

The Iranian raw silk trade and European manufacture in the seventeenth and eighteenth centuries

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Introduction

From the sixteenth to the early eighteenth centuries much of the silk woven on European looms originated in Iran. This short paper will consider a few of the questions raised by the trade that brought silk from Iran's remote Caspian provinces to the manufacturing industry of early modern Europe. In Iran, the existence of expanding commercial commodity production for distant markets poses serious problems for accepted models of the Safavid state and economy. In Europe, the partial dependence of the silk industry on remote sources of supply had important repercussions: the geographical distribution of the industry was affected by access to raw silk supplies, while its growth was constrained both by the availability of supplies, and by the ability to procure raw materials of the standards required by an increasingly mechanized industry. Before turning to these questions, however, it is necessary to consider first the overall volume of the trade during the period.

The scale of trade

The regular export of Iranian raw silk to Europe began as early as the twelfth century with the establishment of a significant silk industry in central Italy. Lucca and later Florence and Venice all

depended on the Levant for a part of their raw silk supplies, and until the eighteenth century most of the silk exported from the Levant came from Iran. Raw silk was produced in many parts of Iran, but the most important regions for the export to the West were the provinces to the south and west of the Caspian Sea — in particular, Shirvan, Karabagh and above all Gilan.

At first the volume of trade was small: individual consignments were usually of only a few bales,¹ and the annual purchases of even the major buyers did not reach one hundred bales. In the fifteenth century Europe's part in the Levant silk trade was still minor; a large proportion went to the industry of Ottoman Bursa, also the principal market of the time. In the course of the sixteenth century the situation changed, as Aleppo replaced Bursa as the centre of the raw silk trade, and Europeans became the biggest buyers of Iranian raw silk. In the last years of the sixteenth century Venice, the greatest but by no means the only European nation involved, was importing nearly 1,500 bales per annum. Steensgaard, the only historian to have made a serious attempt to calculate the volume of trade, reckoned that in the early seventeenth century Europe imported around 500,000 lb (or some 2,200 bales) of Iranian raw silk.²

In the seventeenth century the sources become more numerous, but arriving at a total for the volume of trade is even more difficult, because Iranian raw silk was being brought to Europe via a number of different routes. The principal channel remained the Levant, but there was no longer a single centre. From around 1620 Aleppo faced a growing challenge from Izmir (Smyrna), and by the second half of the century the latter was handling most silk exports,

¹ Quantities are given in bales — the unit in which silk was traded. Bales varied greatly in size, depending on the pack animal that was carrying them. Here a standard bale of about 105 kg. has been adopted.

² STEENSGAARD, NIELS, *The Asian trade revolution of the seventeenth century*, Chicago, 1973, pp. 160-162.

though it never succeeded in completely replacing Aleppo. In the second quarter of the eighteenth century, when Iranian silk supplies became sporadic, the merchants turned to Syrian silk, and Aleppo again emerged as the principal centre. Nor were Aleppo and Izmir the only outlets for Iranian silk; occasionally, when Mediterranean shipping was particularly threatened by war or piracy, silk was carried by the overland route through Bursa to Istanbul and across the Balkan peninsula to the Adriatic.

Other routes were opened that bypassed the Levant altogether. In the 1620's to 1640's the English and Dutch East India Companies brought considerable quantities of Iranian raw silk to Europe via the Cape route from the Persian Gulf. Then, towards the end of the century, the Russian government agreed to allow the transit of Iranian raw silk from the Caspian port of Astrakhan, along the Russian waterways to the Baltic or White Sea where Dutch vessels loaded it for shipment to Amsterdam.

Reliable data are available for only one of these routes — the Cape route used by the East India Companies — but this was never the most important. For the others, scattered and dubious figures have to be supplemented by the estimates of various more or less informed travellers, diplomats and merchants. The estimates vary wildly — for Iran's total silk export, from 40,000 to 1,800 bales — but they make it possible to arrive at an order of magnitude for the trade, if not at any precise quantification.

The highest estimates, such as the 40,000 just mentioned and the 34,000 bales suggested by the English adventurer Robert Sherley, are unsupported by evidence, and can safely be dismissed. The most commonly cited estimate is Chardin's 22,000 bales (c. 1670) for total Iranian production,³ but although Chardin is generally reliable on Iran, he seems to have based his figure on that of Olea-

³ CHARDIN, JEAN, *Voyages de Chardin...*, ed. L. LANGLES, 10 vols., Paris, 1811, vol. 4. pp. 162-163.

rius some thirty years before ⁴ — simply adding two thousand bales to allow for continuing growth. In fact neither Olearius nor Chardin was personally involved in the raw silk trade, and the estimates made by those who were are more trustworthy.

The first, in 1618, was that of Barker and Pettus, two English East India Company agents serving in Iran. They put total silk production (excluding the north-eastern province of Khorasan whose entire output was consumed locally or exported to India) at 168,000 *man-i shah* (9,300 bales) of which they believed two-thirds, 6,200 bales, was exported to the West. ⁵ This is a great deal lower than Chardin's estimate, but high compared with Steensgaard's calculation, especially since Barker and Pettus believed the output was currently 1,700 bales lower than usual because of war damage in the silk producing provinces. It seems likely that the Englishmen, like Chardin, erred on the generous side; 1618 was only the second year of the East India Company's involvement in Iran, so they may have succumbed to the tendency to exaggeration typical of the first E.I.C. agents in Iran. Certainly the estimate made by the Dutch agent, Overschie, in 1637 is much lower, and as Overschie was probably the most experienced European to volunteer an opinion on the subject, his estimate merits serious attention. He calculated that Iran produced a total of only 2,800 bales of silk, 2,100 of these coming from Gilan. Of the total, 300 bales went to the Turkish market and 1,000 to the domestic industry, leaving 1,500 bales for export to Europe. Knowledgeable though he was, Overschie certainly was not a disinterested observer. He was then attempting to secure for the Dutch East India Company a monopoly in the export of Iranian raw silk to Europe, and his estimate was made in a report written to persuade his directors that this objective had vir-

⁴ OLEARIUS, ADAM, *Vermehrte neue Beschreibung der Muskowitschen und Persischen Reise* (1), SCHLESWIG, 1656 (reprint Tübingen 1971), p. 601.

⁵ FERRIER, RONALD W., "An English view of the Persian trade in 1618", *Journal of the Economic and Social History of the Orient*, vol. 19, part. 2, 1976, pp. 198-199.

tually been achieved. According to Overschie, in the previous year the Dutch had bought a thousand bales and the English 373, leaving only just over a hundred for the Armenians to export via the Levant.⁶ But the Company directors were not convinced, and pointed out with unconcealed annoyance that half the silk reaching the Netherlands was still coming via the Levant, where English, French and Italian merchants were finding no shortage of supplies from Iran.⁷ It therefore seems certain that Overschie seriously underestimated the scale of trade.

Two other estimates of Iran's total export merit consideration. In the 1660's and 1670's several Armenian silk merchants — the people best qualified of all to talk about the silk trade — came to the Russian court to negotiate the opening of the route through Russia to the silk trade. The delegates several times stated that the annual Iranian silk export was 4,000 loads or 8,000 bales.⁸ Some fifty years later, when Peter the Great was preparing for the invasion of Iran's Caspian provinces, an Indian merchant resident in Astrakhan and active in the Caspian trade told Peter's officers that Iran exported 9,000 bales of raw silk to Turkey and the Mediterranean.⁹ The fact that these two estimates from independent and well-informed sources are so close certainly lends them credibility, but the Armenians, at least, had a clear motive for giving a high estimate, as they were trying to persuade the Russian government of the enormous customs revenue they would receive by diverting the trade. Despite the large discrepancy between Overschie's 2,800 bales and the eight or nine thousand suggested by the native merchants, these figures have to be taken as outer limits for the investigation.

⁶ DUNLOP, HENDRIK, *Bronnen tot de geschiedenis der Oostindische Compagnie in Perzie*, s'Gravenhage, 1930, p. 612.

⁷ *ibid.*, pp. 657, 665-666.

⁸ *Armjano-russkie otnosheniya v XVII veke*, ed. V.A. PARSAMYAN, Erevan, 1953, pp. 37, 39, 46, 55.

⁹ SOIMONOV, FEDOR I., *Opisanie Kaspiiskago Morya ...*, Saint Petersburg, 1763, p. 108.

The only relatively full series of statistics on the silk trade are for the Dutch and English East India Companies' exports. In the 1620's their average combined export was 670 bales. In the 1630's the figure rose to nearly 1,000 bales, but fell back to around 600 bales in the 1640's, and never amounted to more than a few hundred bales thereafter. The largest export was achieved in 1637/8, when the two Companies took 1,873 bales.¹⁰ Figures for the Levant route are very sparse for this period. In 1620 the Venetian consul in Aleppo reported that 4,000 bales had reached the city that year, of which the English had bought 1,400.¹¹ In 1621, however the English exported only 118,000 great pounds (760 bales).¹² The customs registers of Iskanderun (Aleppo's sea port) indicate an even lower level, giving the total exports by all nations as:

1624/5	544 bales
1626/7	945 bales
1627/8	611 bales
1628/9	1801 bales ¹³

It would probably be a mistake to attach too much significance to these figures, since in 1624/5 the port of Iskanderun (Alexandretta) was closed for more than six months after an attack by pirates, and the mid — 1620's were generally difficult years for Aleppo's trade, with the routes interrupted by war. In any case a substantial part of silk exports may already have been passing through Izmir.

Later in the century the data are somewhat richer. In circa 1675 a silk merchant reckoned that Izmir exported 2,900 bales¹⁴ of

¹⁰ SEENSGAARD, *op. cit.*, p. 395 (using a bale of 100 kg.).

¹¹ *ibid.*, p. 182, DUNLOP, *op. cit.*, p. 11.

¹² DAVIS, RALPH, "England and the Mediterranean 1570- 1670", *Essays in the Economic and Social History of Tudor England*, ed. F.J. FISHER, Cambridge, 1961, p. 125.

¹³ KALDY-NAGY, Gy. "Dannye k istorii levantinskoj trgovli v nachale XVII stole-tiya", *Vostochnye istochniki po istorii Yugo- vostochnoi i Tsentral'noi Evropy*, vol., 2, ed. A.S. Tveritinova, Moscow, 1969, pp. 327-330.

¹⁴ SAVARY, JACQUES (the elder), *Le parfait negociant*, Paris, 1742-49, vol. 1, part 2, book

Iranian raw silk each year, the English buying 1,000 of these. In the early eighteenth century another estimate put Izmir's export at 2,000 bales,¹⁵ while at the same time Aleppo was said to be handling some 1,400 bales.¹⁶ Scattered figures are available in the Marseilles and London customs records for French silk imports from Izmir, and for English imports from the whole of the Levant. The table below gives these figures converted into 105 kg bales:

	French imports from Izmir ¹⁷	English imports from the Levant ¹⁸
1663 & 1669		1,700
1697-1700		1,400
1701-10	300	1,300
1711-20	300	1,800 D 2,000 U
1721-30	40	1,600 D 1,700 U

These figures indicate that the English were much bigger importers of Levant silk than the French — but unfortunately they leave out as much as they include. There are no figures for the Dutch (who were also major importers), or for the Armenians (who

5, pp. 410-413. He specified the weight of these bales, and they are considerably larger than the 105 kg bale adopted as standard. In 105 kg bales the total would be around 4,000.

¹⁵ PITTON de TOURNEFORT, JOSEPH, *Relation d'un voyage du Levant*, Paris, 1717, vol. 2, pp. 438, 497. Again this is a very large bale. The total is equivalent to some 3,600 105 kg bales.

¹⁶ Archives du Ministère des Affaires Etrangères, Paris, *Correspondence Politique*, Perse, vol. 5, f. 22.

¹⁷ ULKER, NECMI, *The Rise of Izmir 1688-1740*, unpublished PhD dissertation, University of Michigan, 1974, pp. 83-84. The trade figures given here may be too low, as on p. 116 Ulker cites a different source giving values only for French imports from Izmir that are some three times as great as those given on p. 83.

¹⁸ Based on ANDERSON, SONIA, *An English consul in Turkey. Paul Rycant at Smyrna, 1667-1678*, Oxford, 1989, p. 160; DAVIS, RALPH, *Aleppo and Devonshire Square*, London, 1967, pp. 42, 139; and Ulker, *op. cit.*, pp. 86-87. Where they differ they are distinguished by "D" and "U".

were shipping silk to Europe themselves in chartered vessels). Moreover the data cover imports to only two of Europe's major ports. To construct anything approaching a complete picture we would also need the figures for Venice, Livorno and Amsterdam. As it stands, the table represents no more than a large fraction of the total European import of Iranian raw silk from the Levant.

In the later seventeenth and early eighteenth centuries the Cape route had declined, never taking more than a few hundred bales a year in spite of sporadic attempts to revive it. The route through Russia on the other hand grew considerably in importance, especially in the 1690's when the Nine Years War interrupted the Levant route. Numerous individual consignments of silk recorded in the Russian archives suggest a vigorous trade, but the information is too incomplete to build up annual totals.¹⁹ Contemporary commentators estimated the volume of silk exported via Russia at one thousand bales a year or more.²⁰

Lack of firm data has made it impossible to arrive at a definitive account of the scale of Iranian raw silk exports, but the available information suggests a vigorous and expanding trade. In the early sixteenth century Europe imported only a few hundred bales a year. By the early seventeenth century the figure was already more than 2,000 bales, possibly a great deal more. By the late seventeenth and early eighteenth centuries the volume may well have been as great as 5,000 bales, and even the 8,000 suggested by the Armenian merchants is not impossible.

¹⁹ KUKANOVA, NINA, G., *Ocherki po istorii russko-iranskikh torgovykh otnoshenii v XVII-pervoi polovine XIX veka*, Saransk, 1977, pp. 86, 108-110, tables 1-2.

²⁰ GLAMANN, KRISTOF, *Dutch-Asiatic trade 1620-1740*, Copenhagen/The Hague, 1958, p. 126; HANWAY, JONAS, *An Historical Account of the British Trade over the Caspian sea ...*, London, 1753, vol. 2, p. 31.

Silk and the Iranian economy

For Safavid Iran the silk trade was a lifeline. The returns in European silver coin were the only significant source of precious metal, so without silk, the mints would have had no silver to strike coin, and the constant trade deficit with India would rapidly have drained the country of currency. Historians agree on the importance of the silk trade to the Iranian national economy, but the idea of fast-expanding commercial production of raw silk to feed the growing export trade sits very uncomfortably beside accepted notions about the Safavid economy. The agrarian sector is generally depicted as static and geared to subsistence, virtually isolated from the commercial life that animated the towns, and prevented from developing by the grip of exploitative and shortsighted absentee landlords whose only concern was to extract any surplus for their own immediate profit.

The production of raw silk was carried out in villages by peasants who also raised food crops. There was only one silk harvest a year, and from autumn until early spring there was no activity at all in sericulture. Intensive labour was only required for a short period in early summer when, men, women and children all worked together to feed the silk worms several times a day. The silk was wound off the cocoons by a process that required the labour of only one person, and the skeins were then baled together and exported without further treatment. Silk production required very little capital outlay: the eggs were provided from stock; the worms were raised in easily constructed sheds; the winding off process required a large metal basin (the only expensive item) in which the cocoons were softened in hot water, and a simple hand or pedal-powered wooden wheel onto which the silk filaments were wound.

The nature of the production process placed certain obvious constraints on the expansion of production: peasants could not go over to a monoculture of silk because of the seasonal nature of the

activity; and the availability of mulberry leaves to feed the worms, and of labour, limited the level of production within the sericultural season. There is nothing, however, to suggest that the upper limits of capacity were reached in the Safavid period, and such growth as was achieved seems to have come from intensification in the silk-producing regions. There is no evidence that raw silk supplies were diverted from domestic industry to export markets, and attempts to extend sericulture into new regions did not meet with success. This leaves open the questions of how Iranian agrarian production was able to respond positively to the growing demand of the distant European market.

Unfortunately, very little is known about the processes of procurement and marketing in the silk trade. In the Levant, European merchants bought raw silk primarily from the Armenian merchants of New Julfa (the Christian suburb of Isfahan), who transported the silk from Iran. The Armenians' predominance in the trade dates from the end of the sixteenth century, and was considered by contemporaries to be a result of their employment as commercial agents by Shah Abbas I (1587-1629). The Safavid ruling class — the shahs, tribal khans, senior state officials and local nobility — extracted a large share of all surplus agricultural production as rent or revenue. Silk, as a product with a ready market and a high cash price, was a particularly desirable commodity, so it is not surprising to find that the political élite had long taken an active interest in the silk trade. Throughout the Safavid period merchants bought a large part of their silk stocks from shahs, provincial governors, and lesser landholders. In Gilan (the most important province for silk), the main beneficiaries until the late sixteenth century were the local rulers, who retained a degree of independence from the central government, but in 1592 Abbas I crushed the last vestiges of Gilan's independence and a few years later incorporated the province into the crown lands. It is from about this time that the Armenians (his preferred commercial agents) achieved a virtual monop-

oly of the export trade. In 1619 Abbas went a step further and declared the whole of Iran's silk export a royal monopoly, pushing up prices, playing off the Armenians against the East India Companies' agents, and using his control of the silk trade to threaten the revenue of the Ottoman Sultan. The Shah's dominance of Iran's trade appeared so complete to one Italian traveller that he described him as "the greatest, rather the only, merchant in his kingdom".²¹ Even after the monopoly was discontinued following Abbas's death in 1629, the crown still maintained a large share in the silk trade (over 1,000 bales p.a. in 1634).

The political élite's excessive control and exploitation of economic resources has often been identified as an obstacle to the development of commercial capital and an independent bourgeoisie in pre-modern Iran, the silk trade being cited as a prime example, but the flourishing silk export trade of the seventeenth century hardly supports this view, and the involvement of the crown and ruling class certainly did not exclude the private commercial sector. Raw silk was sold in local towns by private individuals, described by European travellers as the country people (which probably refers to small local traders rather than the producers themselves). In addition, the major silk merchants went or sent their agents to Gilan to buy silk in the villages at first hand. It seems likely, though conclusive evidence is lacking, that they contracted for the silk before the harvest by making a down payment, and collected the silk and paid the balance in the summer. A point on which the sources are unanimous is the full monetization of the silk trade; no-one sold silk without receiving its price in cash. As a result, in Gilan silver coin was abundant even in the villages, a sharp contrast with most other provinces. The Rasht mint existed almost solely for the purpose of recoinng imported foreign silver into Iranian currency for use in the silk trade.²²

²¹ VALLE, PIETRO DELLA, *Viaggi*, Brighton, 1843, vol. 2, p. 41.

²² SOIMONOV, *op. cit.*, pp. 189-190.

The big silk merchants were rich and powerful men, each exporting several hundred bales a year. The enormous wealth of the Julfa merchants dispels the notion that commercial capital in Iran was weak. Apart from their own capital, silk merchants won investment from the majority Muslim community (a 1731 partnership contract records an investment of 900 *tumans* by an Iranian nobleman), and even from as far away as Aleppo.²³ Nor were the merchants as politically powerless as has often been supposed. In Abbas I's reign the Julfa Armenians brought effective pressure to bear on the Shah by threatening to hold up the returns from the Levant, and the suspension of the monopoly after his death was partly in response to the representations of prominent silk merchants. An early eighteenth century Russian account draws attention to the great power of the silk lobby in Gilan, where the royal governor could do nothing that threatened the interests of the local merchants and élite.²⁴ Even under the monopoly, royal control of the silk trade was not complete. There is no evidence, for example, that it was effective outside the crown provinces of Gilan and Mazandaran. The other important silk growing areas, Shirvan and Karabagh, were administered indirectly through governors who appointed and controlled their own officials, so it is unlikely that the monopoly was enforced there. Even in Gilan it did not result in the complete suspension of private commerce, which was permitted on payment of high duties to the crown.²⁵ Even the East India Companies were allowed to buy from private suppliers when crown stocks failed.²⁶ Nor did the monopoly itself represent a complete break with existing commercial practices — the crown

²³ KHACHIKYAN, Sh. L., *Nor Jughayi Hay vacharakanutzyune ...*, Erevan, 1988, p. 121; MASTERS, B., *The Origins of western economic dominance in the Middle East*, new York, 1988, pp. 62-63. A *tuman* was worth about £ 3 10s.

²⁴ SOIMONOV, *op. cit.*, pp. 189-190.

²⁵ DELLA VALLE, *op. cit.*, vol. 2, p. 59.

²⁶ MELINK-ROELOFSZ, M.A.P., "The earliest relations between Persia and the Netherlands", *Persica*, vol 6, 1972-1974, pp. 1-50.

agents found they could only secure the silk harvest by contracting in advance and sending into the villages to pay for the harvest in cash.

The admittedly sparse evidence on the silk trade does not suggest that there was any essential conflict of interest between the merchants and the Safavid ruling class. On the contrary, in some ways the involvement of the latter significantly facilitated trade by gathering and concentrating a substantial part of silk production as revenue, and by the credit it extended to merchants who sold this silk in the Levant either on a commission basis, or against payment deferred until their return. The answer to the question of how Iran was able to substantially increase its output and export seems to lie in the cooperation of mercantile and landholding élites in a system of commercial production whose incentives penetrated as far as the individual producer.

Iranian silk in European industry

For the seventeenth century European silk industry imports from Iran represented a substantial share of raw material supplies. No other Asian source compared with Iran until the mid — eighteenth century. From Bengal, for example, between 1669 and 1718 the Dutch and English East India Companies imported around 1,000 bales per year, and this was several times the level of imports of Chinese raw silk.²⁷ Comparisons with Europe's own sources of raw silk are more difficult since much was consumed locally, and quantities never recorded in trade figures. For Sicily, however, one of seventeenth century Europe's major raw silk producers, Aymard has suggested an annual export of some five to six hundred

²⁷ PRAKASH, Om, *The Dutch East India Company and the economy of Bengal*, Princeton, 1985, pp. 217-218; CHAUDHURI, KIRTI N., *The trading world of Asia and the East India Company 1660-1760*, Cambridge, 1978, pp. 533-535; GLAMANN, *op. cit.*, pp. 112-131 *passim*.

thousand Messina pounds, roughly 1,500 to 1,800 bales.²⁸ Figures for European consumption are no easier to come by, although in the mid — eighteenth century Lyons, Europe's greatest single manufacturing centre, was said to consume 6,000 bales annually.²⁹ By either of these indicators, Iran was a very significant supplier to European industry in this period.

Although Iranian raw silk was imported into Italy, France, Holland and England, it was more important in the northern than southern countries. The French and Italian industries had easy access to supplies in Sicily, southern France and mainland Italy, and merely supplemented these with imports from the Levant. England and Holland had no such convenient sources, and the development of their silk industries was more closely connected with that of their overseas trade. The birth of the English industry has often been attributed to the influx of protestant refugees from Europe — from Flanders in the late sixteenth century, and from France after 1685 — but another important factor was the large-scale importation of raw silk by the Levant Company, which began in the early seventeenth century when spices could no longer be profitably imported from the Levant.³⁰ Later in the century it was again England and Holland that became involved in the import of Iranian, Bengal and Chinese silk via the Cape route. It should have been an advantage to have diverse sources of supply, but in fact it was difficult to control the level of imports from producing areas over which the Europeans exercised no direct control, and to which they were linked by long and vulnerable sea and land routes. News travelled too slowly, even to the Levant, for information about market conditions in Europe to be put to effective use in

²⁸ AYMARD, M., "Commerce et production de la soie sicilienne aux XVIe et XVIIe siècles", *Melanges d'Archeologie et d'Histoire*, vol. 77, part 2, 1965, p. 640.

²⁹ *ibid.*, p. 610. The total can be broken down by country of origin of the supply: Sicily 1,600 bales; Italy 1,500; the Levant 1,400; Spain 300; Provence, Languedoc, Dauphine 1,200.

³⁰ DAVIS, *Aleppo*, pp. 134-135.

Asia. Throughout the seventeenth century the unpredictable interaction of imports from various sources caused frequent gluts and shortages on the European market. As a result prices, and hence profits, in the silk trade were wildly variable — prices fluctuated more in London than in Aleppo.³¹ These difficulties were generally short-lived, but the Nine Years War of 1689-1697 showed up the precarious position of the English and Dutch industries. Levant trade was severely disrupted, causing a serious shortage. This prompted significantly increased orders by the East India Companies for Bengal silk, but political circumstances disrupted supplies there as well. As a result of this double failure, looms were left standing idle for want of silk.³²

In the long run Europe did benefit from the diversity of supplies, and when the real crisis for Iranian silk came in the decades after 1720, with the disintegration of the Safavid state and the Turkish and Russian invasions of Iran, the shortfall in Levant silk was largely compensated for by increased imports from Bengal and China. The vulnerability of an industry based on raw material supplies that were outside European control was a constant incentive to discover new sources of raw silk, or to increase control over existing ones.

The reliance of the English and Dutch industries on Asian silks had another far-reaching effect. By the later seventeenth century silk manufacture in Europe was beginning to be mechanized, with Italy and France leading the way. In particular the spread of the organzine silk throwing mill led to the exclusive use of that yarn for the warp threads in all high-quality textiles. England and Holland, obliged to raise their own standards, had to import increasing quantities of Italian yarn and use their Asian silks for the wefts of textiles, and for articles such as ribbons and buttons.

Even after the introduction of the organzine mill into England

³¹ *ibid.*, pp. 164-167; PRAKASH, *op. cit.*, p. 209 note 40.

³² PRAKASH, *op. cit.*, p. 217; GLAMANN, *op. cit.*, p. 126; CHAUDHURI, *op. cit.*, p. 348.

in the second decade of the eighteenth century the dependence on Italian silk continued; since Levant, Bengal and Chinese raw silks were not suitable for the new process, Italian raw silk had to be imported. This was partly because of the low quality of Asian silks, but even more because of their lack of uniformity.³³ Europeans gradually phased out the lower grades in the later seventeenth and early eighteenth centuries,³⁴ but even with the higher grades the problems persisted. The Armenian silk merchants were notorious for mixing low and high grade silks in a single bale to defraud their customers, and Levant silk merchants complained constantly about the quality of supplies.³⁵ Furthermore, the Iranian producers wound the silk in skeins too large to be used on the organzine mills. That these problems need not have been insurmountable is shown by the short-lived direct trade established by the English in Gilan in the 1740's. Their agents found it possible to procure short skeins of uniformly good silk,³⁶ but such control could not be exercised by the Levant merchants buying through Armenian intermediaries. In Bengal, where Europeans were in direct contact with the producers, the two East India companies made numerous attempts (with only mixed success) to control quality, even introducing European reeling machines.³⁷ Some Chinese silks could be substituted for Italian in organzine throwing, but again quality control was always a problem.³⁸ In the nineteenth century mechanized reeling was successfully introduced to China — not to increase productivity or reduce costs (it did neither) but to produce raw silk of the uniform quality required by mechanized industry.³⁹ Iran's ex-

³³ DAVIS, *Aleppo*, pp. 136-137; CHAUDHURI, *op. cit.*, pp. 346-347.

³⁴ PRAKASH, *op. cit.*, p. 208; DAVIS, *Aleppo*, p. 140; CHAUDHURI, *op. cit.*, p. 349.

³⁵ ANDERSON, *op. cit.*, pp. 162-163; ULKER, *op. cit.*, pp. 89-96.

³⁶ HANWAY, *op. cit.*, vol 2, p. 16.

³⁷ PRAKASH, *op. cit.*, pp. 111-117; CHAUDHURI, *op. cit.*, p. 350.

³⁸ *ibid.*, pp. 349-350.

³⁹ LI, LILLIAN M., *China's silk trade: traditional industry in the modern world, 1842-1937*, Cambridge (Mass.), 1981, pp. 29-30.

perience was similar: it was not until European companies introduced mechanized reeling in the nineteenth century that Iranian silks again began to play a role in world trade. In the long run the mechanization of the industry dictated that mere access to raw material supplies was no longer sufficient, control over production was also required.

Conclusions

In the long term the trade in Iranian raw silk may appear as no more than an interlude, when European manufacture had outgrown its own raw silk supplies, but before it had established firm control over overseas sources. The final interruption of Iranian supplies through political circumstances probably only hastened their departure from an industry that had already discovered alternative sources, and could no longer tolerate the lack of control over quality and quantity that the long overland route to Gilan entailed. At the time, however, the trade was of immense importance, and was recognized as such by contemporaries. For Iran the trade was vital to the country's monetary and financial stability, and, as this paper has suggested, was responsible for the beginnings of commercial agricultural production (even though those beginnings came to an abrupt halt with the collapse of the Safavid state in the eighteenth century). In Europe, the large-scale import of Iranian raw silk allowed the industry to grow and spread faster than it could otherwise have done in a period before other sources of supply were available. The success of the maritime nations, England and Holland, in securing access to Iranian raw silk gave their textile industries a significant boost. The dependence on Iranian silk may have left them vulnerable to the uncertainties of extended lines of supply, but without it Northern Europe's silk textile industry could hardly have got off to such an early start.

