First, I present a chronological sequence of events. Thereafter, I first discuss the company's spoons, then the presses, and finally the stainless steel. It would have been possible to focus on other material actors, but this choice was not accidental. DFA produced far more types of spoons than forks; the presses were the factory's most expensive and vital machines; and stainless steel became the dominant raw material in the post-war period.

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[1] Cf. brochure for silver stain and stainless-steel services for marine use. The history of A/S Alfenide is based on a then-privately owned archive that since has been given to Designmuseum Danmark and the National Archives. The latter already had archives from the company (1208 Dansk Forsølvningsanstalt). Part of the material at the National Archives has also been reviewed but does not form the basis of the text presented here.

[2] See Per H. Hansen: 'Organizational Culture and Organizational Change: The Transformation of Savings Banks in Denmark, 1965-1990', *Enterprise & Society* 8 (4), 2007 p. 920-953.

[3] See Ole Hyldtoft: *Teknologiske forandringer i dansk industri 1870-1896*, Dansk Industri efter 1870 bind 4, Odense: Odense Universitetsforlag 1996; Ole Hyldtoft and Hans Chr. Johansen: *Teknologiske forandringer i dansk industri 1896-1972*, Dansk Industri efter 1870 bind 7, Odense: Syddansk Universitetsforlag 2005; Carl-Axel Nilsson: *Forbrug og produktion af industrivarer*, Dansk Industri efter 1870 bind 2, Odense Universitetsforlag 1989; Thomas Dickson: *Dansk Design*, København: Gyldendal 2009.

[4] See Tine Damsholt and Dorthe Gert Simonsen: 'Materialiseringer. Processer, relationer og performativitet', Tine Damsholt, Dorthe Gert Simonsen and Camilla Mordhorst (ed.): *Materialiseringer. Nye perspektiver på materialitet og kulturanalyse*, Århus: Aarhus Universitetsforlag 2009 p. 9-38.

Alfenide Ltd.

A traditional chronological story about the company can be told as follows: In 1880, the Danish Nickel-Plating Institute was founded in Copenhagen. After some years, the company, which was then nicknamed Nikkelmøllen (The Nickel Mill), also began to plate its products using silver. The owner-manager, Hakon Møller, built up a permanent customer segment of hotels, restaurants, shipping companies, hospitals, and similar institutions by producing durable cutlery capable of withstanding heavy usage. In 1899, the firm was transformed into the limited liability company Alfenide Ltd., consisting of the Danish Nickel-Plating Institute and the Danish Silver-Plating Institute, abbreviated as DFA. The company's purpose was to manufacture metal goods, to silver-plate and nickel-plate, and to conduct all related manufacture and trade. In 1902, the company was sold to Johan Hansen, who handed over the management to his son, who later passed it onto one of Johan Hansen's two grandsons.

DFA manufactured a range of cutlery and corpus used in hotels, ships, and other business customers. However, the products were also sold through jewellers and hardware dealers for use in private homes. Corpus includes objects such as pitchers and bowls for which the main component (corpus) is made of a shaped metal plate.[5] In an anniversary publication from 1955, a photo series showed the production of a silver coffee pot (corpus) and a tablespoon made of stainless steel (cutlery). The photos of the spoon production showed the whole process, from the cutting of a steel plate until the spoon was checked for errors and ready for sale. The spoon was made according to the Dansk Standard Nr. 10 (Danish Standard No. 10) design, which was, in fact, developed by DFA competitor Einar Cohr in collaboration with a hospital inspector. The design was explicitly intended for institutions such as hospitals and represented an early example of a Danish standard as well as a typical product from DFA. The two products, the coffee pot and the spoon, represented the breadth of the factory's production and showed a focus on both aesthetics and practical use.

The company expanded over the years, and by its 75th anniversary in 1955, it employed approximately 130 individuals. Its products won medals at several exhibitions, not least after Johan Hansen's second grandson, Aage Helbig Hansen, became the designer and advertising manager in 1939. Later, he joined the board of directors.[6]

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[5] See *Ordbog over det Danske Sprog*.

[6] Cf. the anniversary publication A/S Alfenide: *75 Aars Jubilæum. A/S Alfenide • Dansk Forsølvnings Anstalt. Specialfabrik for fremstilling af bordservicer i sølvplet og rustfrit staal*, København: A/S Alfenide 1955; two texts about the history of DFA that were written in connection to the company's 60th anniversary in 1940 and 75th anniversary in 1955 (according to a note on the text, the latter was written by Oscar Møller); an unpublished description of the history of the company with the title 'Møllen', probably from 1955; *Den gamle fabrik, et causeri* by Bendix Bech-Thostrup (probably from 1955); press material from the 75th anniversary and *Love for Aktieselskabet Alfenide* from May 31 1899 changed April 25 1919. Regarding the cutlery design Dansk Standard (Danish Standard), see *Nyt tidsskrift for Kunstindustri* 8, 1929, p.123 and Meddelelse fra Dansk

In 1972, the company was terminated. The artisanal family business was unable to compete with new mass-produced cutlery in the context of growing competition in an international market. For several years, management had attempted to make the company profitable by reducing the variety of products, raising prices, narrowing the customer segment, and developing new goods. Still, liquidity was a problem, hindering necessary investments in new machinery.[7]

This story resonates with the history of thousands of other small- and medium-sized enterprises and is just one example of a general development in the Danish industry. In the post-war period, some enterprises managed to increase their productivity through automation and performed well in an increasingly liberalised international market, while others did not survive.[8] In the following section, I examine DFA's history as a story that illustrates significant developments in the Danish industry in the almost 100 years the company existed.

Figure 1: An advertisement from 1948 emphasised that cutlery from DFA went through up to 40 work processes demonstrating a focus on producing high-quality products. However, the customers were not always willing to pay the extra price compared to cheaper (imported) cutlery on the market. In the photo, extra material is cut off before the bowl is formed. Photo in private possession.

'Really [a spoon] to eat with'

As mentioned above, inspired by *the material turn,* I focus on material actors and seek the *doing* of objects in the history of DFA. The following analysis of one of the factory's products, spoons, is a result of this approach. I frame this research according to actor-network theory, which emphasises *non-human actors* and focuses on unpretentious objects that are rarely noticed in everyday life. While the term *non-human actors* is disputed, here, it covers the perception that objects *do*

Standardiseringsraad, *Ingeniøren* 7, 1931, p. 83-87. Cf. also Karin Cohr Lützen: *Arvesølvet. Et familiefirmas storhed og fald*. København: Gyldendal 2016.

[7] See letter to customer March 10, 1972; liquidation account July 1974; minutes of board meetings and Monday meetings (executive board meetings) from the mid-1960s; and material from Foreningen af Kniv og Staalbestikfabrikanter i Danmark (The Association of Knife and Steel Cutlery Producers in Denmark) from the 1950s and 1960s. See also note 30.

[8] See Hyldtoft and Johansen: *Teknologiske forandringer*.

something in the sense that they make a difference compared to what would have happened otherwise.

Different authors have formulated this point in different ways. In the early 1980s, the historian of technology Ruth Schwartz Cowan described tools as objects that make specific actions possible and others impossible. Thus, our tools help define and limit how human beings can act. Her research revolved around household technology and its correlation with the distribution of housework among family members.[9] The anthropologist Daniel Miller, who studies objects and consumption and is one of the leading figures in *the material turn*, has stated that 'things do things to us, and not just the things we want them to do'.[10] Generally, the theorists and practitioners associated with or inspired by *the material turn* have been interested in '*what materiality does in the* world and *how materiality does'*.[11] Perhaps most famously, the sociologist Bruno Latour has written about heavy hotel keyrings, door closers, seatbelt alarms, and other material actors that we rarely notice. One of his suggestions for analysis is to write down the work that other human and material actors would have to do if these objects did not exist.[12]

In analysing the spoons at DFA, I began by asking whether the spoons that the company produced worked. The question may seem strange; however, inspired by Marianne de Laet and Annemarie Mols' analysis of the *fluidity* of a water pump, I would argue that some of the problems that led to the rise and fall of DFA were due to issues with the products, here exemplified by the spoon. A spoon is not just a spoon: it has fluid boundaries and must operate in many ways in order to contribute to a successful business. The concept of *fluidity* proposes that there are 'many grades and shades of "working"; there are adaptations and variants'. Therefore, the question of whether an object like a spoon works is not a binary question that can be answered with a simple yes or no.[13]

First, it should be possible to use the spoons that DFA produced as spoons. They should not be too soft, as was the problem with the coffee spoons based on DFA's design no. 65,[14] and they should

[9] Ruth Schwartz Cowan*: More Work for Mother. The Ironies of the Household Technology from the Open Hearth to the Microwave*, USA: Basic Books 1983 p. 9.
[10] Daniel Miller: *Stuff*, Cambridge: Polity 2010 p. 94.
[11] Damsholt and Simonsen: *Materialiseringer* p. 13.
[12] Bruno Latour: 'Technology is society made durable', John Law (ed.): *A Sociology of Monsters: Essays on Power, Technology and Domination*, London and New York: Routledge 1991 pp. 103-131; Jim Johnson (pseudonym for Bruno Latour): 'Mixing Humans and Nonhumans Together: The Sociology of a Door-Closer', *Social Problems* 35 (3), 1988 pp. 298-310; Bruno Latour: 'Where Are the Missing Masses? The Sociology of a Few Mundane Artifacts', in Wiebe E. Bijker and John Law (ed.): *Shaping Technology/Building Society: Studies in Sociotechnical Change*, Cambridge/Massachusetts: MIT Press 1992 pp. 225-258. See also Edwin Sayes: 'Actor-Network Theory and methodology: Just what does it mean to say nonhumans have agency?', *Social Studies of Science*, 44 (1), 2014 pp. 134-149.
[13] Marianne de Laet Hotels and Annemarie Mol: 'The Zimbabwe Bush Pump: Mechanics of a Fluid Technology', *Social Studies of Science* 30 (2), 2000, pp. 225-263. Quote p. 225.
[14] Letter to DFA from representative Sv. Andreasen February 10, 1967.

not have a shape that makes eating difficult, like that of competitor Arne Jacobsen's now-famous cutlery designed for the SAS hotel in Copenhagen. The hotel reportedly stopped using his spoons because the guests complained of bruises on their fingers and meat and flour buns rolling off the soupspoon.[15] Not all modern cutlery that entered the market in the 1950s was easy to eat with, and using it was certainly different than using more traditional cutlery.

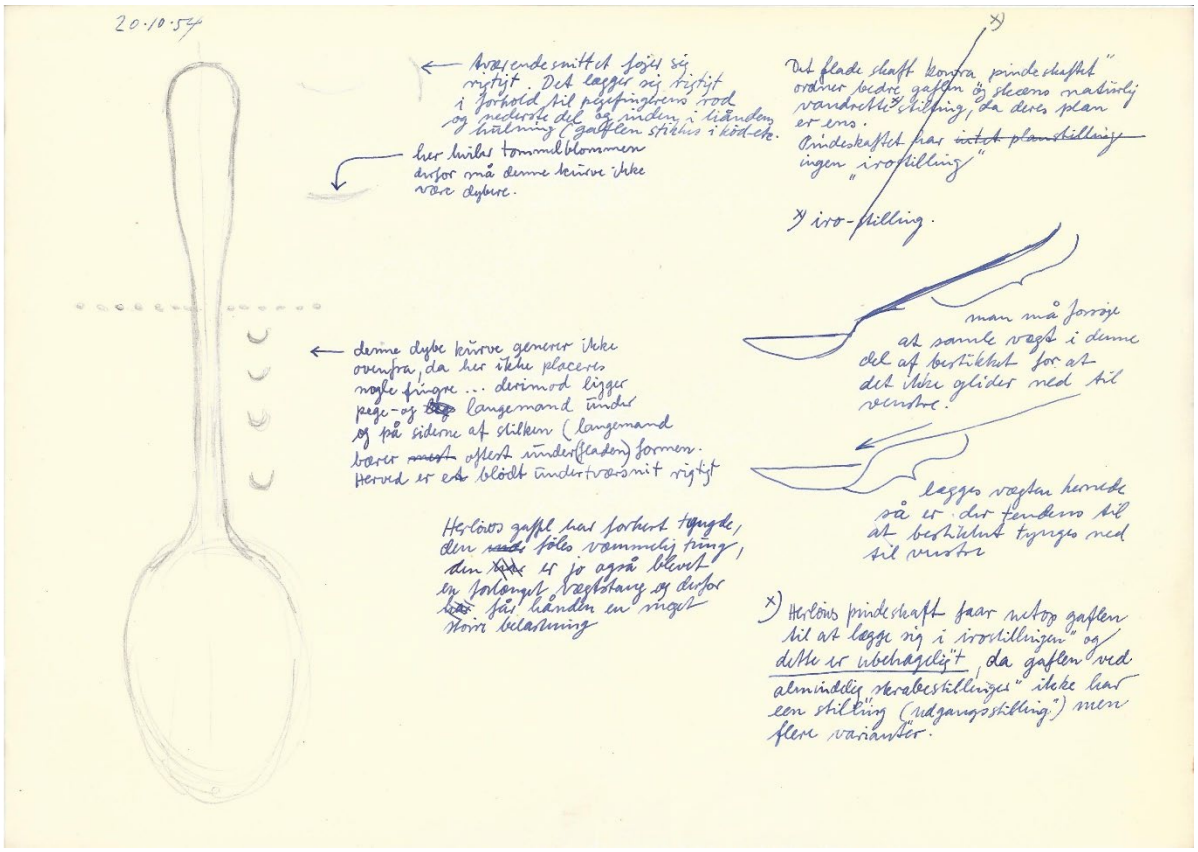

Figure 2: Many thoughts were given regarding the design of cutlery from DFA. The designer Aage Helbig Hansen wanted to create cutlery that was not only nice looking but that also felt right in the hand. Think about the difference between eating with different kinds of spoons. Is the weight right? How does it feel? Is it easy to transport the food from the teller to your mouth? Drawing from Aage Helbig Hansen in private possession.

Today, products, packaging, photos, drawings, and examples of prototypes made of cardboard or metal from DFA are preserved in archives and in private possession, even prototypes of cutlery that was never put into production. In this way, it is possible to observe designer Aage Helbig Hansen's experiments with different shapes of the handle and the bowl of the spoons. Hansen sought to create cutlery that felt good to use, and he cared deeply about the relationship between the cutlery and its user. Helbig Hansen's drawings show, for example, that he was concerned with how the cutlery worked with the hand, whether the gravy could lie on the fork, how the fork and

[15] Two undated clippings from the newspaper B.T. with the headlines 'Pas på næsen' and 'Skån os for blå mærker'. The latter refers to a dining experience for B.T.'s employee on August 31. The year is probably in the early 1950s.

plate played together, and similar concerns. In a drawing from 1965, he explicitly wrote: 'Can't you shape a completely new and natural cutlery?'[16]

Whether the designer himself was satisfied with the results in this direction is unknown, but the brochures for DFA often state that the products were designed for use. For example, a 1955 brochure for Jubilé cutlery wrote the following:

> To judge and assess JUBILÉ 75, you must take every single part in the hand. You will then feel how ingeniously it is designed in size, weight distribution and lines – it is shaped to lie well in hand, for it has its centre of gravity distributed right, and therefore it seems lighter than its weight. [...] The spoon has a pleasant rounding and depth, lies naturally in hand, does not cut into the fingers, and the thumb rests and supports in a nice and natural way.[17]

DFA advertisements also claimed that the company's stainless-steel cutlery was easy to clean. Among DFA's major customers were hospitals and nursing homes, and for such customers, it was crucial that the spoons were hygienic and easily cleaned. Of course, individual housewives also appreciated this. A brochure for Margrethe cutlery also highlighted another DFA selling point: 'You should not think about polishing; it is beautiful, as long as you dry it well after washing'.[18]

Spoons should also be durable and peel-resistant. In general, DFA produced high-quality products, and some complaints the seller received regarding stained and peeling spoons were ultimately due to customers using the spoons incorrectly, for example, by washing silver-plated spoons with dishwashing detergent. Though DFA made efforts to educate its customers, either the information did not reach them, or it was not read and understood. Dishwashers and new forms of dishwashing detergent changed the network of actors around the spoons such that the spoons no longer worked despite the quality of production. This was a problem for a company where quality played a major role as both part of their self-understanding and as a key selling point.[19]

The spoon also had to function in relation to the norms and fashions of the end users. Although stainless steel may have been fashionable in certain circles, spoons stamped with 'stainless steel' were not ideal for hotels that wanted their customers to imagine they were eating with silver spoons. This was a problem in relation to cutlery no. 65. Hotel guests sometimes debated whether

[16] The quote is from a drawing dated May 28, 1965.
[17] Brochure for Jubilé 75 with a price list from February 1958.
[18] The quote is from a brochure containing a price list from November 1954.
[19] Cf. letters from Sv. Andreasen March 29 and July 26, 1971.

they were eating with silver cutlery because, in certain lighting, it could be difficult to tell the difference.[20]

Fashion not only concerns materials, but also appearance. A 1955 anniversary publication stated that the company's design was characterised by 'a healthy balance between the unsightly but marketable and the artistic but unsellable'. This balancing act was called 'good applied art'.[21] In this way, DFA was a typical artisanal enterprise that generally followed the changing fashions ranging from *Skønvirke* (a Nordic variant of jugendstil/arts and craft/art nouveau) to functionalism.

Quality normally has a positive association. However, DFA's focus on high-quality cutlery was not always an advantage for the company. For example, when DFA sold cutlery for use in the Legoland amusement park, so much cutlery was stolen from the cafeteria in a single season that the park had to change to disposable tableware and, subsequently, demanded cheaper cutlery.[22] However, DFA continued to emphasise quality, and the term remained a key concept in their marketing, anniversary stories, and similar venues. For example, DFA wrote several letters in the late 1950s to Centralforeningen for Danmarks Isenkræmmere (The Central Association for Denmark's Hardware Dealers), outraged about how hardware dealers using the association's quality mark, the arrow label,[23] 'met more and more stacked goods of quite inappropriate quality'. In the letters, DFA referred to how thin-tinned canned goods had previously destroyed the sales of high-quality canned goods and how two-tower silver-plated cutlery had done irreparable damage to the reputation of silver-plated cutlery (high-quality silverware was stamped with three towers, the so-called Copenhagen mark, guaranteeing a certain silver purity, while silverware stamped with two towers was of lower quality). DFA feared that the same loss of quality was happening in the case of stainless steel. Therefore, they wrote the following in a letter to the association:

> At DFA, we still try to deliver quality goods, but one day we will also be forced to join the game and participate in the general dissolution of the concept of quality <u>if</u> we are not competently supported to keep the quality high. [...] You must understand that prima stainless steel costs approximately DKK 11 per kilo in the quality we use, whereas you can get steel in poor qualities that costs only about half. When Cohr's and our goods weigh in, it is easy to understand that we can never compete.[24]

[20] Letter from Sv. Andreasen on April 16, 1969.
[21] A/S Alfenide: *75 Aars Jubilæum*.
[22] Letter from Sv. Andreasen on August 19 and November 20, 1970, and February 18 and September 10, 1971.
[23] The arrow label (Pilmærket), the traditional alchemists' symbol for iron, was introduced by Centralforeningen for Danmarks Isenkræmmere in the 1920s and marketed as a quality stamp, cf. Thøger I. Pedersen: 300 år med godt kram. Isenkram og isenkræmmere 1693 – 10. juni – 1993. Danmarks Isenkræmmerforening 1993 pp. 61-62.
[24] Letter to the Centralforeningen from 1957.

A DFA spoon not only had to have the right quality, it also had to last the right amount of time on the market. It could not be part of an assortment for so long that it became unsellable, but it also could not go out of production or be changed so quickly that customers could not supplement their cutlery set. Advertisements for the Pil cutlery series claimed it had seven virtues: it was imperishable, did not require polishing, was inexpensive, came with a device that created order in the cutlery drawer, had no loose knife blades, had an appearance described as 'the beauty of form and steel', and finally, it would never go out of production. The cutlery set included up to 85 parts, including special spoons for foods such as jam, mustard, ragout, and fried eggs. In total, there were no fewer than 20 different spoons. Therefore, the company had to continue to produce many unique items to keep the full set available for purchase in the future.[25]

Another cutlery design, the Perle, certainly did not have the correct market duration. In the late 1960s, DFA ended the line almost before production had begun, and before any customers had all parts delivered. As a result, DFA's salesperson complained that the company risked its reputation. He also pointed to the problem of reduced assortment when parts were removed from another cutlery series, and he was unhappy about changes in individual cutlery products, such as when the form of the knife in yet another cutlery design was slightly modified. Customers who supplemented their cutlery over a longer period of time were not pleased with such changes. The duration of the products was a key parameter for them.[26]

The spoon should also function in the production process. Spoons made of stainless steel appeared on the market in the early 1930s, which severely affected the machinery at DFA. Only after investment into new presses did the production of cutlery begin to work again. Generally, in the development of new cutlery designs, there was a continued consideration of what was possible in production. Speed was also a factor. DFA had to be able to produce and deliver spoons relatively quickly after orders were placed so that customers did not lose patience and cancel their orders. In fact, several times, the salesperson noted problems with delivery times, especially after being confronted by customers who claimed that competitors such as Cohr were able to deliver quickly and without limits.[27]

To work, the spoon also had to be marketed. DFA developed a special goods vehicle to exhibit the assortment, and the company worked with brochures, the appearance of the packaging, as well as advertising displays for shop windows. If one visited the hardware dealer Henrik Fog in Gentofte

[25] See advertising leaflet for Pil 11 as well as a letter to the hardware dealers in 1953 and an advertisement from 1953.
[26] See the letters from Sv. Andreasen on October 14, 1968, and April 3, 1970.
[27] See the letter from the representative November 15, 1945 signed 'junior' (probably Aage Helbig Hansen). See also his drawings of cutlery.

in the spring of 1952, an oversized version of the tablespoon from the Pil cutlery series could be seen in the window. Such giant spoons were used to draw attention to new cutlery, and DFA had prepared all the material for the exhibition in the store's window.[28]

Finally, the spoon also needed the right price compared to other products on the market. In the factory's final years, the salesperson repeatedly asked for cheaper cutlery in the assortment. His wish was not necessarily easily met because the price also had to be right in relation to the price of production. When DFA experienced financial problems in 1964, they considered the variety of their products to decide what should be taken out of production and asked themselves questions such as the following: What did the individual goods cost to produce? Should the jewellers be discontinued as customers? Should the hardware dealers? Of the 1,886 unique products in the assortment at the time, only 884 had been sold at all in 1963, and of those, far fewer than half had been sold in high numbers. During normal production, these products could not break even within a year. Only five unique products had sold over 10,000 pieces. Naturally, having production expenses that were higher than customer prices did not work in the long run.[29]

As a result of the grave financial situation, the assortment of unique pieces was reduced, prices were increased, the travelling representative who visited the jewellers was terminated, workflows were examined, and the development of new products was initiated. Finally, the design of a new, inexpensive cutlery series made of stainless steel was also introduced. The new cutlery was intended for use by hotels, and by the end of 1966, it had actually sold well to restaurants and other business customers, but not at the hardware dealers, as the range within the collection was too small for private consumers. Consideration was given to expanding the range of products within the cutlery series and investing in new cutlery tools if the salesperson thought there would be sufficient interest among the customers. However, in his opinion, DFA was unable to compete with the mass of cheap imported cutlery that was now on the Danish market.[30]

Overall, framing the story of DFA through an exploration of the spoon shows that the history of a business's products is more complex than is usually evident from the business history literature. The spoons at DFA were part of a complex network of both human and non-human actors, and they had to work in many different ways in order to be successful. It was not enough with a well-reputed designer who cared about how the spoons functioned in use and made designs according to the

[28] See the letter to hardware dealers from 1953, A/S Alfenide: *75 Aars Jubilæum* as well as photos of shop windows and sketches for advertisements.
[29] See the sales statement from June 22, 1964; the minutes of the board meeting from June 29, 1965; and the letter from Sv. Andreasen on December 15, 1966. See also note 30.
[30] See the minutes from the Monday meetings from September 29, October 5, October 12, and October 26, 1964; the report to the board of directors from October 8, 1964; the investment plan for the purchase of machinery (available at the December 7, 1964 meeting); the board meeting minutes June 6, 1967; and the letters from Sv. Andreasen June 14, 1967, and July 20, 1969.

fashion of the time. The spoons also had to function in the production process, in the market, with customers, and in relation to new developments, such as new dishwashing detergents.

'A very sensitive press'

For DFA's spoons to succeed, there had to be appropriate production machinery available. The following story about DFA centres on one such machine type: the presses. Presses are machines that exert pressure. They are divided into hydraulic and mechanical presses, and the latter can be further divided into a wide range of types, of which the excenter press is the most common. The types reflect different ways of constructing presses to achieve greater or lesser pressure.[31]

The presses at DFA were mainly used to shape metals. These machines were so important in production that an entire department at the factory in the post-war period was called the press house. Many different types of presses were located in this 55-metre-long hall. For example, a large toggle press with a pressure of 600 tonnes was used to emboss cutlery, while in the smaller excenter presses, a pressure of as low as 15 tonnes could be used, for example, for the lighter carving of the spoon bowls. A 250-tonne friction screw press was used for pre-pressing and intermediate pressure and, in some cases, embossing, and yet another type of press, a drawing press, was used to draw up the corpus. In general, these machines were used for a wide variety of operations, and the press department, which also had several other machines, such as a milling machine, performed the tasks of pressing, embossing, rolling, pulling, and carving in order to change a sheet of metal into a product.[32]

At DFA, the presses are an example of objects that could be part of the company for decades. Among other factors, this was because they were major investments and were often heavy and difficult to move. Along with the relatively large space requirements, their immobility meant that they affected and were affected by the company's physical space. In the years around 1900, DFA was located in Købmagergade, in the middle of Copenhagen. At these premises, there was a rather limited machine stock, including a single crank press, as the rooms were too small to accommodate more and larger machines. The limited number of machines meant that the cutlery produced was limited to certain types made almost as handwork. The conditions were later described as being like those in a large silversmith workshop. Around 1906, the factory expanded, and more machinery was accommodated, including a 160-tonne friction press, enabling the company to manufacture more

[31] www.denstoredanske.dk: presse, visited December 4, 2014.
[32] Cf. 'Den røde Traad gennem D.F.A.' from August 25, 1944 (written by Oscar Møller) and A/S Alfenide: *75 Aars Jubilæum*.

cutlery and perform pressed work (corpus) on a larger scale. It was now possible to make cutlery from scratch and rationalise its production.[33]

In the 1920s, space conditions became limited again, and in 1929, the company moved to Frederiksberg. Several competitors closed during the economic crisis at that time, and therefore, it was possible for DFA to buy machines and tools at reasonable prices. This meant that only some of the existing machines were relocated to the new premises. The pride of the factory, the great friction press, was wearing out, overworked by the incipient manufacture of steel cutlery.[34]

The same year DFA moved, its competitor, Cohr, advertised that it had invested in a new press. This shows how important the presses were not only in the daily production processes, but also in the mindset and self-representation of companies producing cutlery, corpus, and similar objects.[35] However, the appearance of the presses in advertising was also an expression of the machine enthusiasm of the time. When a new applied art magazine appeared in 1928, it soon ran an article about another of DFA's competitors, Georg Jensen's silversmith. This article stated that an applied art object should be cheap:

> To reach this result, we must get help from our best friend, *the machine*. Despite the enormous knowledge and interaction with machines of our time, we stand only at the beginning; for the artist, who must necessarily create the thing, does not know the machine sufficiently yet. One thing is a given: You *cannot* imitate the old handicraft when you want to use the machine. That is what the manufacturers thought, and then we got that deluge of machine monstrosities that, for a time, almost flooded everything. No, the machine is more demanding than it looks. It requires the most extensive knowledge of its nature and technique; yes, more than that, it requires such an understanding and empathy on the part of the artist that the great machine hall, with the whirling presses and spinning wheels, exerts an inspiring influence equal to the silence and poetry of the small, low-ceilinged workshop, where the master sat bent over his work with all his spinning tools scattered around him. Only then have we tamed the machine and prevented it from making itself master of us.[36]

In 1933, DFA invested in a new large press, a 600-tonne, toggle press at a cost of DKK 24,000, which was later described as a very sensitive press that required users to acclimate to it. However, despite

[33] Cf. note 6.
[34] Cf. note 6.
[35] Advertising for Cohr from August 1929, presumably from *Guldsmedebladet*.
[36] Thorolf Møller: 'Erfaringer fra Georg Jensens Sølvsmedie, især om fremmed skik og brug', *Nyt tidsskrift for Kunstindustri* 5, 1928, pp. 89-95.

many expensive repairs, it was useful for many years. For example, as early as 1941, DFA had to pay almost DKK 10,000 for partial renewal of the press. Generally, the ever-increasing demand for stainless steel goods and the desire to manufacture spoons and forks in stainless steel in a satisfactory way led to new investments in the press.

In the mid-1930s, the company purchased a pair of excenter presses, and in 1935, the total value of DFA's machinery and inventory account peaked at DKK 90,862, which is equivalent to just over DKK 3 million today. In 1942, investments were made in a new friction press for use in pressing cutlery. The press was purchased from Danish Press Factory Ltd., a company specialising in mechanical presses for use in mass production. DFA continued to produce more and more stainless-steel items, which meant that a stronger press was soon needed. Therefore, DFA invested in an 800-tonne American toggle press from Bliss as well as a new 225-tonne drawing press in 1949, not least because it was thought that the risk of production stoppages due to breakdowns of the existing presses had become too great. The large new press was not easy to install; it required both an expansion of the press hall and the casting of a new foundation because the press alone weighed 25 tonnes. In total, the cost of machinery in 1949 was high. As much as DKK 245,000 was spent that year on new machines, motors, and electrical installations, and by the end of the year, the value of machines and equipment again peaked with an accounting value of DKK 194,553, equivalent to almost DKK 4 million today. A single 100-tonne press was purchased in 1954, but in general, the Bliss press became the culmination of the factory's mechanical development, which had begun with a single crank press and a small steam engine providing power to grinding machines and other smaller machines.[37]

In the mid-1950s, the factory's machinery was heralded as large and modern, but this reputation did not remain a reality for long. A decade later, Fabrikstilsynet (the public factory inspectorate) announced that DFA's excenter presses would be illegal starting in 1973. In fact, DFA now possessed outdated machinery. The company applied for an exemption and began determining the cost of changing existing machines and acquiring new presses. However, these investments were never made.[38]

Overall, many plans were made for the purchase of new machinery in the mid-1960s. A rescue plan for the financially distressed company, including a machining plan, was discussed in 1964. The

[37] See note 6, lists of investments in machinery in the period from 1902-1949 and specifications of machines and inventory in the accounts. Regarding Dansk Pressefabrik, see, E.K. Henriksen: 'Jernindustriens Arbejdsmaskiner', *Ingeniøren*, 4.1.1939 and Åge Schiott: *Dansk Pressefabrik Aktieselskab 1 June 1918-1943*, Copenhagen: Dansk Pressefabrik 1943.

[38] See 'Servicer i Sølvplet og rustfrit Staal til Hoteller – Restaurationer – Rederier og Institutioner' (Services in Silver Stain and Stainless Steel for Hotels – Restaurants – Shipping and Institutions) and Monday meeting reports from October 24, 1964 and January 23, 1967.

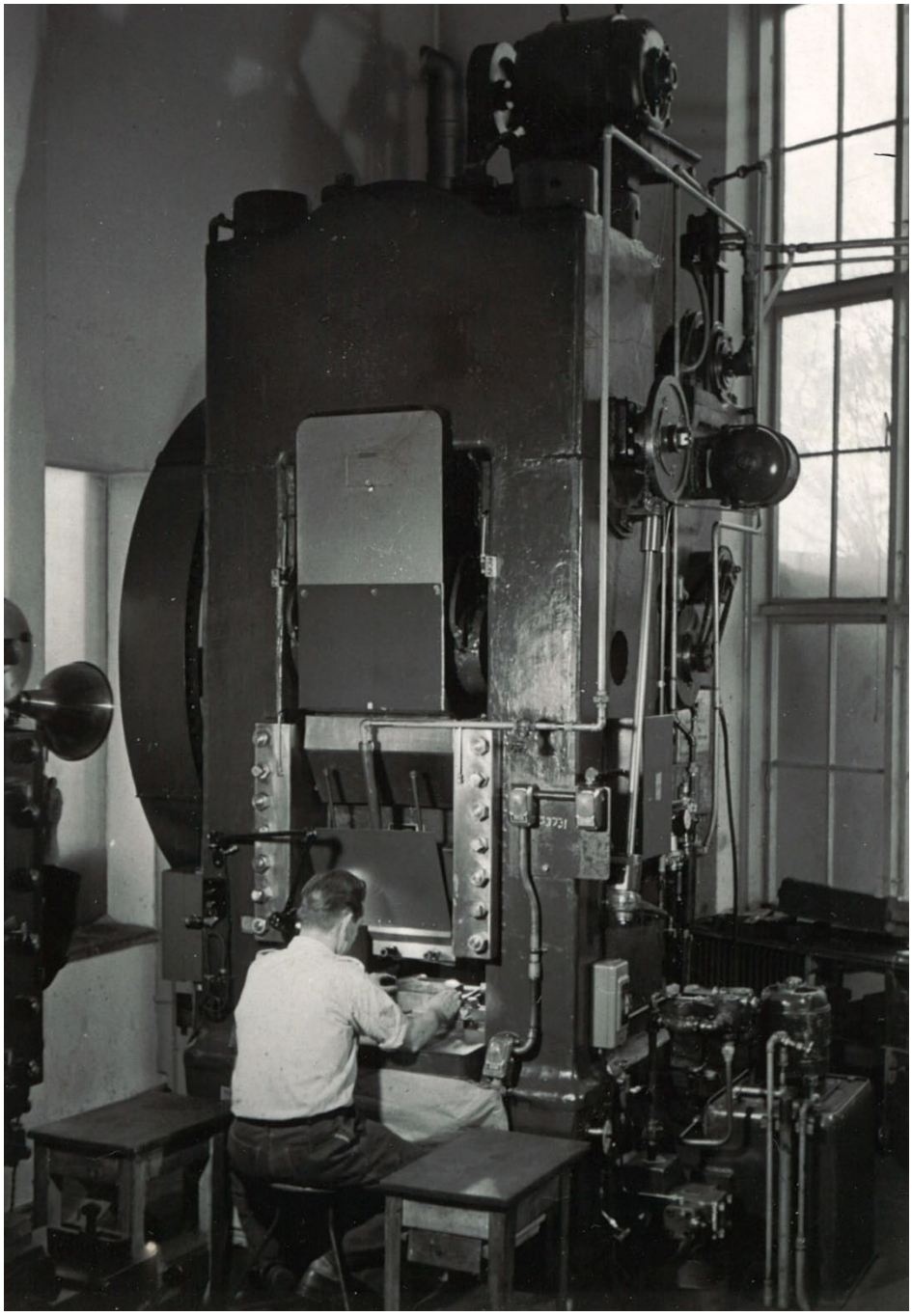

Figure 3: The presses were among the most important machines at DFA, but the revival of the hard stainless steel led to the decline of the old ones and demanded new models. The massive toggle press from Bliss was a major investment and the pride of the factory. At the jubilee in 1955, it was described as a gigantic press bought with the purpose of producing cutlery in stainless steel. Photo in private possession.

plan included proposals to replace old, end-of-life machines with new machinery and to supplement existing machinery with new types of productivity-enhancing machines. The machines in the plan included three new presses: a drawing press, a friction press, and a swing press. However, the problem was that investment in new machinery was difficult when liquidity was tight. It was estimated that new machines would cost about DKK 600,000, but management expected that some machines could probably be bought for less second-hand. Generally, the management discussed the

need for each machine and found that the machine plan should be included in discussions about the company's future objectives. The choice of machines was, of course, related to the choice of which products to focus on going forward.

While on the one hand, it was difficult to implement the plan in a situation where the company's finances were so tight, it was also becoming difficult to do nothing. For example, the company's old drawing press from 1892 needed repair, and in 1965, its bridge broke. Wear and tear had worn it and other machines out. Another example is that in 1966, DFA had to refuse to offer new cutlery to the airline SAS because, despite positive test results, they had not yet invested in new automatic grinders.[39] Despite these problems with the existing machinery, the renewal of the machinery never materialised. Until the factory's closure in 1972, the Bliss press remained the largest one in the factory. It was also the most valuable when the machines were sold after the closure. However, the large press was broken at the time and had to undergo a major repair before it could be re-stationed elsewhere. It ended up being sold for DKK 24,000, corresponding to approximately DKK 160,000 today. However, it was difficult to move the large, heavy machine out of the factory building, and the building was damaged in the process.[40]

Ultimately, the presses at DFA were both a source of pride and a pain point. In several ways, they brought the past into the present. When stainless steel became modern, the presses caused problems because they were built for the materials of the past and were destroyed by having to process the harder stainless steel. Later, the presses created problems because they fit the regulatory requirements of the past and did not follow modern standards. They were also an expression of the spatial and economic opportunities and priorities of the past. The presses demanded both investment and space, and an initial investment in a specific press meant that it stayed with DFA for decades. However, the world around the company changed, and the machines became more and more worn and unfashionable. Using the presses as examples, I propose, with a quote from the philosopher Michel Serres, that DFA was 'a disparate aggregate of scientific and technical solutions dating from different periods'.[41]

[39] See the Monday meeting minutes of November 22, 1964, and November 14, 1966 and the notes from July 6 and July 13, 1964 with Aage Helbig Hansen's reflections on economics.
[40] See Paul Andersen's assessment of the machines, offer to purchase, and letter dated December 27, 1973 to GUAX. Bliss was purchased by Erik Hansen, Roskilde, May 30, 1973.
[41] Michel Serres (with Bruno Latour): *Conversations on Science, Culture, and Time*, Michigan: The University of Michigan Press 1995 p. 45. Serres' own example is a car. See also Bruno Latour: 'Kan vetenskapssociologi lära organisationsteori någonting?', in Bruno Latour: *Artefaktens återkomst. Ett möte mellan organisationsteori och tingens sociologi*, Stockholm: Nerenius & Santérus Förlag 1998 pp. 269-289. Latour's point here is that technology dissolves the simultaneity of interactions. Cf. the understanding of non-human actors as *gatherings* (see, Sayes: *Actor-Network Theory and methodology*).

'The steel with silver shine'

The final angle in my story of DFA focuses on stainless steel, the main raw material in the last half of the factory's nearly 100-year history.

Steel is strong, durable, easy to mould, and recyclable. Therefore, it has been called one of the most important materials in modern society. A characteristic of the Second Industrial Revolution was that steel gained ground at the expense of casting and wrought iron, and in 1907, Denmark opened its first steel mill. Stainless steel is alloy steel, mainly made with chromium, which increases the steel's corrosion resistance because it forms a membrane of insoluble oxides on the surface. Steel which is called stainless must contain at least 10.5% chromium. So-called austenitic stainless steel is the most commonly used alloy, with a typical content of 18% chromium and 8% nickel (often called 18/8). In addition to its corrosion resistance, stainless steel is heat-resistant, malleable, weldable, easy to clean, hygienic, and long-lasting.[42] Many of these properties are important for the use of stainless steel in cutlery. In fact, the discovery of stainless steel has been called the most significant and fundamental change in the development of cutlery for several thousand years.[43]

The Englishman Harry Brearley is commonly known as the inventor of stainless steel based on the new alloy of steel and chromium that he invented in 1913 as part of his experiments to develop better rifle barrels. He did not succeed in this task, but acid tests showed that the new alloy he had created did not rust. Han saw an opportunity to use the alloy for cutlery and, in 1914, had some knives made using the material. However, before Brearley, others had worked on alloys with chromium, and the German company Krupp had already patented a stainless-steel alloy with chromium and nickel in 1912. What made Brearley special, then, was not that he was the first to invent stainless steel, but that his new alloy quickly became a success. Initially, because of World War I, Brearley's stainless steel was primarily used for purposes other than cutlery (e.g., for aircraft engines) when production in his company's home area of Sheffield was re-organised due to the war. It was not until 1920 that the production of stainless-steel knives took off.[44]

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[42] Lemvigh-Müller: *Bogen om stål*, København: Lemvigh-Müller 2009; Hyldtoft and Johansen: *Teknologiske forandringer*.

[43] Victoria and Albert Museum: *Masterpieces of cutlery and the art of eating*, London: Victoria and Albert Museum 1979 p. xv.

[44] Claus Qvist Jessen: *Rustfrit stål og korrosion*, Skanderborg: Danstahl 2011; Geoffrey Tweedale: *Steel City. Entrepreneurship, Strategy, and Technology in Sheffields 1743-1993*, Oxford: Clarendon Press 1995; Victoria and Albert Museum: *Masterpieces*; Peter Brown (ed.): *British Cutlery. An illustrated history of design, evolution and use*, London: York Civic Trust. Philip Wilson Publishers 2001; Harry Brearley: *Steel-Makers and Knotted String*, London: The Institute of Materials 1995 (1933/1941); David Dulieu: *Stay Bright. A History of Stainless Steel in Britain,* Sheffield: Outokumpu Stainless Ltd. 2013; Tysk patent no. 304126 regarding 'Herstellung von Gegenständen (Schusswaffenläufen, Turbinenschaufeln usw.), die hohe Widerstandskraft gegen Korrosion erfordern, nebst thermischem Behandlingsverfahren'.

In Denmark, Raadvad Knivfabriker (Raadvad Knife Factories) was granted the right to manufacture stainless-steel cutting instruments by The Firth-Brearley Stainless Steel Syndicate, which was founded in 1917. The right to exclusivity was likely granted in the early 1920s, and stainless-steel products appeared in a price list from Raadvad in 1922. The list stated that once customers tried stainless eating utensils, they would prefer them because they facilitated kitchen service and were more hygienic. A 1933 anniversary publication for Raadvad Knivfabriker noted 'stainless steel's absolute victory in the table knives area' and explained:

> Stainless steel had been known for a long time but was very expensive and had several unfortunate properties, so it had not been widely used. However, new inventions had provoked a complete upheaval, as the steelworks could now supply steel, which was and remained stainless, could be forged and hardened, and sharpened so that a sharp and durable knife edge was produced.[45]

The first Danish cutlery made of stainless steel appeared in the late 1920s,[46] and stainless-steel cutlery was soon widely used. In a 1937 issue of *Haandbog for Nutidshjem* (*A Handbook for Housewives*), readers were advised to throw away their old cutlery: 'You almost owe it to yourself to bury the old non-stainless knives and forks and buy stainless things that only need to be washed in soapy water'.[47] Stainless cutlery was thus considered to be practical, and its use became more widespread. In 1953, one could read in *Dansk Husmoderleksikon* (*Danish Encyclopaedia for Housewives*) that stainless steel 'has increasingly found use not only for cooking vessels, cutlery, and other household utensils, but also in modern kitchens for sinks, tabletops, etc.'[48]

However, not everyone believed that stainless-steel cutlery was as good as silver cutlery. In 1956, Torsten Boheman described what he perceived as a bitter feud between steel's supporters and opponents. The latter saw stainless steel as an unworthy competitor to silver and banished it from the dining room. However, according to Boheman, the youth embraced stainless steel, not least because of its price. He also believed that several respected artists and architects had created beautiful cutlery and corpus in stainless steel.[49]

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[45] Knud Bokkenheuser: *Fabrikken i Raadvad igennem 175 Aar. 3. Maj 1758 – 3. Maj 1933*, København: Aktieselskabet Raadvad Knivfabriker 1933, p. 60; A/S Scania-Vabis & Raadvaddam pricelist 1922 (Rigsarkivet: 1065 Rådvaddams Fabrikker, katalog, løbenr. 353). See also Bo Kalling: 'Rustfri og syrefaste Staal"', *Tidsskrift for Elektro- og Maskinteknik* 10, 1928, pp. 73-76.
[46] Lars Dybdahl (ed.): *De industrielle ikoner: design Danmark*, København: Det danske Kunstindustrimuseum 2004.
[47] Esther Scheel (ed.): *Haandbog for Nutidshjem*, København: Chr. Erichsens Forlag 1937, bind 1, p. 156.
[48] Karen Braae (ed.): *Dansk Husmoderleksikon*, København: Standard Forlaget 1953.
[49] Torsten Boheman: 'Rustfrit stål for unge hjem', *Bygge og Bo* 2, 1956, pp. 38-41.

The introduction of the new material might seem like a rather harmless occurrence, but it had several consequences at DFA. For example, stainless steel caused problems for the existing machinery, as mentioned above. Further, it was not without reluctance that the company embraced the new material. In the early 1930s, DFA's competitors began producing stainless-steel cutlery and corpus, and, as was described in retrospect, DFA 'had to keep up, though reluctantly, because these goods were becoming a major competitor to the jewellers'.[50] The factory director Oscar Møller, likely the source of this quote, complained that stainless steel, unlike brass and nickel silver, was 'hard and stubborn and allowed only very limited shaping, and in addition, the steel to a very strong degree overstrained tools and machines, which had to be of a much more robust kind'. As noted above, the friction press, the pride of the factory at the time, was overloaded, and new and larger presses had to be procured to manufacture spoons and forks in stainless steel.

DFA's designer, Aage Helbig Hansen, later described silver as plastic and almost as soft as clay, while nickel silver was described as a strict material, for which the silversmith's hammer had to be replaced by the power of the machine. This was even more true of stainless steel. The stubborn material characterised the design, and therefore, according to Aage Helbig Hansen, steel objects had a stricter style than products made of silver.[51] Overall, the cutlery designers could not simply reuse their knowledge from working with silver; they also needed to become familiar with stainless steel as a material. As the industrial historian Ole Hyldtoft has noted, material knowledge is a prerequisite for industrial design because a thorough knowledge of the properties of a material provides the opportunity to recognise that it can be given new forms.[52]

Like Aage Helbig Hansen, the silversmith Kay Bojesen was very interested in how cutlery would be used. His verdict on stainless steel was, first, that

> *much* work still had to be done on the steel alloys before a material emerges that, manufacturing and use-wise, can be equal to the brilliant properties of silver, its plasticity and its beauty. The steel seems hard and cold to the eye and by hand; for example, steel forks, made of thin material, are a pure murder weapon for the tongue. There is a long way to go before you put an eating utensil made of stainless steel in your mouth with the same pleasure as one made of silver.

[50] 'Møllen'. Quote p. 13.
[51] Aage Helbig Hansen: 'Om Hotelservicer i Sølvplet og Rustfrit Staal', *Dansk Kunsthåndværk*, February 1953, pp. 22-25.
[52] Hyldtoft and Johansen: *Teknologiske forandringer*, p. 338.

Bojesen believed that if silver were as cheap as steel, there would not be much steel cutlery in the trade.[53] Others were more enthusiastic about the new material, and in 1937, the editor Kaj Borchsenius called it 'a lovely, honest material that is functionalist in just the right way'. A material created for 'the simple and factual cutlery we have been sighing for for so many years' instead of what he called false, neo-romantic cutlery made without a sense of the material.[54] In practice, the new material influenced the shape of the cutlery and contributed to changing the design permanently.

Although in the 1930s, DFA was somewhat reluctant to manufacture stainless steel goods, by the 1950s, the company actively marketed itself with its stainless-steel products. Stainless steel had become 'an expression of our time', as was said in an advertising leaflet for the Pil cutlery. In the same leaflet, customers were informed that there were many different types of stainless steel and many manufacturing methods. The mention of the steel type in the brochure clarified for customers that not all stainless-steel cutlery was of the same high quality as the kind DFA manufactured. In the brochure, the so-called Dafa steel, which was used to make the Pil cutlery series, was called 'the steel with the silk gloss' – a solid-quality product. In practice, the 18/8 alloy was used, which Aage Helbig Hansen described as the best possible steel for cutlery because it did not rust, it was hard, it had a beautiful shine, and it could be cleaned in all dishwashers. Thus, the new material presented not only problems, but also new opportunities. The durability and hygienic properties of the steel were important qualities that were emphasised, not least towards customers such as hotels and hospitals.[55]

The new material was also significant for sales methods. According to Danish legislation, as stainless steel is not a precious metal, it had to be sold at hardware dealers, who sold iron goods, while cutlery in silver and silver stain was sold at jewellers. When DFA's competitor Cohr began selling their Dansk Standard cutlery to private consumers in 1929, they followed both tradition and legislation. However, when Georg Jensen's silversmith began to produce a newly designed cutlery series, Mitra, in stainless steel instead of silver due to material shortages during World War II, they were not prepared to sell it among tin buckets and iron pots at the hardware dealers, thereby risking their reputation. They flouted the rules, and the material division regarding sales channels that had long been under discussion was further challenged.[56] In 1943, a jeweller was fined for selling

[53] Kay Bojesen: 'Lidt om vort spiseværktøj', *Dansk Kunsthåndværk* 3-4, 1956, pp. 62-66.
[54] Kaj Borchsenius: 'Carl M. Cohrs Sølvvarefabrik', *Nyt Tidsskrift for Kunstindustri*, 1937, pp. 221-224.
[55] See the brochures and Aage Helbig Hansen's drawings and sketches for sales material.
[56] Karin Lützen: 'En fejde om metaller', *Weekendavisen* 2.5.2014. Georg Jensen advertised their stainless steel cutlery in 1941 in Guldsmedebladet (see, *Guldsmedebladet* 5, 1941). Conversely, around 1930/1931, in Isenkræmmerbladet, the hardware dealers discussed whether they should refrain from selling cutlery in silver stain. As one of them argued, they should be allowed to sell silver stain, since, as the natural dealers of table

stainless-steel goods, while other jewellers were allowed to sell those products because they were certified not only as jewellers but also as traders. In short, the rules were complicated.[57] The DFA probably advertised cutlery made of stainless steel to the jewellers in *Guldsmedebladet* (*The Goldsmith Magazine*) in August 1940 for the first time. However, according to an advertisement from 1942, at least three of DFA's other stainless-steel cutlery lines were sold at hardware dealers.[58]

Figure 4: Cutlery in stainless steel shifted status from the 1930s to the 1950s when it became an expression of modern taste. In this advertisement from 1942, the use of cutlery in stainless steel is connected to the home, but not least to less fancy places like the summerhouse and the camp. Cutlery in stainless steel was at the time neither prestigious nor connected to the functionalist and strict look that characterized later cutlery in the material. This simplicity and strictness saw designers like Aage Helbig Hansen not only as a new fashion but also as an expression of the materials properties. Advertisement in the magazine Bygge og Bo 1942.

In 1935, DFA registered the trademark Dafa, which covered eating utensils made of precious metal and stainless steel. Among the trademarks that the factory filed with the trademark register were also Dana, Dana Silver-plate, and Dana Silver. It is not known why they chose the name Dafa instead of Dana. However, it may have been related to the fact that this occurred long before cutlery in stainless steel came into fashion, and DFA therefore may have wanted to reserve the brand Dana for 'finer' goods. Regardless, the name Dafa was used only briefly and was soon changed to Dana. In 1952, the name Dana Steel was submitted to the authorities, and in practice, there was no difference between Dafa and Dana steel; it was only a matter of marketing.[59]

The switch to stainless steel was not the only material shift in DFA's history. DFA had experimented with different materials before, and several material shortages occurred during the company's lifetime. During World War I, when it was difficult to obtain the usual raw materials, the

knives, they should be able to sell the spoons and forks that customers used with those knives (*Isenkræmmerbladet* February 12, 1931, p. 100).

[57] Aage Park: 'Rustfrit Staal', *Guldsmedebladet* 1, 1944, pp. 11-12.

[58] See the advertisement from Bygge og Bo 1942 and *Guldsmedebladet* from the period.

[59] See the correspondence with Patent- og Varemærkevæsenet (Patent and Trademark Office) as well as advertising material.

factory manufactured products in tin, and during and after World War II, substitute metals such as zinc and aluminium were used when the desired high-quality steel could not be obtained.[60]

DFA also mixed different materials. In the late 1960s, DFA tested silver-plated goods based on steel for hotel use. The factory's salesperson was enthusiastic about this concept, and he suggested that they advertise it with slogans such as 'the strength of steel with the brilliance of silver'. [61] DFA's competitors also experimented with mixing different materials, and several advertised cutlery with silver handles and stainless steel bowls in the early 1940s.[62] This composition helped ensure that these companies could continue to supply products in a time of war with silver shortages. However, Cohr had already announced cutlery with stainless steel bowls in *Guldsmedebladet* at the end of 1933 as 'the great news of the year'. This was probably the first time that the term 'stainless steel' appeared in Cohr's regular advertisements in the magazine.[63]

The anthropologist Tim Ingold argues that humans do not exist 'on the "other side" of materiality but swim in an ocean of materials', and he generally calls for a greater focus on materials in research. For him, materials are 'the active constituents of a world-in-formation'.[64] Stainless steel played a major role in DFA's development as a material and, like the spoons and presses, was an important non-human actor. Initially, the material created problems, especially in relation to the presses, while later, it was highlighted for its advantages. First, better hygiene and durability were emphasised as important properties, and later, stainless steel became an expression of quality, modernity, and fashion awareness. A brochure from the end of the 1950s for the cutlery design Dana in stainless steel stated, 'DANA 58... modern... elegant... just something for modern people!'[65]

Objects and history

Even though objects have been discussed extensively in the past decade in the wake of *the material turn*, especially among anthropologists, archaeologists, and others, relatively few historians have embraced objects as subject matter or as central source material. In short, it is rare for objects to be assigned the main role in history.[66] This may be because many historians believe that a focus on

[60] Cf. 'Møllen'.
[61] Letter from Sv. Andreasen on February 21, 1969.
[62] See *Guldsmedebladet* April 4, 1941, and June 6, 1941.
[63] Cohr advertisements from *Guldsmedebladet*; see in particular the November 1933 advertisement.
[64] Tim Ingold: 'Materials against materiality', *Archaeological Dialogues* 14 (1), 2007 pp. 1-16. Quotes p. 7 and 11.
[65] Brochure for Dana 58, probably from 1958.
[66] There are exceptions. Among those who have worked with *the material turn* are Dorthe Gert Simonsen (see, Dorthe Gert Simonsen: 'Transitrum. Flykabiner og supermodernitetens ikke-steder', *Scandia* 74/2, 2008 pp. 103-126) and Ning de Conick-Smith, which is reflected in the newly published school history (Ning de Coninck-Smith and Charlotte Appel [ed.]: *Dansk Skolehistorie* bind 1-5. Århus: Aarhus Universitetsforlag 2013-2015). Much history of technology also deals with objects, but, after a resurgence in the 1990s (see, e.g., Jan Pedersen: 'Ny dansk teknologihistorie: en kort oversigt og discussion', *Historisk Tidsskrift* 96:2 1996 pp. 368-

objects does not contribute new insights or that objects do not have value as sources, but it may also be because we are more used to dealing with written sources.[67] I find objects interesting because, on the one hand, they do not change at the same speed as, say, a political sequence of events; rather, they can appear to be relatively immutable, like as a passive background. On the other hand, objects are definitively not stable, as reflected in the history of DFA, in which the products, machines, and materials changed and caused change.

In my view, those objects which may appear to be inconsequential daily tools but which still influence what we do and what we can imagine doing are interesting for historical analysis, as noted at the beginning of this article.[68] In the context of the story of cutlery, the journalist Bee Wilson claims that the tools we use in the kitchen affect what we eat, how we eat, and what we feel about what we eat. In fact, she believes that spoons can be perceived as no less than a mirror of the culture that produces them.[69] In other words, a story about spoons can shed light on many different perspectives and, as microhistory has shown, a focus on everyday life and what might often be written off as insignificant actors can lead to inspiring historical research. Microhistory uses the analytical approach of *exoticisation*, where what at first might seem obvious and natural (such as spoons) is considered alien. For me, this approach seems closely related to Bruno Latour's early work on unpretentious objects, such as keyrings and door closers.[70]

In exploring the history of DFA, my interest in and attempt at exoticising unpretentious objects, such as spoons, presses, and stainless steel, meant that my analysis centred around non-human actors. Instead of a focus on, for example, the owner-managers who would have been central to a more traditional business history, my analysis pointed to the importance of shifts in raw material and machine development for a company's growth. DFA adopted stainless steel but did not automate production, so the product, the spoon, stopped working in the market. DFA remained very much an artisanal company that was perhaps better suited to products in silver stain than for stainless-steel products competing with cheap imported goods.

Generally, my interest in material objects increased the focus on the role of products, materials, and machines, which I find is relevant not only for the analysis of a single company, but

382), the field has been relatively unnoticed among professional historians in Denmark. See also the approach known as industrial archaeology: Henrik Harnow: *Danmarks industrielle miljøer*, Odense: Syddansk Universitetsforlag 2011.

[67] See Bent Egaa K: *Historisk Metode*, Copenhagen: Hans Reitzels Forlag 2007.

[68] Cf. the section on spoons and Louise Karlskov Skyggebjerg: *Teknologihistorie. Historieforskning og -formidling i feltet mellem opfindelsesfascination og diskussioner om materiel agens*. Aalborg: Aalborg Universitetsforlag 2014.

[69] Bee Wilson: *Consider the fork. A history of how we cook and eat*, London: Penguin Books 2013 p. 5; www.splendidtable.org/story/the-spoon-used-by-every-human-culture-in-the-world (30.11.2015).

[70] Liv Egholm: 'Mikrohistorie', *Den jyske historiker* 85, 1999 pp. 20-46.

also for the analysis of societal changes more broadly. Like many other everyday consumer items, cutlery changed from an artisan item to a mass-produced product. Machines became more important in the production process, and new materials influenced not only the shape of the products, but also the price and quantity.

From a broader perspective, this change to less expensive, mass-produced goods led to many consequences on a societal level. In this way, the welfare society that developed in Denmark in the twentieth century not only concerns social legislation, but also a material history of the creation of a comfortable, item-based life in what has been called the *21°C culture*.[71] A wide range of new materials, machines, and products have become essential for our consumption and comfortability, including more cutlery than ever before.

Another theme I want to address here using DFA's case is the use of objects as historical source material. The account of DFA is based on both written sources and preserved objects, such as spoons, boxes, and prototypes made of cardboard. In addition, I have used drawings and photographs showing buildings, machinery, and products. However, only a limited part of the materiality of the factory is, in fact, available as a source today, while both the buildings, the large presses, the stainless-steel plates, and numerous other objects are gone. Thus, the main sources of the story are still traditional written sources. In addition, the bias in the preserved source material is problematic, biased towards the aesthetic objects and those of manageable size.[72] In practice, this makes it difficult to have a strict focus on materiality and material sources in the historical analysis, and it is debatable whether I have succeeded in this regard. In the story of DFA, there is, for example, more information about the prices of the presses than about their materiality and technical construction.[73] However, the problem with missing and biased sources is, in principle, no different from those related to written sources in traditional historical analysis. Some sources have been preserved, while others are missing, and the historian must analyse, prioritise, and piece together the rest from the available material.

In addition, my focus on objects was never meant to replace more traditional chronological narratives and a more traditional economic framework of understanding. My goal was only to supplement these approaches. Although this article focused on the history of the company based on

[71] See Ning de Coninck-Smith and Mogens Rüdiger: 'Typehus, energi og familieliv i Danmark i 1950'erne og 1960'erne', in Niels Finn Christiansen, Kurt Jacobsen, and Mogens Rüdiger (eds.): *Ole Lange – fra kætter til koryfæ*, København: Gyldendal 2007, pp. 196-216.
[72] See Louise Karlskov Skyggebjerg: 'Ting som aktører. Refleksioner over genstande med udgangspunkt i udstillingen *Skriv*', *Nordisk Museologi* 2016, 1, pp. 3-20.
[73] *The material turn* has been criticised for having too little focus on materials and materiality. See Tim Ingold: 'Materials against materiality' and Bjørnar Olsen: *In defense of Things. Archaeology and the Ontology of Objects*, Lanham: Altamira Press 2010.

objects, I began with a short, traditional chronological history, which provided an important context for reading the other sections. Neither objects nor people act alone in a vacuum.[74]

The messy everyday life – a summary

When objects are put at the centre of the narrative, business history becomes a story about everyday affairs rather than a story about conscious strategies and admirable personalities. To a lesser extent, such a story focuses on seminal events that we can fix precisely in time. Instead, it becomes a story of messy everyday life, where it can be difficult to distinguish one day from the other and identify changes that happen slowly over a long period, for example, in the form of machinery wearing out and becoming unfashionable. The above story of DFA is only indirectly about events in the executive suite. Instead, it focused on how the decisions taken by management affected and were affected by the materiality of the company, and compared to a more traditional story of DFA, this object-based angle gave insight into a wide range of micro-processes that influenced the company's development.

However, the story of DFA also could have been written using approaches from the traditional business historian's toolbox, for example, by focusing on path dependency, increasing competition, globalisation, and the inability of a traditional family-owned business to change strategy and adapt to a changing world (such as by automating production or converting to niche production). Among other possibilities, inspired by the economist Joseph Schumpeter, one could have analysed the introduction of stainless steel as an innovation that disrupts the equilibrium of the system, that is, as a case of *creative destruction*.[75] Thus, only the nuances in the story and the choice of main actors distinguish this object-focused historiography from traditional business history.

In addition, what emerged from the focus on objects was perhaps only an illumination of well-known processes from a different angle. However, in my view, the object angle provided interesting insights into the many parameters that must work together to create and run a successful business. It is not enough to have the economy under control, to develop a good strategy, and to have great managers. The numerous small details of production, the choice of materials etc. must also work.[76]

From the perspective of the product, the raw material, and the machinery—in short, the attempt to write a business history as framed by objects and with the inclusion of objects as source

[74] In the other sections, the understanding of time is more chaotic; cf. Michel Serres's notion of multitemporality in Michel Serres: *Conversations on Science, Culture, and Time* p. 60.
[75] Joseph Schumpeter: *Capitalism, socialism, and democracy*, New York: Harper 1942 pp. 81-86; Joseph Schumpeter: *Theory the Economic Development*, Leipzig: Verlag von Duncker & Humbolt 1911.
[76] Cf. Louise Karlskov Skyggebjerg and Anja Meier Sandreid: 'When Danish Industry relocates – globalisation in an everyday perspective', *Erhvervshistorisk Årbog* 63 (1), 2014 pp. 127-151. This article points to how even small differences in the production processes and materials in Denmark and Thailand created challenges when the production was relocated.

material—the story of DFA brought new actors to the core of the story. Consequently, some relevant themes disappeared from the focus. I could have developed a stricter economic analysis of DFA based on the many preserved accounts or focused on corporate culture or labour history through an analysis of sources such as the sports club's laws. I could also have focused on design history based on the many preserved drawings, brochures, and products from DFA. This means that a business history which takes objects seriously must be thought of as a supplement to and not a substitute for other approaches to the historiography of Danish industry. As a complement, it can highlight some of the many small and seemingly insignificant elements of daily life that cause some businesses to survive and others to fail. Perhaps today's entrepreneurs and business leaders can also derive benefits from this knowledge in their messy everyday life, surrounded by material actors who influence what they do and what they can imagine doing.

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Brev fra repræsentant 15/11 1945, underskrevet "junior" (formentlig Aage Helbig Hansen).

Brev til Centralforeningen for Danmarks Isenkræmmere fra 1957.

Brev til isenkræmmerne, dateret 1953.

Brev til kunderne 10/3 1972.

Brochurer for bestik og korpus. Herunder også prislister.

Den gamle fabrik, et causeri af Bendix Bech-Thostrup (formentlig fra 1955).

Den røde Traad gennem D.F.A., 25/8 1944 (skrevet af Oscar Møller).

Fotos af produkter, butiksvinduer, udstillinger, fabrikationen m.m.

Investeringsplanen for indkøb af maskiner (foreligger på bestyrelsesmøde 7/12 1964).

Korrespondance med Patent- og Varemærkevæsenet.

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Liste over investeringer i maskiner i perioden 1902-1949.

Love for Aktieselskabet Alfenide vedtaget 31/5 1899 og senest ændret 25/4 1919.

Materiale fra Foreningen af Kniv- og Staalbestikfabrikanter i Danmark fra 1950'erne og 1960'erne.

Møllen (en historisk beskrivelse af virksomheden), formodentlig fra 1955.

Noter fra 6/7 og 13/7 1964 med Aage Helbig Hansens overvejelser om økonomien.

Poul Andersens vurdering af maskinerne i forbindelse med lukningen samt diverse købstilbud.

Pressemateriale/presseklip i anledning af 75 års jubilæet 1955.

Produkter og fysiske forslag/forsøg til nye ga□ler

Produkttegninger, skitser o.l.

Rapport til bestyrelsesmødet 8/10 1964.

Referater fra bestyrelsesmøder.

Referater fra mandagsmøder (=direktionsmøder) fra 1960'erne.

Regnskaber, herunder specifikationer af Maskin- & Inventarkontoen.

Reklamemateriale.

Salgsopgørelser.

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