Chapter N (please do not write anything in this line. Editors will annotate the chapter number)

The future of the Italian tanning industry considering the recent geopolitical crisis

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**Abstract:** The war in Ukraine - and its disturbing long-term prospects - risks further exacerbating the historic need for raw materials (raw and semi-finished) of Italian tanneries, already plagued by years of competition, sometimes unfair, made up of customs barriers and limitations of various types that have stolen, especially in recent years, a lot of raw materials from the free market. Given the greater availability of raw hides, the tanneries of non-European countries (Asian and South American) could take advantage of this to reduce our competitiveness on international markets.

The foreign procurement of raw hides accounts for over 90% of the needs of Italian tanneries and the conflict area accounts for about 3.5% of total purchases from abroad. Ukraine is one of the main suppliers of semi-finished leathers, including Russia and Belarus, the Italian purchase of raw and semi-finished leathers, is equal to 70% of the total, while the export of Italian finished leathers to these incident countries for alone 1% of the total.

The situation is so worrying that the most important italian association of tanning industry, the Unione Nazionale Industriale Conciaria (Unic), in accordance with the European trade confederation, proposed asking the European Commission to limit the export of raw hides. / European semi-finished products outside the EU borders. Faced with such a disturbing scenario, it is clear that the problem of raw leather supply must be addressed at the EU level with management that takes into account the different production capacities of individual member countries, providing for adequate investment, and increasingly implementing the principles of circular economy and technological innovation to the leather industry.

**Keywords.** Leather, raw hides, circular economy

**1.1 Introduction**

Every year around the world, tanneries valorize and enhance about 8 million tons of raw hides and skins, a waste material from the agri-food supply chain that would otherwise be destined for disposal in landfills or incineration, resulting in the release of about 5 million tons of greenhouse gases. On the other hand, leather, an extraordinary example of valorization and conversion of a putrescible and polluting material, has a much longer use life than its substitutes and a far more favorable degradative fate for the environment.

The market for materials proposed as alternatives to leather, whether exclusively synthetic ones such as polymers derived from petrochemicals, or those of synthetic biogenic origin such as for example Appleskin, Desserto (essentially cellulosic pulps from various plant sources, including waste), more or less additivated in some cases with prevailing percentages of synthetic components (PVC and PU), is also growing as an effect of ecovegan propaganda that is not infrequently as uninformed as it is aggressive. It must, in fact, be remembered that no animal is killed to obtain its skin for tanning purposes (apart from the case of the fur industry); on the contrary, the tanning industry has, precisely, the merit of valorizing a waste product that would otherwise constitute a serious environmental problem. It is no coincidence that the 2021 UNIC sustainability report includes the proposed use of the ethical claim "*we recover our hides and skins from the food chain*" which, in an extremely succinct and effective way, summarizes the origin of a material that is natural, biodegradable, and able to meet the requirements of the circular economy.

Moreover, many claims of often ideologized propaganda are punctually refuted by scientific studies, as demonstrated recently (Meyer, 2021) by the FILK Freiberg Research Institute, which compared eight new materials by subjecting footwear made with genuine leather uppers and artificial materials, respectively, to various tests (standardized physical tests in use for leather such as mechanical performance, water absorption, water vapor permeability, etc.). It emerged from the study that the most signiﬁcant parameters of functional performance are, for genuine leather, superior in many respects to synthetic materials, of which none can simultaneously match the physical-mechanical properties of genuine leather, which is the result of the special, inimitable three-dimensional interwoven structure of collagen fibers that "*have no beginning and no end*" and is appropriately protected by Legislative Decree No. 68/2020, which defines it as a material of animal origin that has preserved the original intact fibrous structure

(Fig. 1).

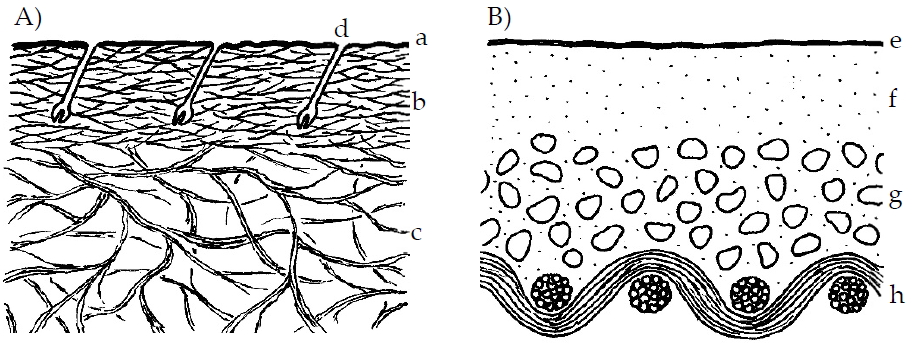


Fig. 1. A: leather cross-section with the different density and angle of interlacing of collagen fibers; B: "artificial leather "composite of polymer foam, fabric, surface layer of protective/aesthetic coating

Sources: (Meyer et al., 2021)

**1.2 Historical evolution of the Italian tanning industry**

Italy had more than 1300 tanneries at the beginning of the last century (Truffi, 1901), concentrated especially in Piedmont, Campania and Lombardy, with about 13500 workers; it owned, in 1890, 17,500,000 heads of large and small livestock and derived more than 15 million quintals of tanning vegetables (mostly barks and sumac) from its woodland heritage. It processed nearly 60000 tons of raw hides, about two-thirds of which were sourced domestically and the remainder from abroad (mostly from Calcutta, China, the Plata, and the Mediterranean coast of Africa).

After more than a century, there are no substantial numerical differences: 1,165 companies with more than 17,000 employees, mostly SMEs concentrated, today, mainly in the tanning districts of Arzignano (Vicenza), Santa Croce sull'Arno (Pisa) and Solofra (Avellino), which together make 90 percent of Italian tanned leather production (UNIC, 2021). Specifically, in the entire Ateco C15 division - manufacture of leather and similar articles, more than 14 thousand companies were operating in 2019, three-quarters of them micro enterprises (with less than 10 employees), 21.5 percent with 10 to 49 employees, and only 0.3 percent with more than 250 employees. The nearly 150 thousand workers in the sector (including footwear) are 40 percent employed in small enterprises (10 to 49 employees). They are mostly employees (84.2% in 2017) and half are women (Veronicoo, 2021).

Over the years, on the other hand, both production technology has changed profoundly, with finished products that are merceologically highly evolved and varied, as well as the speed of production: just think of the introduction, at the beginning of the 20th century, of chrome tanning: the patent of the American Dennis, with the "one-bath" chrome tanning is from 1893, and after a slow diffusion, due to some initial difficulties in application, it became established worldwide, so much so that it still constitutes about 80 percent of those in use today. Vegetable tanning, which at the beginning of the last century was practiced with very long and complex procedures with the available tanning vegetables simply chopped up, has also undergone profound innovations in the type of tanning agents. These are now mainly chestnut, quebracho, tara and sumac, as well as a boundless array of evolved "synthetic" auxiliary and substitution tannins, which are traded, almost exclusively, in the form of concentrated extracts, including vegetable tannins sulfited extracts. Technological innovations have also undergone significant improvements with the introduction of dynamic rather than static tanning processes, which have made vegetable tanning itself possible in a few days rather than in many weeks as in the case of slow tank tanning. Compared to the past, the localizations and characteristics of raw hides export and supply markets, the result of upheavals (two world wars) and consequent new geopolitical arrangements, have also more or less expanded or shrunk.

The UNIC Report 2021 shows that despite the difficult economic situation in the previous year, the Italian tannery, with the high added value of production, maintained its relevant role globally, being the leading European producer of finished leathers, almost exclusively bovine and sheep and goat leathers, the production of which amounted to 97 million square meters (-16.4% over 2019) and 7 thousand tons of sole leather (sole leather, vegetable-based, is traded by weight), with a total value of 3.5 billion euro (-23.1% over 2019), of which more than 70% is generated by exports. Processed hides and skins are destined for the fashion (36 percent for footwear, 26 percent for leather goods, and 4 percent for clothing) and upholstery (furniture 16 percent and car interiors 16 percent) sectors."

Italy is, by political choices and natural characteristics, a country highly dependent on foreign countries in terms of both energy and raw materials, and even the tanning industry unfortunately does not escape this insufficiency. In fact, it is well known that the raw material of the Tanning Industry is a waste product of animal slaughtering, therefore, closely related to meat production. The national livestock population and, in particular, the number of slaughtered animals cannot meet the demand for raw hides and skins of the tanning industry, and this situation is actually not new. In fact, already statistics from the late 19th century show that the amount of imported raw hides compared to exported ones is largely higher; the same trend, although with different numbers especially in terms of productivity related to the tanning technological evolution, both in tanning processes (fast chrome tanning vs. slow vegetable tanning) and in the level of automation, especially in mechanical operations (fleshing, trimming, etc), can be seen in more recent statistics as in the following table (Tab.1).

Table 1. Historical trend of import/export of raw, tanned and glove leather in Italy

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| YEAR | RAW HIDES (metric tons) | | TANNED HIDES (metric ton) | |
| IMPORT | EXPORT | IMPORT | EXPORT |
| 1876 | 13926 | 2019 | 1630 | 771 |
| 1896 | 21120 | 8260 | 2150 | 850 |
| 2017 | 171390 | 49713 | 198.075  (semi-finished leathers  181653+16422 finished) | 144.366  (semi-finished leathers  85696+58670 finished) |
|  | PAIRS OF LEATHER GLOVES | |  | |
|  | IMPORT | EXPORT |
| 1876 | 14.700 | 2.626.300 |
| 2017 | 12.357.166 | 1.339.747 |

Sources: freely taken from (Truffi, 1901); (UNIC, 2017)

The leadership position of the italian tanning industry, which contributes to 23% of the global value of finished leathers produced worldwide, is the result not only of a recognized superiority of the prestige of Made in Italy, but also of a farsighted and courageous strategy of entrepreneurial investments in quality, minimization of environmental impact and continuous research of more sustainable tanning processes. However, every effort aimed at sustainability is, unfortunately, thwarted by the reduced availability of raw material and the industry of the sector for several decades, also to avoid the most environmentally burdensome processing steps, prefers to import semi-finished products (Wet Blue).

**1.3 Current situation and future perspectives**

The war in Ukraine, and its disturbing long-term prospects, is likely to further exacerbate the atavic raw material requirements (crude and semi-finished) of Italian tanneries, which have already been plagued by years of competition, sometimes unfair, made up of tariff barriers and limitations of various kinds that have taken, especially in recent years, much raw hides from the free market. Foreign supply of raw material accounts for more than 90 percent of the needs of Italian tanneries, and the conflict area counts for about 3.5 percent of total purchases from abroad. Ukraine itself is one of the main suppliers of semi-finished leather; including Russia and Belarus, Italian purchases of raw and semi-finished leather account for 70% of the total, while exports of Italian finished leather to these countries account for only 1% of the total.

The international market for raw hides and skins, especially cattle and sheep and goats, is extremely fluid and complex as well as particularly sensitive to a multiplicity of situations that cannot be easily managed or predicted: industrial, geopolitical, technological, social and environmental. The series of crises not only political and commercial, just to mention the most recent ones, that preceded the current one is worth mentioning as an example:

* 2014, Russian annexation of Crimea with mutual sanctions Russian Federation/European Union
* 2018, U.S./China trade war with exchange of major tariff sanctions
* 2020, widespread lockdown due to Covid pandemic.

Without coming to any definitive conclusions, there has been an attempt to understand the effects on international trade, which, in essence, seems to have hurt both sides of the dispute but, more importantly, consumers, and this should make people think about the consequences of applying trade sanctions. It has thus gone on to paroxysmally exacerbate a tense situation already present in the leather market, which, moreover, is also already struggling due to competition from low-quality, low-priced substitutes. So worrisome is the situation that the Unione Nazionale Industria Conciaria (Unic), in agreement with the European trade confederation Cotance ( Confederation of National Associations of Tanners and Dressers of the European Community), has asked the European Commission to limit the export of European raw/semi-processed hides outside the EU borders, and this in order to protect the European tanning industry against that of its main non-EU competitors (China, Brazil, Argentina) with greater availability of raw material, which can take advantage of the economic consequences of the war. This is clearly an extreme measure that conflicts with the rules of the free market and is justifiable only in situations of absolute emergency such as the one we are currently experiencing and which is likely to get worse.

Certainly, with the current uncertain geopolitical situation and with the disturbing trend toward bipolarization into blocs, the unavailability of raw material on the one hand and the restriction of export markets on the other are superimposed on the creeping economic raw hides war that has been going on for many years, not always correctly, with tariff barriers and other noncustoms obstacles, has taken considerable quantities of raw and semi-processed hides and skins away from the free market, particularly because of the industrial emancipation policies of emerging or already emerged countries that tend to export less and less raw and more and more finished or semi-processed hides and skins. Among other things, raw hides and skins even if preserved (green salted, dry salted etc.) do not lend themselves by their nature to excessively long storage periods, thus preventing the possibility of strategic storage, and the same is true for tanned hides and skins.

In the face of such a disturbing scenario, there is a clear need to adopt countermeasures projected over the medium and long term, providing, with renewed impetus, adequate investments, and increasingly implementing the principles of circular economy and technological innovation to the leather industry. Also because of the geopolitical scenarios on the horizon, coordination first and foremost between UNIC - Italian Tanneries and the European Confederation of National Trade Associations, COTANCE (Confederation of National Associations of Tanners and Dressers of the European Community), will be crucial, to propose in the EU an integrated management of the availability of both EU and non-EU accessible raw hides and skins, as well as of energy and water resources, with the Italian tanning leadership not as an antagonistic element but rather as a dragging element of the entire European tanning supply chain : in short, the protection of the Italian tanning industry as the driving force and model of an ever deeper and ever more imperative European integration.

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