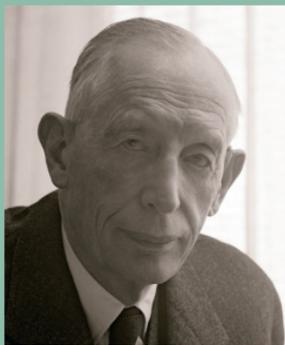


A TRIBUTE TO THE MEMORY OF

RUBEN RAUSING

1895–1983



BY PROFESSOR EM. LARS ENGWALL

ROYAL SWEDISH ACADEMY OF ENGINEERING SCIENCES (IVA)

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RUBEN RAUSING

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PRESENTED AT THE 2018 ANNUAL MEETING
OF THE ROYAL SWEDISH ACADEMY OF ENGINEERING SCIENCES

BY PROFESSOR EM. LARS ENGWALL

The Royal Swedish Academy of Engineering Sciences (IVA) is an independent, learned society that promotes the engineering and economic sciences and the development of industry for the benefit of Swedish society. In cooperation with the business and academic communities, the Academy initiates and proposes measures designed to strengthen Sweden's industrial skills base and competitiveness.

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IVA, P.O. Box 5073, SE-102 42 Stockholm, Sweden

Phone: +46 8 791 29 00

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Each year the Royal Swedish Academy of Engineering Sciences (IVA) produces a booklet commemorating a person whose scientific, engineering, economic or industrial achievements were of significant benefit to the society of his or her day. The person to be recognised in the booklet must have been born at least 100 years ago. The commemorative booklet is published in conjunction with the Academy's Annual Meeting.

The person being acknowledged this year is Ruben Rausing, the father of Tetra Pak and the containers for milk, yoghurt, juice and wine that can be found on most kitchen tables around the world. Ruben Rausing has indeed had a great impact on people's everyday lives.

If we want to define the character of a true entrepreneur, we may need to look no further than the career of Ruben Rausing. He was known as a powerful leader as well as a man with the courage to invest in a product and a company that was only expected to yield returns in the distant future.

We wish to extend our sincere thanks to Professor Emeritus Lars Engwall for the time and effort he has dedicated to this year's commemorative booklet.

A handwritten signature in blue ink, appearing to read 'Tuula Teeri', with a long horizontal stroke extending to the left.

Tuula Teeri
President of the Academy

A handwritten signature in blue ink, appearing to read 'Camilla Moderer', written in a cursive style.

Camilla Moderer
Chairman of the Medals Committee

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INTRODUCTION

Assume that someone came up with the idea of choosing the Swede who has had the biggest impact on the daily lives of the greatest number of people globally. In such a competition, one person stands out as a very strong candidate. That person is Ruben Rausing. He has impacted the lives of people around the globe through a packaging concept developed by the company Åkerlund & Rausing, first registered by the Swedish Patent and Registration Office in March 1944. Seven years later, the company Tetra Pak was formed as part of Åkerlund & Rausing to let out machinery and sell materials for the patented packaging solution. Tetra Pak has since grown into a global corporation, which in 2017 had close to 25,000 employees in more than 160 countries with net sales of EUR 11.5 billion, producing a total of 188 billion packaging items. Tetra Pak containers for milk, yoghurt, juice and even wine can be found on kitchen and dining room tables around the world. However, not many people think about Ruben Rausing when pouring themselves something to drink. It is therefore about time for us to celebrate his memory and put his achievements in a greater context. Ruben Rausing was a true entrepreneur with an eye for new opportunities. He was also – to quote his colleague Olof Stark when remembering him – “a leader with enough power, insight and persistence, and despite very long odds, to have the courage to invest development resources in a product that was only expected to yield returns in the distant future.”

PATENT N^o 131 599

SVERIGE

KLASS 81 c27

BESKRIVNING
ÖFFENTLIGGÖRD AV KUNGL.
PATENT- OCH REGISTERRÅDET



BEVILJAT DEN 3 FEBRUARI 1901
PATEENTFRÅN DEN 2 MARS 1900
PUBLICERAT DEN 2 MAJ 1901

Års. Års N^o, 2016, nr 2517/2016.

Märkt en utgång.

R. RAUBERG, LIND.

Sätt att framställa en tetraformig förpackning jämte på detta sätt framställd förpackning.

Uppfunnen af K. E. S. Wallenberg.

Följande uppfinnning har till ändamål att skaffa en till sin konstruktion yttre rätvinklig och i tillverkning billig men likväl förhållandevis förpackningsförmig förpackning af pappe eller annat lämpligt lösligt eller vätskigt material, tillämpligare till ändamål med uppfinnningen är, att denna förpackning skall kunna göras af ett ämne i ett stycke, vilket dels på ett enkelt eller på ett annat sätt ständigt åter sig självt och samtidigt samtidigt till form af den önskade förpackningen. För detta och andra ändamål, som framgår af det följande, göres förpackningen enligt uppfinnningen af en lyfta eller två genom tillhö-

papper eller liknande, som kan vara lösligt lösligt eller annorlunda behandlat, t. ex. har skerut, sått eller lackat eller allt efter vad det speciella användningsändamålet kräver. Ämnet till lyftan bör då så enkelt som ett sådant rektangulärt pappersark, som kan tillåtas ut af en papperskassa eller sådant pappersark. Den enligt uppfinnningen framställda tetraformiga förpackningen är öfverstående parallell och lämplig för många varor, särskildt i sammanhang äro rökande och flytande varor. Förpackningen kan såväl vara till hvarns tillåtas pastör- och vätskehalt, och den är till att öppna på ett enkelt

Patent application for the Tetra packaging method.

CHILDHOOD



Ruben Rausing was born on 17 June 1895 as Ruben Andersson. In 1921 he adopted the name he is better known for today from the parish in which he was born, Raus at the mouth of the river Råå. His birthplace, which today is part of the Helsingborg municipality, was a village with just over a thousand residents at the turn of the century. It was also Sweden's largest fishing village, where – according to Ruben's writings from 1958 – there was lively bartering between the herding fishermen and the farmers when the fishing boats came in from the

August and Hilda Andersson with their children Ruben (left), Greta (right) and Cecil (front).



Råå fishing village at the time of Ruben's childhood and upbringing.



Childhood home (Ruben on the left, mother and siblings to the right).

north. Ruben himself came from a family of both farmers and fishermen. His father August originated from a farm in northern Skåne, while his mother Mathilda belonged to a family of fishermen and fishmongers. Ruben's father was a master painter with a



Bertil Ohlin (1899-1979), Ruben Andersson's school-mate, later Professor of Economics at the Stockholm School of Economics (1923-1965), Leader of the liberal political party *Folkpartiet* (1944-1967) and recipient of the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel in 1977.

paint shop, a member of the Swedish Missionary Society and active in local politics as a liberal. He was particularly interested in issues of education and poverty relief. By all accounts, liberal values made more of an imprint than religious ones on the upbringing of Ruben and his two siblings, Cecil and Greta. Ruben decided early on to skip Sunday school.

After finishing elementary school, he stayed on at school for two more years to take the exam to qualify to enter the top stream of lower secondary school. He was thus able to attend the boy's school *Hälsingborgs Högre Allmänna Läroverk för Gossar*, from age 15. There he began a lifelong friendship with a fellow student. His name was Bertil Ohlin who would later become a prominent economics professor and leader of the social-liberal political party called *Folkpartiet*. They were never actually classmates because Ohlin was a Latin student and Ruben Andersson's focus was natural sciences.

STUDYING IN STOCKHOLM AND FIRST JOBS

After graduating in 1915 Ruben Andersson's greatest wish was to study medicine or genetics, but lack of financial resources made this difficult for him. Already before graduating he had written to a seed production company in Svalöv with a request to be accepted as an unpaid apprentice. While waiting for an answer, which was not forthcoming, he was called up to do his first round of military service. This was short-lived because after just a few months Ruben was discharged due to back problems. While doing military service Ruben met Bror Linderöth, who later would become the head of a savings bank in Malmö. He had studied economics in Lund under Knut Wicksell and generously shared economics books from his library. In this way, conscript Andersson soon realised that "economics was a subject he might consider studying after finishing his military service. Although Linderöth had studied in Lund – or perhaps because of that – he recommended his friend Ruben to apply to *Handelshögskolan* (the Stockholm School of Economics), which had opened in 1909. After a trainee job at the local bank, *Sydsvenska Kreditaktiebolaget*, in spring 1916, by means of money his aunt Johanna had saved selling fish, he was able to enrol at the Stockholm School of Economics. In present-day parlance his aunt would be called a "business angel", having laid the foundation for a distinguished entrepreneurial career.

The Stockholm School of Economics was at the time housed in Hotel Victoria at Brunkebergstorg where the central bank of Sweden, *Riksbanken*, is now located. Ruben's



Handelshögskolan (the Stockholm School of Economics) which, when Ruben Andersson was admitted, was housed in Hotel Victoria at Brunkebergstorg where Sveriges Riksbank (Sweden's Central Bank) is now located.

favourite professor was Eli Heckscher, whose book on World War economics, *Världskrigets ekonomi* (1915), he had already read while doing his military service. However, Heckscher was about to ruin his student's interest in the subject by recommending four volumes by the Norwegian economist Torkel Halvorsen Aschehoug called *Socialökonomi*. Ruben would later describe them in an essay as “dull and uninteresting and therefore joyless.” His future as a student of economics was rescued, however, when he read works by Alfred Marshall and David Ricardo, but above all by Eli Heckscher's exciting seminars. At these seminars, in addition to his professor, he became acquainted with five fellow students – Robert Kristensson, Bertil Ohlin, Torsten Streyffert, Gerhard Törnqvist and Johan Åkerman – who would all later become economics professors themselves. Later on, he met up with his schoolmate Bertil Ohlin at meetings of the Swedish Economic Association (*Nationalekonomiska föreningen*) where, in addition to Heckscher and Ohlin, he met most of the prominent economists of the day: Gustaf Cassel, Knut Wicksell and advocates of the Stockholm School of economic thought such as Erik Lundberg, Gunnar Myrdal and Ingvar Svennilson. He also participated over the years in tax debates with finance ministers Ernst Wigforss, Per Edvin Sköld and Gunnar Sträng.



Eli Heckscher (1879-1952), Ruben Andersson's favourite professor at the Stockholm School of Economics.

After graduating in June 1918, Ruben Andersson started working at *Stockholms Enskilda Bank*. He thus entered a world that reflected aspects of his seminar papers in commercial technique (now called business administration) and economics. He had written a commercial technique essay about the relationship between the head office and branches of a bank and an economics essay about the development of Sweden's provincial banks. His inspiration for both of these essays probably came from his short period of bank employment before enrolling to study in Stockholm. His continued interest in genetics was apparent in his essay on economic geography, which addressed ways to improve autumn wheat in Sweden.

His job at *Stockholms Enskilda Bank* did not last long, however. Ruben Andersson left the bank by October because he thought his future prospects there were too limited as the top management positions seemed to be reserved for members of the Wallenberg family. Instead, he answered a job advertisement and started working closely with Carl

Ramström, the Managing Director of *Sveriges Litografiska Tryckerier* (SLT), a printing and graphics company later

**AKTIEFÖRBUNDET NORDISK
ORGANISATION**

ORGANISATIONSAVDELNINGEN

under ledning av
C. RAMSTRÖM

KIRUNA ANDERSSON · JOHN JOHNSON · GERHARD TÖRNQVIST

~

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Ruben Rausing and Gerhard Törnqvist employees of Sveriges Litografiska Tryckerier (SLT) in an advertisement in the journal *Nordisk Tidskrift i Organisation*.

known as Esselte. His fellow student at the Stockholm School of Economics, Gerhard Törnqvist from Mjölby, was employed there at the same time.

The job at SLT provided an opportunity for Ruben to take the first step towards finding good solutions for rational organisation. His interest in this is evident in an article he wrote expressing his views on how to organise a newspaper company in a journal called *Nordisk Tidskrift i Organisation* (Nordic journal of organisation) in 1919. In this article, we find statements that reflect what would become his future lifework: “Saving productive power, capital and labour while achieving a given result is an application of the economic principle. This is the starting point for all economic theory and action and is [...] the means and the end of the organisation.”

NÅGRA SYNPKUNKTER VID ORGANISERANDET AV ETT
TIDNINGSFÖRETAG.

AV RUBEN ANDERSSON.

ORGANISATIONEN I PRIVATEKONOMISK mening innebär ett tillämplande av den ekonomiska principen i det enskilda företags förvaltning. Det gäller således att vid organisationsarbetet åstadkomma ett sådant system, att företags givna tillgångar lämna ett maximalt resultat, eller, om ett givet mål är avsett att nås, detta erövas med minsta möjliga uppoffring. Varje metod, den må ur teknisk synpunkt vara hur fullkomlig som helst, som går utanför de här utstakade linjerna, är både ur det enskilda företags och det allmännas synpunkt felaktig, därför att den tar i anspråk mera medel och således innebär en större uppoffring än som varit nödvändig.

Den administrativa organisationens viktigaste del är det ekonomiska redovisningssystemet, vars uppgift är att lämna företagsledningen en överblick av resultatet och ge den en säker grund för beslutandet och bestämmandet av produktionsriktning. Den måste givas en form, som är avpassad efter varje företags speciella förutsättningar och som är så elastisk, att den kan avpassa sig efter de ändringar, som kunna tänkas förekomma.

på vanligt sätt med normal arbetstid och deras löner måste naturligtvis betalas, antingen företaget har arbete åt dem eller ej. Härav följer omedelbart, att kostnaderna vid ett tidningsföretag med eget sättteri och tryckeri äro nästan absolut fasta upp till gränsen av den för tidningens framställning nödvändiga fasta kapitalbildningen och användningen av arbetskraft.

Vilka konsekvenser har då detta för företaget självt? Ledningen ser, att när tidningen är tryckt, arbetarna gå utan arbete och maskinerna stå stilla. Inlet är då naturligare, än att man söker få beställningar utifrån, och så sker i regel också. Utan att här närmare ingå på frågan synes det för en utomstående, som om den naturliga, verkligt stora lösningen av frågan vore en fusion mellan kvälls- och morgontidningsföretag, i vilket fall en anläggning hela kapacitet kunde utnyttjas och således en betydande besparing av kapital och arbete äro möjliga.

Vad det förta alternativet beträffar är att ställa, att när kostnaderna nästan uteslutande äro fasta, en förtjänst uppkommer, så snart priset för papper, tryckvärtet och stål, d. v. s. råvarukostnaderna, äro

Part of the first page of Ruben Andersson's article in 1919 on newspaper organization.

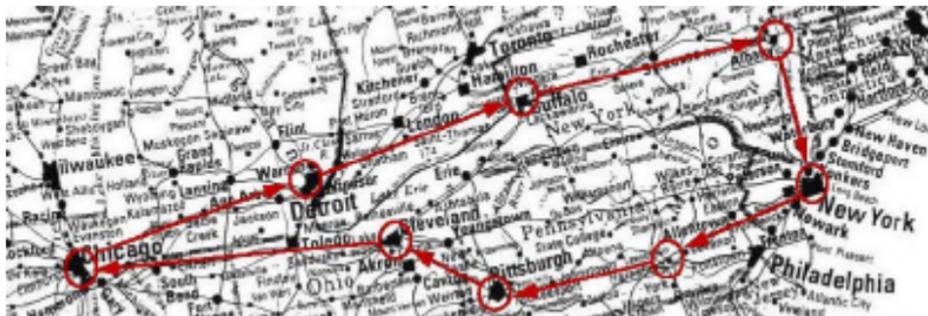
STUDIES IN THE USA

In the summer of 1919, the same year as the Royal Swedish Academy of Engineering Sciences' statutes were established by the Swedish Government and its first 40 members were inducted, Ruben Andersson and Gerhard Törnqvist were each awarded a scholarship from the Stockholm School of Economics to study at Columbia University in New York. They were granted a leave of absence from SLT but also asked by their employer to report back on the American packaging industry, which was expanding rapidly at that time.

The two Stockholm School of Economics graduates developed a particular interest in the principles put forward in the USA by Frederick Winslow Taylor that had quickly spread to Sweden. His book *The Principles of Scientific Management* from 1911 was translated into Swedish as early as 1913, under the auspices of



The man behind scientific management, Frederick Winslow Taylor (1856–1915).



Ruben Andersson's and Gerhard Törnqvist's itinerary for the study trip in the summer of 1920.

to Eli Heckscher, the men had made “the daring but frugal choice of buying an old car” and “camping out, experiencing the real outdoor life.” The trip was problematic, mainly because the two students had not learnt how to drive a car before purchasing one, and their 1912 Overland was not in the best condition. They nevertheless managed to visit numerous companies that were applying modern organisational principles, including Ford in Detroit, as well as various universities to meet with professors. At the Carnegie Institute of Technology in Pittsburgh, they met some prominent industrial psychologists including a man of Swedish descent, Louis Leon Thurstone, whose name lives on today through the attitude measurement technique he created called the Thurstone scale.

BACK IN SWEDEN



Carl Ramström (1862-1943), CEO of SLT, who hired Ruben Andersson and Gerhard Törnqvist in 1918.

The USA clearly made a strong impression on the 25-year-old Ruben Andersson. He was therefore very keen to return. However, despite an offer from the Taylor Society for paid PhD work to study the application of scientific management in practice, he ended up staying in Sweden after his return. His boss at SLT, Carl Ramström, had managed to persuade him to stay on at the company.

In 1921, the same year as Ruben Andersson adopted the name Rausing, he married Elisabeth Varenius, daughter of Benjamin Varenius, a post office clerk in Hälsingborg, and his wife Maria. The couple lived in the Stockholm suburb of Bromma, where their first son Gad was born the following year. Rausing was later assigned to organise SLT's business in Gothenburg where his middle son Hans was born in 1926. In 1927, the family moved to Stockholm and settled in the suburb of Djursholm. Their third son Sven was born there in 1928. Due to a disability, Sven, unlike his older brothers, would never be involved in Ruben Rausing's businesses.



Gerhard Törnqvist (1894–1963), Ruben's fellow student at the Stockholm School of Economics and in the USA, and later a professor. Oil painting at the Stockholm School of Economics by Sigurd Wallin.

After returning from the USA, in addition to working at SLT, both Ruben Rausing and Gerhard Törnqvist were active in spreading the ideas they had picked up in North America. In November 1920 a special edition of *Nordisk Tidskrift i Organisation* was published. The topic was scientific management and the two men contributed articles, one describing scientific management and the other discussing scientific management as a labour issue. During the 1921–22 academic year, Rausing held a series of Saturday lectures on industrial administration at the Stockholm School of Economics. The lecture series was subsequently taken over by Gerhard Törnqvist, at the time employed by the SLT company Svanströms. This was the start of Törnqvist's academic career, which led to a new professorial chair in

business administration in 1934 with a focus on the economics of goods distribution.

Although Törnqvist chose an academic career path and Rausing was a businessman, their past studies and interest in scientific management made an impression on the careers of both men. By applying Taylor's ideas beyond industrial production and applying them to goods distribution systems, both in their own ways made important contributions to retail rationalisation. Törnqvist conducted studies in shops to determine the amount of time spent on fetching goods and weighing them, as well as customer waiting times. In various publications, he developed his ideas on rationalisation of distribution systems. His main publications were the books *Kostnadsanalys och pris-sättning i detaljaffärer* (Cost analysis and pricing in retail shops), 1929, *Distributionsvägarna i kritisk belysning* (Critical examination of distribution paths), 1933 and *Varudistributionens struktur och kostnader* (Goods distribution's structure and costs), 1946. If these books had been written in English he would have become world famous like his good friend Ruben, although certainly not as wealthy.

ÅKERLUND & RAUSING



Newspaper magnate Erik Åkerlund (1877–1940) who became Ruben Rausing's business partner in 1930.

Törnqvist left SLT in 1929 when he was recruited by the Stockholm School of Economics. Meanwhile Rausing looked for another job after realising that it would be difficult to implement the reconstruction he considered necessary at SLT due to the company's structure as an umbrella organisation for a number of old family businesses. When he found out that Erik Åkerlund wanted to sell his newspaper company Åhlén & Åkerlund, he contacted him about acquiring it. The idea came to nothing, however, because the Bonnier family thought Rausing was making the deal on behalf of SLT and therefore exercised their option to buy it. Erik Åkerlund then proposed a partnership with Rausing, offering him the position as Managing Director for the packaging company AB Lito &

Kartong in Malmö. Although he himself was reluctant and his father advised against it because he thought a partnership with Åkerlund would be risky, Rausing accepted the offer. The company's name was changed to Åkerlund & Rausing, and the two partners began a process that, according to a subsequent talk by the new Managing

Director, was influenced by Erik Åkerlund's words: "I have taught the Swedish people to use their reading skills and now together we are going to revolutionise distribution through packaging."

The partnership between Åkerlund and Rausing did not last long however. By 1932, Rausing would become the sole owner when Åkerlund needed to release some capital. Thus, according to Rausing's own words in an interview, he became "the only one of Erik Åkerlund's partners and colleagues to land on his feet financially." He was thus able to continue pursuing his business concept of "rationalising goods distribution through purpose-built consumption packaging and proper shipping packaging."



For there to be a demand for this type of packaging, it was important for the retail environment to be rationalised by a gradual increase in self-service features.

Svenska Tobaksmonopolet (the Swedish tobacco monopoly) was a pioneer in prepacked products. A few others followed, with products like the Gyllenhammar

Packaging from Åkerlund & Rausing.



Holger Crafoord (1908–1982), graduate of the Stockholm School of Economics, recruited by Åkerlund & Rausing in 1930, Deputy Managing Director 1937–1946, Managing Director 1946–1968 and Chairman of the Board 1968–1972. Founder of the company Gambro in 1964.

brand of oats and Mazetti's brand of cocoa. However, almost everything in retail was still sold loose by weight. One important development was sugar packaging. The aforementioned studies conducted by Gerhard Törnqvist played an important role here. They showed the cost-saving aspect as well as the possibility of developing brands. Sugar was followed by flour and then a variety of other food products.

However, it was more than his empirical studies that made Gerhard Törnqvist an important partner for Rausing. While working as a professor at the Stockholm School of Economics he met gifted students who he later recommended for employment at Åkerlund & Rausing. In this way, men such as Holger Crafoord, Knut Laurin, Börje Svenby, Erik Torudd and Gunnar Brime would become key employees of the company.

The development of more types of packaging, enabling the reconstruction of the retail environment, meant strong growth for Åkerlund & Rausing in the 1930s. By 1934, the company was turning a profit, and in the years that followed, despite substantial investments, its profits continued to rise. One particularly valuable employee during this time was Holger Crafoord, who in 1934 became a minority owner of the company. This was a very important move as it meant that Rausing's colleague, who was a valuable complement to his own visionary entrepreneurship, would remain involved in the company. In 1937 Crafoord became Deputy Managing Director and in 1946 Managing Director when Rausing took up the position of Chairman of the Board and Director on Duty.

After the success at the end of the 1930s, the company needed larger premises and above all access to water for its paper mill. As luck would have it, the company's solicitor Bo Pfannenstill met with Aron Borelius, a prominent figure in the Social Democrats in Lund and later a university art professor, who saw the large advantages of Åkerlund & Rausing moving to the university town in Skåne. Despite strong opposition within the town council, Åkerlund & Rausing was able to purchase land south of the city at a good price. The move took place in August 1939.

To market Åkerlund & Rausing and its products, the company started publishing a magazine in 1937 called *Svenska förpackningar* (Swedish packaging). At the bottom of the page of each issue was the motto "Proper packaging saves more than it costs." The editorial in the first issue with the heading "Rationalisation of Distribution" argued

at the factory.” He saw great opportunities for Swedish cellulose companies to become more market-oriented in the future. Apart from the fact that rational distribution could lead to an increased demand for packaging, he believed that the use of brand names would increase advertising, which in turn would increase demand for newsprint.

Åkerlund & Rausing operated mainly in Sweden but eventually expanded internationally. By 1951, a subsidiary for export and licencing had been established. Five years later a licensed flour packaging plant was inaugurated in Lahore, Pakistan, and the first wholly owned factory was opened in Germany. With transportation in mind, the location chosen for the German factory was Hochheim close to Frankfurt Airport. Rausing’s desire to find rational solutions was probably behind this decision as well.

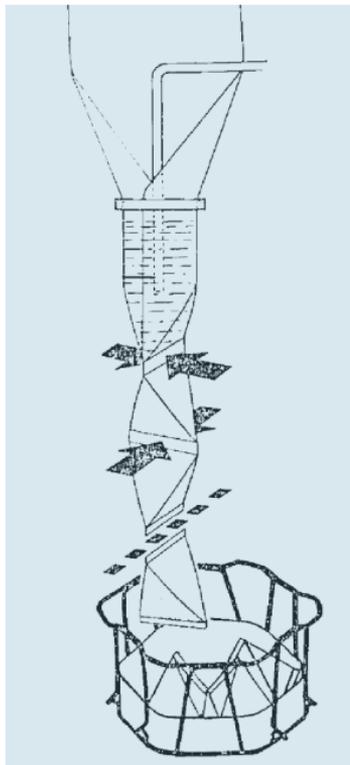


Åkerlund & Rausing promoting its products on a railroad car.

TETRA PAK

For a long time Åkerlund & Rausing only focused on dry goods packaging, but they also recognised the importance of being able to pack important perishables such as milk and cream. These were mainly sold loose by weight and sometimes in bottles in Stockholm and Gothenburg. Paper packaging would be an important rationalisation solution, but it would also improve hygiene and prevent dilution with water. The solution to the problem was to create tetrahedron-shaped cartons by pouring milk into a paper tube, which was then cut and sealed so that the sealed ends were perpendicular to each other. The idea came from a laboratory assistant named Erik Wallenberg, who in 1991 would be awarded IVA's Great Gold Medal. Rausing was initially sceptical about Wallenberg's idea, as was the patent agency. However, in 1944 it was assigned to

Outline diagram for filling and sealing.





Inventor of the tetrahedron carton Erik Wallenberg (1915–1999), recipient of IVA's Great Gold Medal in 1991.



Ruben, Gad and Hans Rausing with the prototype of the packing machine now on display in the main entrance of the company's offices in Lund.

submit the application for a patent, which was granted in February 1951. The previous year the name Tetra Pak had been adopted for the project.

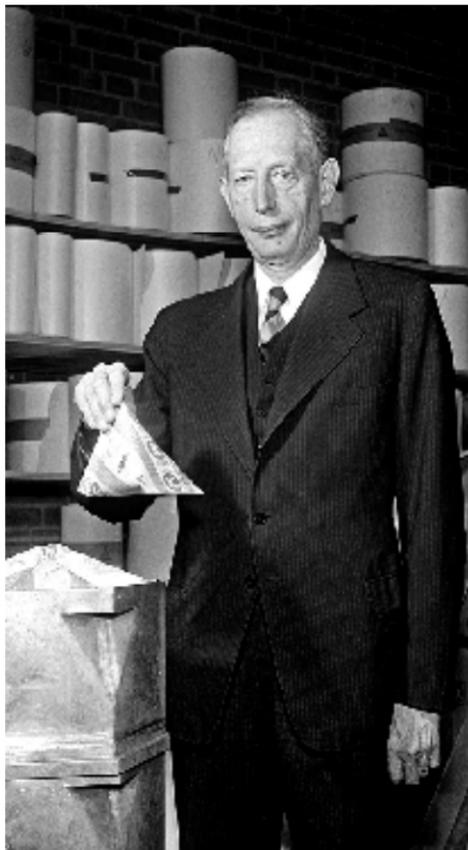
There were, however, some problems with the venture. One of the first challenges was how to design a machine that would fill the tetrahedrons continuously. Another problem was finding a suitable coating material. Ruben Rausing's colleagues managed to solve these problems in various ways. Harry Järund developed the prototype that now stands in the company's main entry hall in Lund, while Erik Torudd, Stig Sunner and Gad Rausing found the necessary raw materials while on a trip in the USA. So, in 1952, using a horse and cart, the first machine for packing cream in 100 ml cartons was delivered to *Lundaortens Mejeriförening*, a dairy association in Lund. The following year machines were delivered to the Stockholm branch of a similar dairy association, *Mjölkcatedralen*, followed by other locations. In 1954, the 500 ml carton was launched. A basic principle was to supply packaging systems to the dairies through the rental of machinery, the sale of paper and a guarantee of fast service. The latter was particularly important because the machines were not always reliable.

In 1954, Ruben Rausing let his sons Hans and Gad take over operation of Tetra Pak as Managing Director and Deputy Managing Director. They faced a difficult task in a company that was still not established in the market and that had launched packaging that sometimes leaked. There was resistance from both consumers and dairies. Sales were slow, and the company was losing money. The company had little equity, and its liquidity was strained because of late customer payments. Tetra Pak was in turn

often late in paying its suppliers. It was only able to stay afloat thanks to capital provided by Åkerlund & Rausing. After a few years, this arrangement would lead to strained relations between that company's Managing Director and part owner Holger Crafoord and the Rausing family. Crafoord, with the help of an Executive Committee, was eventually able to tighten Tetra Pak's belt to improve the company's finances.



First filling machine delivered to *Lundaortens mejeriförening* (the Dairy Association of Lund) in 1952.

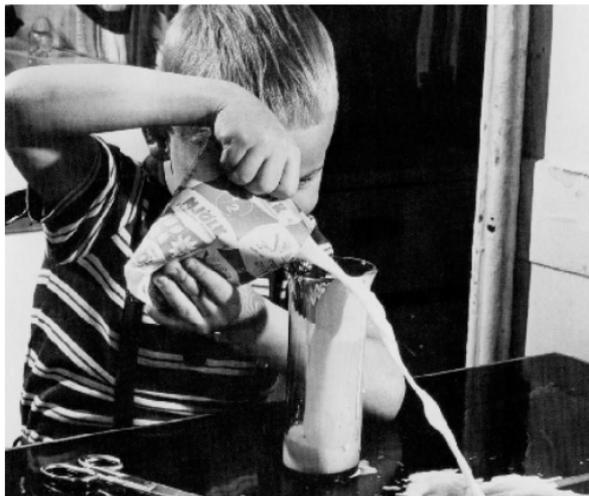


A contributing factor here was also the company's success outside Sweden in countries like Kenya and France. In Kenya, one of the main reasons behind the acceptance of Tetra Pak was a desire to stop the widespread practice among distributors of opening glass bottles and replacing some of the milk with water. In France, the company benefitted from the fact that Prime Minister Pierre Mendès-France (1954–1955) was a keen advocate of drinking milk, but also from the work of the enterprising head of the company's subsidiary Pierre Schmit. In the USA, on the other hand, Tetra Pak was experiencing the same difficulties faced by many other Swedish companies in that market.

Ruben Rausing with a Tetra Pak carton and the shipping trays used for them.

An important step in the development of the company was the installation in 1957 of a machine in Linköping that further increased the carton size, from 500 ml to one litre. It was still tetrahedron-shaped, however, and this could be problematic for storage in a refrigerator but above all in shipping. Special trays had been developed, but they were not optimal from a space-saving perspective. The development of loading pallets at the end of the 1940s and in the 1950s meant there was now a reason to develop stackable cartons. The solution to this problem was Tetra Brik which was launched in 1963, first in Motala and then in Stockholm. It had been developed under the leadership of another of Rausing's employees, Åke Gustafson. However, even Tetra Brik, which like Tetra Pak was based on a continuous filling process, had leakage and pouring problems, thereby reinforcing the saying "Buy Tetra Pak and you will always have milk on the table!"

The milk did not always end up where it was supposed to.



Apart from the shape of the carton, there was another problem that required an urgent solution, namely making aseptic cartons so the milk would stay fresh longer. It was necessary to create sterile systems and to protect the milk from light. Tetra inventor Erik Wallenberg had been working on a solution back in 1946 but his ideas were rejected at that time. It would take another fifteen years and collaboration with a Swiss company before Tetra Pak in 1961 presented its aseptic tetrahedron system at a conference outside Bern. From that point on, international expansion was rapid in developing countries, as well as in the Soviet Union where the planned economy often meant that it was difficult to deliver milk before it was spoiled. The aseptic milk also enabled Rausing to pursue his commitment to solving milk supply problems around the world, working with FAO, the World Bank and the Swedish International Development Cooperation Agency (Sida). The fact that he at that time was living in Rome – the location of FAO's headquarters – no doubt facilitated the necessary contacts.

Despite the new products and new markets, the company's finances remained very strained. At the same time, Ruben Rausing was eager to retain financial control of his companies. When Marcus Wallenberg suggested taking the company public, he was not interested. The alternative was the sale of Åkerlund & Rausing to *Svenska Tändsticks AB* (subsequently Swedish Match) in 1965. This transaction can be seen as the final phase of a process that began nine years earlier in 1956 when Tetra Pak moved into its own premises in Lund. Continuity in the management of Åkerlund & Rausing was nevertheless retained, because Holger Crafoord stayed on as Managing Director. He

remained until 1968 when he became Chairman of the Board, a position he held until 1972. Back in 1964 Crafoord had also started a company of his own called Gambro, which developed and commercialised the artificial kidney, an invention by Professor Nils Alwall in Lund.

After selling Åkerlund & Rausing, the Rausing family gradually bought out the employees who had previously been shareholders in the company. During this process the relationship once again grew strained between Ruben Rausing and Holger Crafoord. The latter nonetheless agreed to remain a member of Tetra Pak's board, a position he held until 1977. By then a lot had happened. The company had launched a new but unprofitable plastic bottle called Rigello, and in light of the tax environment and currency regulations at the time most of its foreign income had been transferred to two foundations in Liechtenstein. The final exit for Tetra Pak took place in the early 1980s due to the threat of the introduction of wage-earner funds. By the time the law was passed by the Swedish parliament (*Riksdag*) on 21 December 1983 Ruben Rausing was deceased, having passed away at the end of the summer that year.

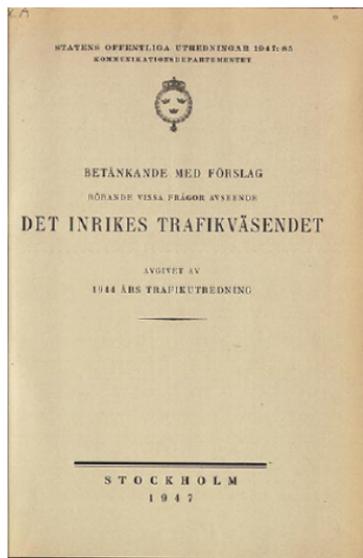
COMMITTED TO SOCIETAL ISSUES

Ruben Rausing is first and foremost famous for entrepreneurship and enterprise. However, he was also committed to societal issues. During the war years, in 1939–1940, he was head of the Swedish Industrial Commission's pricing agency. He was also a member of the Price Control Board in 1940 and its Chairman in 1941–1942 when Axel Gjöres became Minister of Supply. In the years 1941–1942 he was a member of the Industrial Commission. Due to the wartime conditions, Ruben Rausing thus participated in a type of planned economy, a system that he had criticised back in 1934 in his talk "Private initiative or planned economy?" at a meeting of the Swedish Taxpayers' Association. In another talk in the same forum in 1946, "Taxes, enterprise and monopolies," he described his post-war work experiences. He pointed out that although the Price Control Board had been successful in reducing the price of uniforms during the war, the price reduction was insignificant compared to the decrease after the war when price restrictions were removed. This talk was a clear indication that Rausing favoured private initiatives and market solutions. The same ideas were expressed in the report from the 1944 Traffic Commission, which he chaired. A central passage of the report says: "Administrative direction executed by public officials, however skilled they may be, will unavoidably essentially build on the current situation. It will thus, as a rule, preserve the status quo."

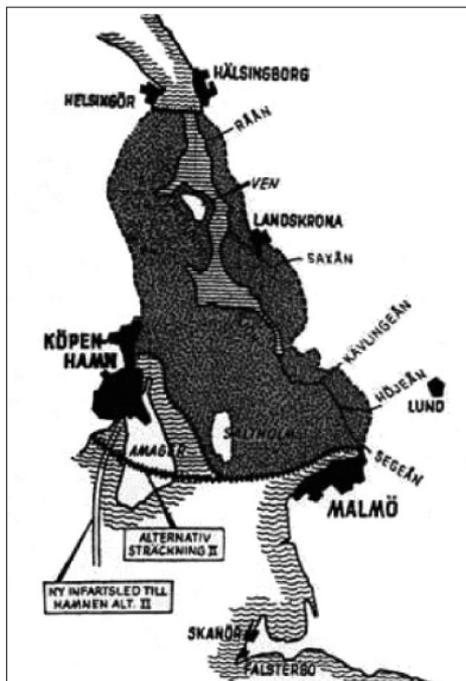
In the 1940s and 1950s, Ruben Rausing took an active part in the discussions of the

Swedish Economic Association. In November 1940, he discussed problems of industrial production and adjusting investments, and in January 1947 the new tax proposals, while in April 1950 he talked about competition and ideology. In 1952 and 1957, he commented on the Government's budget proposals. Later on, he discussed the role of Swedish industry in Europe in essays on Swedish industry in the common market and Swedish industrial production in the European market.

When Ruben Rausing's wife Elisabeth was diagnosed with cancer in 1939 and after her death from the disease in 1946, he worked with medical researchers to try to solve the mystery of the disease. After experiments on horses Rausing formulated the hypothesis that healthy individuals were protected by certain hormones, that a surplus of these were produced and that urine from healthy individuals could be used to cure cancer patients. He funded a research team under the leadership of Professor Ernst Wollheim, which conducted studies in mice. In a short essay entitled "Reflections on Cancer" in 1950 Rausing summarised



Report from the 1944 Traffic Commission of which Ruben Rausing was Chairman.



Ruben Rausing's proposal to drain the Öresund sound to create a land border between Sweden and Denmark, according to a drawing published in *Dagens Nyheter* on 25 March 1953.

the experiment by optimistically claiming that it had brought the world closer to a cure for cancer. This would not be the case. However, Rausing did continue to support cancer research and was one of the individuals behind the initiative to establish the Swedish Cancer Society (Cancerfonden) in 1951.

Ruben Rausing's most spectacular contribution to the public debate was a proposal published in the daily newspaper *Dagens Nyheter* on 25 March 1953, probably inspired by his work with the 1944 Traffic Commission. It involved draining the water from Öresund (the stretch of water that forms the Swedish-Danish border). His article had the headline: "Why not have a land border with Denmark?" It was an alternative to the tunnel and bridge connections between the countries that were being dis-

cussed. Under his proposal, a lake in the middle of Öresund would take the water flowing from the rivers in the area making the islands Ven and Saltholm into two shallow ridges. Instead of Ruben Rausing's proposal, a bridge between Malmö and Copenhagen would, after much back and forth, become a reality many years later. His vision of having a connection further north as well may eventually materialise in the form of a tunnel from Helsingborg to Helsingor.

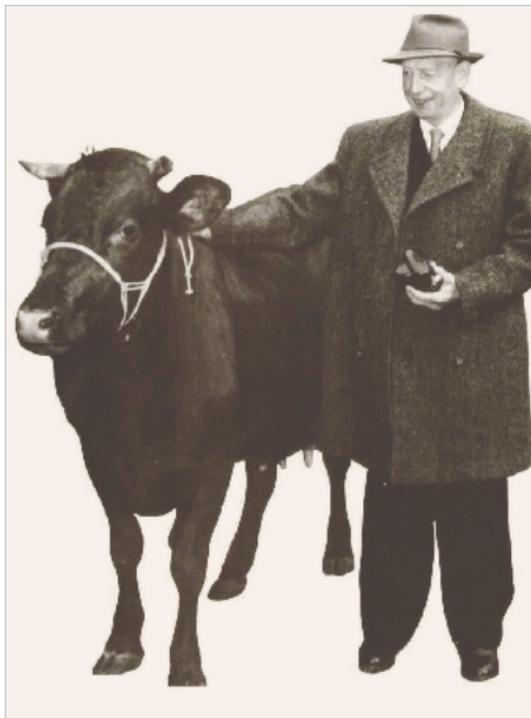
Ruben Rausing's interest in genetics came to the fore once more when in 1941 he purchased Simontorp, a farm in the Sjöbo municipality. There he developed a concept



Simontorp purchased by Ruben Rausing in 1941.

for a barn where the cows stood on fluted rubber mats instead of straw so their faeces and urine were kept away from their udders. This enabled him to produce milk at Simontorp with exceptionally low bacterial content. Later on, farming game fish and signal crayfish became a significant activity as well as a wholesale business in aquarium fish, aquariums and aquarium accessories. Today Simontorp Säteri AB is a subsidiary of the Tetra Pak Group specialising in forestry.

Ruben Rausing as a proud cattle farmer at Simontorp.



CONCLUSION

Ruben Rausing died on 10 August 1983 at the age of 88 at his Simontorp estate, to which he returned after a number of years living in Rome and Lausanne. Towards the end of his life, he was able to look back on an extraordinarily successful career as an entrepreneur and business leader. He had also received recognition in academia. He was elected into IVA's Economics Division in 1950 and became First Honorary Member in 1980. His nominees in 1950 described his ability to solve problems through "a creative imagination combined with an uncommon ability to see the relationship between technical and economic aspects." When he became First Honorary Member in 1980, his wealth of ideas and creative energy were emphasised, as well as how, through his enthusiasm and drive, he "created one of the great innovation companies." By that time, he already had three honorary doctorates. In 1957 he had been conferred an honorary doctorate in medicine at Lund University and two years later in economics at the anniversary conferment at the Stockholm School of Economics, 50 years after it was founded. In 1977 he became honorary doctor in engineering at the Royal Institute of Technology in Stockholm.

After Ruben Rausing's death, Tetra Pak continued to grow both organically and through the acquisition in 1991 of the much older innovation company Alfa Laval. A few years after this acquisition, Ruben's sons Hans and Gad resigned from Tetra Pak's board, and in 1996, the Gad Rausing family purchased the Hans Rausing family's



Ruben Rausing in his senior years.

shares. Thanks to Tetra Pak's market successes, the Rausing family are nowadays among the wealthiest individuals in the world. What a spectacular return on the savings invested by Ruben Andersson's aunt Johanna in her nephew in 1916! The scholarship he received from the Stockholm School of Economics in 1919 must also be regarded as highly significant in sowing the seeds for today's global enterprise. Ruben Rausing and Gerhard Törnqvist, through their academic studies and field trips to various businesses, gained important insights into the ideas of Frederick Winslow Taylor on scientific business management. They each went on to apply these principles in their own ways beyond industrial production to promote

the scientific management of goods in the retail sector. Ruben Rausing very successfully lived up to the vision of his partner Erik Åkerlund from 1930 of "revolutionising distribution through packaging."

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