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The Beauty and the Beast – Smallpox and Marriage in Eighteenth and Nineteenth-Century Sweden

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Abstract: The present study shows that physical attraction played an important role for marriage. Pockmarked persons married about two years later than persons without disfigured faces. Pockmarked men experienced similar disadvantages to women at the marriage market. It is the birth cohorts between the last decades of the eighteenth century and the first decades of the nineteenth century that are of most interest for the study. During the period when these cohorts were acting at the marriage market there was a fairly equal balance between persons who had a previous experience of smallpox and persons without facial pockmarks. This - historically unique - situation created a marriage pattern where previously infected persons married much later than 'healthy'. Pockmarked persons also faced a considerably greater risk of never marrying and when they did so, they almost always chose a partner with a similar experience of smallpox. Correspondingly 'healthy' persons chose to marry each other.

More than 25 years ago A. J. Coale argued that the existence of common age patterns of marriage was discovered as a by-product of research on the historic decline of marital fertility in Europe.¹ The findings which are presented in this study also have their roots in fertility research. The original aim was to see if smallpox infection had a negative impact on fertility or not. What first appeared as a significant difference in fertility between the previously smallpox infected and the never-infected cohorts was explained by differences in marriage ages. Persons who had experienced smallpox gave birth to fewer children,

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¹ Coale A. J. (1971). Age patterns of marriage. *Population Studies* 25:2, 193.

but this was because they married much later.² The notion of differences in marriage ages after smallpox immunity status was the starting point for the present study.

It is well known that there is a significant association between cultural traits and demographic patterns. Given the significance of marriage, as pointed out by McQuillan, it is hardly surprising that groups evolve norms and structures governing behaviour in these matters to encourage compliance.³ W. J. Goode, in a classic study, concluded that all large civilizations had several relatively closed marriage markets, separated from each other by geographical distance, by race or ethnic group, by religion, and by class. It is the norms of these classes and social groups that create the limits to the various markets, thereby being the foundations of “assortative mating”, according to which like-marries-like. Many studies of marriage choice show that there is some rough correlation between husbands and wives with respect to an extremely wide range of both important and trivial characteristics.⁴

One aim of the present study is to find out if the experience of smallpox created a border within the marriage market.

According to Malthus’ mortality crises could be avoided by the practise of late marriage. Ever since Malthus there has been disagreement concerning the important factors which shaped the marriage market and was also decisive for age at marriage. The influential work of Hajnal denied that the ‘Western European marriage pattern’ was caused by urbanization or industrialization has also been argued to be true for the historical covariance between industrialization and the formation of the nuclear family.⁵ Levine, Lynch and Reher, among others, have made a strong case for the economic determinants of marriage in Europe, arguing that the roots of the marriage pattern are found in the logic of balancing resources and population.⁶ Without neglecting the importance of economic considerations other factors have also been stressed. Opportunity

² The relation between smallpox, fertility and marriage is presented in Sköld, P. (1996). *The Two Faces of Smallpox. A Disease and its Prevention in Eighteenth- and Nineteenth-Century Sweden*. Umeå, 193-220.

³ McQuillan, K. (1989). Economic structure, religion, and age at marriage: some evidence from Alsace. *Journal of Family History* 14:4, 331-46.

⁴ Goode, W. J. (1963). *World Revolution and Family Patterns*. New York, 28-29.

⁵ Hajnal, J. (1965). European marriage patterns in perspective. *Population in History. Essays in Historical Demography* (eds. D. V. Glass and D. E. C. Eversley). London, 106-07. Medick, H. (1976). The proto-industrial family economy: the structural function of household and family during the transition from peasant society to industrial capitalism. *Social History* 1976:3, 291-315.

⁶ Levine, D. (1983). Proto-industrialization and demographic upheaval. *Essays on the Family and Historical Change* (eds. L. Moch and G. D. Stark). Arlington, Texas 1983. Lynch, K. A. (1991). The European marriage pattern in the cities: variations on a theme by Hajnal. *Journal of Family History* 16:1, 79-96. Reher, D. S. (1991). Marriage patterns in Spain, 1887-1930. *Journal of Family History* 16:1, 7-30.

levels, often connected with occupational specialization, urban-rural differences, sex ratios, and the role of kin have been generally emphasized as important for the construction of marriage.⁷

It is, however, also readily acknowledged that physical attractiveness is but one of many factors influencing marital choice.⁸ Seagalen has argued that there is no more problematic area than that of the history of sensibility. We can draw up and study graphs showing the marriage rate, analyse the intervals between births or the geographical catchment area for marriage partners, but once we are dealing with the personal sphere of emotions and sexual relationships it is hard to find documentary evidence and even harder to interpret it.⁹ Another aim of this study is to scrutinize if it is possible to use pockmarks as an indicator of the influence of physical attraction in the marriage market. At least smallpox immunity status offers an opportunity to create cohorts of assumed physical differences.

To sum up the aims of this study, the most important problems to be dealt with are:

- 1) Was physical attraction – as indicated by facial marks from smallpox – an influential factor at the marriage market in Sweden? Did previously infected persons marry at later ages than never infected persons?
- 2) To be unmarried could be the result of a free choice, but also the result of a ‘social penalty’ resulting from a lack of success in finding a marriage partner. It is therefore relevant to ask if persons who had previously experienced smallpox were over-represented within the group of never married.
- 3) Is there support for the theory that like-marry-like, i.e. was it more likely that a pockmarked person found his or her partner in the group of previously smallpox infected persons and that ‘healthy’ persons were more likely to marry?

⁷ Woods, R. I. and Hinde, P. R. A. (1985). Nuptiality and age at marriage in nineteenth-century England. *Journal of Family History* 10:2, 119-44. Hinde, P. R. A. (1989). The marriage market in the nineteenth century English countryside. *The Journal of European Economic History* 18:2, 383-92. Tóth, O. (1994). Sociological and historical aspects of entry into marriage. *Journal of Family History* 19:4, 351-68. Malhotra, A. and Ong Tsui, A. (1996). Marriage timing in Sri Lanka: The role of modern norms and ideas. *Journal of Marriage and the Family* 58:2, 476-90.

⁸ Murstein, B. I. (1972) Physical attractiveness and marital choice. *Journal of Personality and Social Psychology* 22:1, 8-12.

⁹ Seagalen, M. (1981 [1986]). *Historical Anthropology of the Family*. Cambridge, 128-30.

Data and Demographic Background

Sweden was the first country of all to establish a national bureau for population records, when *Tabellverket* was formed in 1749.¹⁰ Since the seventeenth century the clergy had kept notices concerning births, marriages and deaths in the church books, which were based on a registration of each family and their attendance to church. From 1749 the clergy also sent in annual tables with the exact numbers for these demographic traits. So it is possible to trace complete demographic life-histories for most persons. This includes information about causes of death.¹¹ Smallpox was certainly a childhood disease during the eighteenth century, but changed character during the nineteenth century.

Table 1: Smallpox mortality age distribution (per cent), Sweden 1776-1875

	0 year	1-2	3-4	5-9	10-24	25-49	50 -	Total
	years	years	years	years	years	years	years	
1776-1785	25,5	30,9	22,9	14,6	5,8	0,28	0,02	100
1786-1795	30,1	31,8	18,8	14,3	4,7	0,28	0,02	100
1796-1805	28,2	33,2	19,7	14,1	4,4	0,34	0,06	100
1806-1815	28,5	31,2	17,5	15,8	6,2	0,5	0,3	100
1816-1825	33,4	20,7	9,7	10,9	18,9	6,3	0,1	100
1826-1835	42,2	17,7	6,4	5,9	12,3	14,8	0,7	100
1836-1845	37,0	15,1	6,6	8,1	12,7	19,3	1,2	100
1846-1855	34,8	11,1	4,2	5,8	15,7	25,3	3,1	100
1856-1865	34,0	9,5	3,5	3,6	12,1	30,9	6,4	100
1866-1875	31,2	10,1	3,5	4,1	10,6	30,6	9,9	100

Source: Pettersson, A. (1912). Smittkoppsdödligheten i Sverige under åren 1776-1875. *Hygienisk Tidskrift* 1912. Stockholm, 11-12.

The data tells that that adult smallpox mortality was very rare. Sweden was administratively organized in about twenty districts, and in each one of these represented children under the age of ten around 95% of smallpox mortality during the eighteenth century. Adults over 25 represented less than 0,5% of total smallpox mortality. Nevertheless, population density had an impact on the epidemiology of smallpox mortality. In more populated districts, and in towns, smallpox epidemics occurred more often than in the countryside. But when an

¹⁰ Arosenius, E. (1970 [1918]). The history and organization of Swedish official statistics. *The History of Statistics. Their Development and Progress in Many Countries* (ed. J. Koren). New York, 537-69.

¹¹ Hofsten, E. (1970). The availability of historical data about the Swedish population, *Statistisk Tidskrift* 8:1, 19-26.

epidemic reached the village mortality was higher than during an epidemic in a town. With local variations smallpox epidemics reached most villages within four-year intervals, giving little opportunity to anyone to avoid smallpox infection longer than the first ten years of life.¹²

After the introduction of vaccination adults remarkably increased their part of smallpox mortality in Sweden. Smallpox was often called the ‘democratic’ disease, since it struck in all social classes of society. It was not dependent on nutritional status, sanitary conditions or hygiene. Social differences are noticed during the nineteenth century, when smallpox mortality had declined to a much lower level than during the previous century.¹³

Smallpox was a dominating disease in Swedish mortality during the eighteenth century.¹⁴ The introduction of vaccination in 1801 changed the picture, and smallpox mortality decreased successively towards a level very close to zero at the end of the century.

From 1813 the Swedish parish clergy were required to note for each person whether he was vaccinated, had a previous experience of smallpox infection or if he eventually was inoculated. The quality of this information is varying to a great degree. Some clergy only noticed vaccination, others give information about all persons living in the parish. We can also find information concerning birth year and age at marriage.¹⁵

For a selection of Swedish parishes all available information in the church books has been organized at the Demographic Database, Umeå University. Five parishes have been chosen after the quality of their church books concerning smallpox immunity status. The study does not claim to follow cohort trends, the demographic part is rather cross-sectional. The cohorts consist of persons born 1750-1825 and who are present in the church books dating from the 1810s and 1820s and forward to the 1870s. The church books older than so do not have any information concerning smallpox immunity status. Persons born during the eighteenth century are therefore under-represented, which explains why the wider time period covers 50 years before the introduction of vaccination in 1801 and only 25 years after. The material does not include

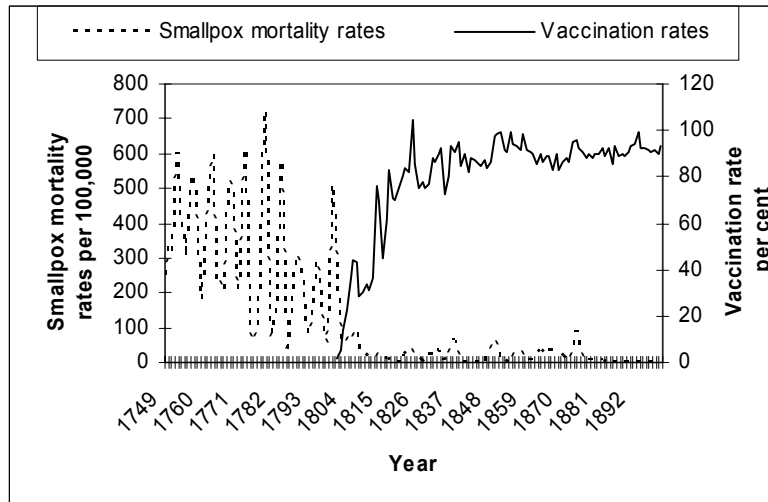
¹² Sköld (1996), 83-90 and 133-159.

¹³ Ibid, 93-98.

¹⁴ The incidence of smallpox before mortality registration in 1749 has often been underestimated. Swedish church books show that smallpox was as common during the seventeenth century as during the following. Age-distribution of smallpox mortality in the mid-seventeenth century is totally dominated by children, which can only be explained by the fact that the adults were all immunized after previous infections (in childhood). Sondén, A. (1969). Farsoter och dödlighet. Iakttagelser i skånska kyrkoböcker före år 1721. *Karolinska Förbundets Årsbok 1969*. Stockholm, 35-52.

¹⁵ Sköld (1996), 37-38, 49-55 and 81-83. Nilsson Jeub, U. (1993). Parish Records. 19th Century Ecclesiastical Registers. Information from the Demographic Database. Umeå.

Figure 1: Smallpox death rates per 100,000 and vaccination rates (proportion of the number of born children during the previous year, infant mortality removed)



Source: Bidrag till Sveriges officiella statistik (BiSOS), serie K), 1860-1900. Sundbärg, G. (1905). Döde efter kön, ålder och civilstånd i Sverige för åren 1751/1900 samt Medelfolk-mängden efter kön och ålder under femårsperioderna för samma tid. Statistisk Tidskrift 1905, 107-63. Compiled population records. The older archive of the Table commission. National archives.

economic or social parameters. Persons without a notice of smallpox immunity status in the church books (and the rare occasions of inoculated) have been excluded from the study.

The birth period 1795-1805 offers a fair balance of infected and vaccinated, and has been chosen for a deepened study. It is important to know that from the start also older children were vaccinated. This means that children born 1795-1801 (before vaccination was introduced) were often vaccinated together with children born 1802-1805.

Beauty at the Marriage Market

Richard M. Smith argues that one of the shortcomings of Thomas Malthus was that his views about fertility behaviour were developed with reference to a family system that he perceived to be a God-given structure in no need of ex-

planation.¹⁶ Nevertheless, we must accept that most people who lived in the eighteenth and nineteenth centuries strived to have children. In an agrarian society such as Sweden reclamation and division of the homestead were important factors in the creation of new households thereby allowing new families to form. The importance of marriage to the peasant economy is well-known. To manage a farm one had to be married. For the rapidly growing landless proletariat marriage, on the contrary, was not a necessity. It might be argued that the growth of a population dependent on wage labour also increased both the opportunity for marriage and the possibility of choosing partners freely.¹⁷

The marriage markets of different societies vary somewhat in which characteristics are highly valued (beauty, intelligence, family honor, wealth, charm, courage), in who has control over striking bargains, and in the rules by which agreements are made. Marriage markets are often closed systems, but the system of implicit bargaining contains a further kind of likeness or equality. Even two individuals in the same market may differ substantially in characteristics that are valued by their social group or family. Goode concludes that a girl may be relatively poor, but beautiful. The boy may not be so well-to-do as the girl, but he may have excellent prospects for the future.¹⁸

Why then should previously smallpox infected persons have less chance of marriage or at least of an early marriage? There is one factor which immediately comes to mind, disfiguring pockmarks. During the 1960s between 65 and 80 per cent of those infected by ordinary-type variola major had facial pockmarks. The number of scars could be between one and several hundred, with most occurring on the face. Hyperpigmentation of the skin on the sites of pustules were also common.¹⁹ Disfiguring pockmarks are perhaps the best known of all smallpox complications,²⁰ but smallpox infection could bring with it

¹⁶ Smith, R. M. (1986 [1988]). Transfer incomes, risks and security: the roles of the family and the collectivity in recent theories of fertility change. *The State of Population Theory. Forward from Malthus* (eds. D. Coleman and R. Schofield). London, 193-95.

¹⁷ Winberg, C. (1977). Folkökning och proletarisering. Kring den sociala strukturomvandlingen på Sveriges landsbygd under den agrara revolutionen. Lund, 52-53. Källemark, A.-S. (1982) The marriage decline in Sweden. Changing marriage patterns and sexual norms in the 19th and 20th centuries. *Statistical Review* 20:2, 80-90. Rogers, J. (1993). Nordic family history: themes and issues, old and new. *Journal of Family History* 18:4, 294-95.

¹⁸ Goode, 28-29. Taussi Sjöberg points out that according to the Swedish Law of 1734 it was the responsibility of the man to take the initiative for marriage by asking the woman's so-called 'marriage-man' (most often the father) for permission. However, she also concludes that there was a free choice of partner, especially in the lower classes of the society. Taussi Sjöberg, M. (1988). Skiljas. Trolovning, äktenskap och skilsmässa i Norrland på 1800-talet. Södertälje, 62-63.

¹⁹ Fenner, F. et al (1988). Smallpox and its Eradication. Geneva, 49-50. See also Schultz, D. (1756). Berättelse om koppors ympande, öfverlemnad till högloflige Kongl. Sundhets-Commissionen. Stockholm, 45.

²⁰ Hopkins, J. W. (1989). The Eradication of Smallpox. Organizational Learning and Innovation in International Health. Boulder, Colorado, 13. Magner, L. (1992). A History of Medicine. New York, 101-03.

other complications. Blindness and eye complications were frequently reported from the eighteenth century. Limb deformities and complications to the respiratory, the gastrointestinal and central nervous systems occurred occasionally. Secondary bacterial infection of the skin lesions were common in societies where hygiene was poor and effective treatment was not available.²¹

Smallpox could also bring with it psychological consequences.²² Hopkins tells of a young girl of seventeen years who had her life and beauty ruined by smallpox, her memorial monument stated that she was released by death at the age of 32. In Nepal the King's Brahman mistress committed suicide because she had lost her beauty after a smallpox infection.²³ Could it be so that ruined beauty caused a social stigmata in the marriage market, and that young people knew this?

Lady Mary Wortley Montagu, who introduced inoculation into England, was left disfigured after an attack of smallpox in 1715. She had been greatly admired for her beauty and expressed her anguish in verse.²⁴ Preserving the beauty of young girls was used as an argument in favour of inoculation. Voltaire told that the Circassians sold young women to the harems of Constantinople. Parents were willing to inoculate their children early in life, so they should not suffer from smallpox and die or become disfigured by the disease.²⁵

In Sweden physicians often mentioned the disfigured faces of the survivors as an argument for public acceptance of inoculation.²⁶ In his teachings of the young prince Gustav, later Gustav III, Carl-Gustav Tessin gave arguments for the practise of inoculation. In the third paragraph he wrote: "*That never any face will be disfigured, so that no wife has to fear a changed temperament of her husband, or any maid is afflicted by a loss of suitors*".²⁷

Tessin's letter clearly indicates that pockmarked persons, especially women, were less likely to get married. Also Nils Rosén von Rosenstein stressed that women had better reasons for accepting inoculation, since they risked losing

²¹ Fenner et al, 47-50.

²² Baxby, D. (1981). Jenner's Smallpox Vaccine. The Riddle of Vaccinia Virus and its Origin. London, 10-13. Dixon, C. W. (1962). Smallpox. London, 90-95. Magner, 139-40.

²³ Hopkins, D. R. (1983). Princes and Peasants. Smallpox in History. Chicago, 75 and 150.

²⁴ Smith, J. R. (1989). The Speckled Monster. Smallpox in England, 1670-1970, with Particular Reference to Essex. Chelmsford, p 19. *The Faber Book of Fevers and Frets* (ed. A. S. Enright). London, 29-31.

²⁵ Voltaire, F. (1745 [1734]). Den Berömde Herr Woltaires ellofte Philosophiske Bref, Om Koppornes Ympning eller Sättet att uti Barnens yngre år, flytta dem ifrån den ena till den andra, förr än de komma af sig sjelfve, på det att de skola undwika den faran, som dem i äldre åren förestår däråf. Tryckt i Rouan på Fransöska år 1734. Stockholm.

²⁶ *Inrikes Tidningar* n:o 15 1765. Salberg, Johan. Tankar i medicin. Unprinted manuscript 1781, 62-64. Ms 465. Archive of unprinted sources. Karolinska Institutet.

²⁷ Tessin, C.-G. (1756). En gammal mans bref till en ung prints. Latter part, letter n:o 18. Stockholm, 190-91.

their beauty,²⁸ or as Geneviève Miller puts it, to “*turn into unsightly monsters*”.²⁹ Murstein states that most individuals have a common standard of physical beauty, at least as far as facial features are concerned. Further, physical beauty is rewarding for both sexes both as an individual experience and for the status it brings to oneself in the eyes of others.³⁰

However, we must not forget that smallpox was widely prevalent throughout Europe in the eighteenth century.³¹ Dixon argues that in a community where smallpox was common, facial scarring caused little or no comment, “*the lightly scarred face was recognized as safe and almost beautiful*”. Later, when smallpox became rarer pockmarked persons experienced a varying degree of ostracization.³² On the other hand Porter argues that appearance was of vital importance in face-to-face encounters within early-modern society, and this created a market for quacks, who sold cosmetic medicine to people who had become unsightly after a smallpox infection.³³ The following study includes those born between 1750 and 1825, but in order to eliminate the time factor, i.e. to find a period when there was a mixture of infected and non-infected persons the cohort born between 1795 and 1805 has been separated.

²⁸ Rosén von Rosenstein, N. (1990 [1764]). *Underrättelser om Barnsjukdomar och deras Bote-Medel: Tilförne utgifne uti de små Almanachorna, nu samlade, tilökte och förbättrade*. Facsimile in Jägervall, M. (1990). *Nils Rosén von Rosenstein och hans lärobok i pediatrik*. Lund, 108-09. Others giving anecdotal evidence to the negative impact of pockmarks at the marriage market are Bergmark, M. (1957). *Från pest till polio*. Stockholm, 115 and the Swedish Nobel Prize winner Selma Lagerlöf in Lagerlöf, S. (1961 [1891]). *Gösta Berlings saga*. Stockholm, 112-26.

²⁹ Miller, G. (1957). *The Adoption of Inoculation for Smallpox in England and France*. Philadelphia, 31.

³⁰ Murstein, 8-12.

³¹ Razzell, P. (1977) *The Conquest of Smallpox*. Firlé, 119-20.

³² Dixon, C. W., 106. Hufton, studying eighteenth-century France, writes that physical attraction in village lore was a will-o'-the-wisp, and that we should also remember that a woman or a man who was not pockmarked, who did not suffer from a vitamin-deficiency disease, or from a congenital defect was in a small minority. Hufton, O. H. (1981). *Women, work and marriage in eighteenth-century France. Marriage and society. Studies in the Social History of Marriage* (ed. R. B. Outwaite). London, 198-99.

³³ Porter, R. (1989). *Health For Sale. Quackery in England 1660-1850*. Manchester, 136. See also Cartwright, F. F. (1977). *A Social History of Medicine*, 79. In 1792 a small (2 x 4 centimetre) item was published in Sweden. It described a method for the prevention of pockmarks after a smallpox infection. When pustules appeared the infected should dress in a red shirt and woolen stockings. The whole body must be covered with red fabrics, the face should be protected by a mask with holes for the eyes. This dress should be worn during ten days and a decoction of bitter orange peel could be used. When the pustules had dried the face should be washed with oatmeal gruel. Teslef. M. (1792). *Beskrifning af et bepröfwadt medel emot Kopp-ärr*. Stockholm.

Age at First Marriage

There are no national compilations of marriage ages for Sweden before 1831,³⁴ but a study by Winberg of the parish of Dala shows that between 1776 and 1830 men married on average at 28.3 years and women at 27.2 years. An even greater difference between men and women was revealed by Eilert Sundt for mid-nineteenth-century Norway, where age at marriage for men was on average at 29.6 years and for women at 26.4 years.³⁵ Matovic was not surprised when she found that both men and women in Stockholm married at about 29,5 years, since she knew that the capital had the highest marriage ages in the whole country.³⁶

In five parishes age at marriage was studied for men and women by smallpox immunity status. Only first marriages were counted and all those who were included must have registered their age. Throughout the whole of Scandinavia men married later than women. The question remains: Did those who were infected marry later than those who were vaccinated?

Table 2: Age at first marriage by smallpox immunity status in five Swedish parishes, men and women born 1750-1825 (N=3134)

	Infected women	Vaccinated women	Infected men	Vaccinated men
Attmar	27,81	26,72	28,50	27,80
Nedertorneå	29,08	25,65	30,31	26,53
Sättna	27,23	26,28	27,73	27,23
Indal	27,23	25,94	29,76	27,72
Tuna	27,91	25,52	29,23	27,61

Source: Demographic Database, Umeå University.

A clear trend is revealed by Table 2. Both infected women and infected men married much later in all five parishes. This seems to be proof of the assumption that infected persons, often disfigured by pockmarks or with other complications were less likely to marry early in life. The Norwegian historian Ståle Dyrvik states that any general explanation for the decisive factors for marriage patterns does not exist. However, Dyrvik also argues that it is common to compare marriages with contract agreements within a market ruled by supply and demand.³⁷ In this perspective, unaware of sex, infected persons had to stand

³⁴ *Historisk Statistik för Sverige. Del 1. Befolkning 1720-1967*. Second edition (ed. Statistiska Centralbyrån). Stockholm 1969, 29-31.

³⁵ Winberg, 57 and 215.

³⁶ Matovic, M. (1984). *Stockholmsäktenskap. Familjebildning och partnerval i Stockholm 1850-1890*. Stockholm, 120.

³⁷ Dyrvik, S. (1983). *Historisk demografi. Ei innføring i metodane*. Bergen, 141.

back for vaccinated and presumably more healthy and perhaps also beautiful men and women.

The difference could also be an expression for a longitudinal change over time with a similar decrease in marriage age taking place in all five parishes. Since there is no information about mean age at marriage at the national level in Sweden we do not know how this changed. Contrary to the assumption of decreasing marriage ages, however, is the result of Gaunt's study of the parish of Alskog on Gotland. Average age of marriage increased from 23,5 years between 1745 and 1769 to 25,3 years during the period 1795-1820.³⁸ We know from later decades that the marriage age for men increased from 28,82 in 1861-1870 to 29,44 in 1931-1940. During the same period women married at 27,12 and 26,50 years of age respectively, a decrease of half a year.³⁹ Ingrid Eriksson and John Rogers conclude that "on the basis of the scattered evidence which is available, it appears that age at marriage in Sweden was on the rise from the eighteenth to the beginning of the twentieth century".⁴⁰

In order to eliminate the factor of time a cohort was chosen where all married persons were born between 1795 and 1805. Only age at first marriage was noted and all persons must have a registered age on marriage. Different cohorts of men and women were created by smallpox immunity status, but these persons were then divided by the smallpox immunity status of their partner in order to see if there were any differences; for example, the cohort of previously infected women when these married previously infected men or vaccinated men.

Table 3: Age at first marriage by smallpox immunity status in five Swedish parishes, men and women born 1795-1805 (N=573)

	Att-mar	Neder-torneå	Sätna	Indal	Tuna
Women					
Infected marrying infected man	25,42	22,33	22,93	21,27	26,59
Vaccinated marrying infected man	24,15	23,82	22,93	21,53	22,76
Infected marrying vaccinated man	27,03	28,43	29,62	24,57	26,99
Vaccinated marrying vaccinated man	26,24	27,74	28,27	24,92	26,09

³⁸ Gaunt, D. (1973). Family planning and the preindustrial society: some Swedish evidence. *Aristocrats, Farmers, Proletarians. Essays in Swedish Demographic History*. Uppsala, 41.

³⁹ *Historisk statistik för Sverige*, 103.

⁴⁰ Eriksson, I. and Rogers, J. (1978). Rural Labor and Population Change. Social and Demographic Developments in East-central Sweden during the Nineteenth Century. Uppsala, 116.

Sequel to table 3

	Att-mar	Neder-torneå	Sätna	Indal	Tuna
Men					
Infected marrying infected woman	26,63	25,74	28,52	24,05	26,00
Vaccinated marrying infected woman	25,70	23,96	27,88	21,96	23,79
Infected marrying vaccinated woman	27,29	28,79	25,97	26,33	28,91
Vaccinated marrying vaccinated woman	26,69	25,00	25,69	26,59	26,03

Source: Demographic Database, Umeå University.

Some interesting trends are apparent. Those infected, both men and women, generally married older than those who were vaccinated. The difference is more pronounced for women when they married a vaccinated man. Also when change over time is eliminated we are left with differences in marriage age between infected and vaccinated persons. Infected men and women were less likely to be attractive within the marriage market.

There were also differences, however, within the cohorts with similar smallpox immunity status. Both infected and vaccinated men and women who married a vaccinated partner had to wait longer than persons with the same smallpox immunity status who married an infected partner. The only exception being men in the parish of Sätna. This strengthens the evidence that it was more attractive to marry someone who was vaccinated and thereby not disfigured partner, than marrying an infected partner.

Choice of Marriage Partner

Fenner et al. state that in contrast to diseases such as leprosy and gonorrhoea, no social stigmata was attached to smallpox in India and Africa during the 1960s and 1970s.⁴¹ However, Sköld has in a study of the Saami people in northern Sweden found that persons with identical smallpox immunity status tended to marry each other more often.⁴² Was this trend also apparent in other Swedish parishes? Five parishes were studied, cohorts were created by sex and smallpox immunity status for both partners. All married persons born between

⁴¹ Fenner et al., 196.

⁴² Sköld, P. (1997). Escape from catastrophe. The Saami's experience with smallpox in eighteenth- and early-nineteenth-century Sweden. *Social Science History* 21:1, 1-25. Becker has claimed that when heights and probability of marriage are considered there is a tendency that likes marry likes. Becker, G. (1976). *The Economic Approach to Human Behaviour*. Chicago.

1795 and 1805 were selected together with their partners, although the partners were not necessarily born during the same period. Those without any registration of smallpox immunity status were excluded from the study. The parishes Attmar and Tuna are presented in Table 4 and Table 5.

Table 4: Choice of marriage partner by smallpox immunity status in Attmar, men and women born 1795-1805, per cent (N=188)

Partners smallpox immunity status			
	<u>Infected</u>	<u>Vaccinated</u>	<u>N</u>
Women			
Infected	79,5	20,5	39
Vaccinated	38,6	61,4	57
N	53	43	96
Men			
Infected	52,5	47,5	40
Vaccinated	23,1	76,9	52
N	33	59	92

Source: Demographic Database, Umeå University.

Table 5: Choice of marriage partner by smallpox immunity status in Tuna, men and women born 1795-1805 (N=160)

Partners smallpox immunity status			
	<u>Infected</u>	<u>Vaccinated</u>	<u>N</u>
Women			
Infected	73,2	26,8	41
Vaccinated	47,4	52,6	38
N	48	31	79
Men			
Infected	63,9	36,1	36
Vaccinated	26,7	73,3	45
N	35	46	81

Source: Demographic Database, Umeå University.

Persons with similar smallpox immunity status tended to marry each other in the two parishes with the largest cohorts, Attmar and Tuna. In the remaining

three parishes there were a less significant relationship between choice of marriage partner and smallpox immunity status.⁴³

Table 6: Chi-square test for ratios of choice of marriage partner by smallpox immunity status in five Swedish parishes, men and women born 1795-1805 (N=573)

Parish	Level of significance	
	<u>Men</u>	<u>Women</u>
Attmar	.01	.001
Nedertorneå	-	.95
Sättna	-	.50
Indal	.50	.30
Tuna	.01	.05
Total	.001	.001

Source: Demographic Database, Umeå university.

Differences were highly significant in Attmar and Tuna and since they had the largest sample the average for all five parishes was significant at a very high level. The tendency that likes marry likes is valid for both men and women. There are, however, also striking differences between the two. A greater proportion of never infected women married previously infected men compared to never infected men marrying previously infected women. Consequently infected men had greater expectations than infected women to find a marriage partner without experience of smallpox infection.

A theory accounting for interpersonal attraction in marital choice has been presented by Murstein. This theory, called stimulus-value-role, holds that, in initial encounters in which individuals are not forced to interact with each other, interpersonal attraction is a function of the individual's perception of the other physical, social, mental, or reputational attributes, and his perception of his own qualities as he thinks these will be perceived by the other person. Individuals with equal market value for physical attractiveness are more likely to associate in an intimate relationship such as premarital engagement than individuals with disparate values. It is readily acknowledged that physical attractiveness is but one of many factors influencing marital choice.⁴⁴

The present study shows that persons infected by smallpox married at older ages than those who had been vaccinated and that infected persons more likely

⁴³ The statistical significance was calculated in a chi-square test for two independent samples. Siegel, S. (1956). *Nonparametric Statistics for the Behavioural Sciences*. Tokyo, 107-110 and 249.

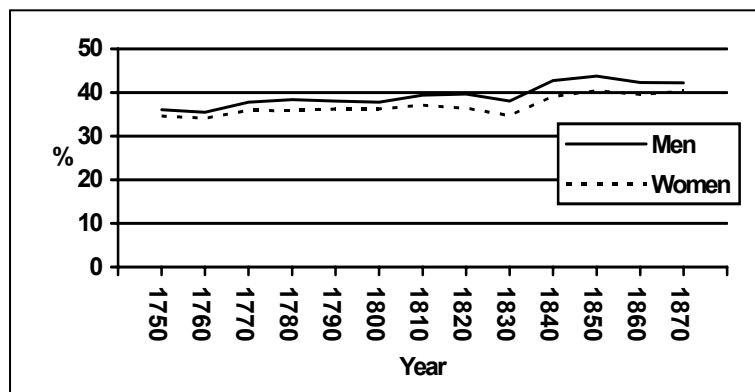
⁴⁴ Murstein, 8-12.

married a partner who was also previously infected. What we have not considered so far are those who never married, the bachelors and spinsters.

Bachelors and Spinsters

In his discussion of the European marriage pattern Hajnal concluded that marriage in Scandinavia in the eighteenth century may well have occurred earlier and there may have been fewer remaining single throughout life than in the nineteenth century, but there can be no question that marriage habits conformed to the European pattern and not to the pattern common elsewhere.⁴⁵ Because of later marriage the proportion of unmarried in Sweden increased between 1750 and 1870, men relatively more than women.

Figure 2: Proportion of unmarried men and women of population 15 years and over (per cent), Sweden 1750-1870



Source: *Historisk Statistik för Sverige*, 79

Included in this group were widows and widowers. Sundbärg calculated the percentage of men between 20 and 50 years and women between 20 and 45 years that were unmarried and not widows or widowers.

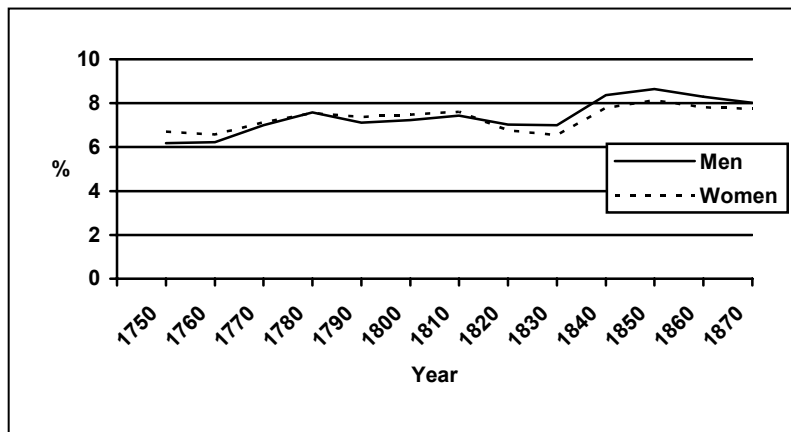
The proportion of unmarried increased between 1750 and 1900, and this was a consequence of decreased marriage frequency in Sweden during this period.⁴⁶ The proportion never married between 20 and 50 years increased from six to eight per cent between 1750 and 1870. We do not know why they remained unmarried. Eriksson and Rogers suggest that the creation of the so-called

⁴⁵ Hajnal, 106-07.

⁴⁶ Hofsten, E. (1986). *Svensk befolkningshistoria. Några grunddrag i utvecklingen från 1750*. Kristianstad, 60-63.

statare-system, which provided better economical opportunities for landless people, increased the possibility of getting married earlier.⁴⁷ Apart from economic factors, psychological and social factors were also involved. In order to find out if it was more common for previously infected persons to remain unmarried five Swedish parishes were studied. Cohorts were created by smallpox immunity status. Everyone was present in the same parish every year between the age of 15 and 45. Only those older than 45 were incorporated into the study.

Figure 3: Proportion of never married men (aged 20-50 years) and women (aged 20-45 years) per cent, Sweden 1750-1870



Source: Sundbärg, G. (1907). Fortsatta bidrag till en svensk befolkningsstatistik för åren 1750-1900. V. Giftermålsfrekvensen. *Statistisk Tidskrift* 1907, 212.

Table 7: Per cent of unmarried persons in cohorts by smallpox immunity status in five Swedish parishes, men and women born 1750-1825 and older than 45 years (N=3634)

	<u>Attmar</u>	<u>Neder- torneå</u>	<u>Sättna</u>	<u>Indal</u>	<u>Tuna</u>	<u>Total</u>
Total						
Infected	14,5	25,4	14,0	10,3	11,0	14,0
Vaccinated	7,3	10,7	5,7	4,5	16,0	8,3
Men						
Infected	10,9	23,8	12,8	6,3	4,8	10,9
Vaccinated	5,3	9,7	6,0	5,4	13,0	7,4

⁴⁷ Eriksson and Rogers, 115-17.

Sequel to table 7

	<u>Attmar</u>	<u>Neder- torneå</u>	<u>Sättna</u>	<u>Indal</u>	<u>Tuna</u>	<u>Total</u>
Women						
Infected	17,4	26,8	15,0	14,0	15,8	17,4
Vaccinated	9,1	11,5	5,5	3,4	18,9	9,2

Source: Demographic Database, Umeå University.

A greater part of the infected remained unmarried until the age of 45 years. The difference is most pronounced among women, where almost twice as many who were infected remained unmarried. It is now obvious that the negative impact of pockmarks at the marriage market affected women more than men. This finding suggests that appearance was of greater importance for women than for men. Infected persons were more common during the eighteenth than during the nineteenth century and again the cohort born between 1795 and 1805 was separated from the study. Identical conditions were applied to this cohort, which meant that a limited number was left. Nevertheless, these confirm that the difference between infected and vaccinated persons in Table 7 existed irrespectively of time.

Table 8. Per cent of unmarried persons in cohorts by smallpox immunity status in five Swedish parishes, men and women born 1795-1805 and older than 45 years (N=500)

	<u>Attmar</u>	<u>Neder- torneå</u>	<u>Sättna</u>	<u>Indal</u>	<u>Tuna</u>	<u>Total</u>
Total						
Infected	5,3	13,6	5,7	5,1	6,0	7,1
Vaccinated	3,6	3,1	-	1,9	11,1	4,4
Men						
Infected	10,7	4,3	6,3	-	4,5	5,6
Vaccinated	5,1	7,1	-	-	11,7	5,5
Women						
Infected	-	23,8	5,3	9,5	7,1	8,5
Vaccinated	2,3	-	-	3,7	10,3	3,4

Source: Demographic Database, Umeå University.

A greater proportion of the infected also remained unmarried when the time factor was removed. The generally higher proportions in the cohort born 1750-1825 than in the cohort born 1795-1805 is explained by the fact that the later cohort included less infected persons and less vaccinated. Less infected because the cohort born 1795-1805 experienced less smallpox epidemics compared to the longer period dominated by the severely affected later half of the eighteenth century. Less vaccinated because of increasing vaccination after 1805.

The difference for men is small, but more pronounced for women. The parish of Tuna has a different pattern, where a greater proportion of the vaccinated never married. Nevertheless, we can conclude that persons previously infected by smallpox married later than vaccinated, they also preferred to marry a partner with a similar smallpox immunity status and a greater proportion of them remained unmarried. These social consequences of smallpox which have not been discussed very often, together with results concerning fertility and sterility had an important impact on overall demographic patterns.⁴⁸

Discussion

In the monumental study on the population history of England Wrigley and Schofield differentiate Hajnal's European marriage pattern into an English "wage" variant and a French and Swedish "peasant" variant. In the latter, nuptiality and illegitimacy moved inversely, the latter acting as a safety valve when depletion of economic niches reduced marriage options.⁴⁹ In another study Laslett argued that marriage required the formation of a new economically independent household was the key to the prevalence of the nuclear family system. However, the persistence of late marriage throughout nineteenth century Europe is a challenge to the Hajnal thesis.⁵⁰

Marriage patterns are complex systems constructed of several factors. The values of some of these factors are more easily estimated than others. One of the more difficult areas to treat is the importance of love and beauty in the marriage market. Near the end of the eighteenth century, Enlightenment phi-

⁴⁸ For an improved understanding of the demographic transition research has begun considering factors other than the traditional. Baten and Murray have stressed the importance of height and nutrition for fertility and nuptiality in a recent study. Baten, J. and Murray, J. E. (1998). Women's stature and marriage markets in preindustrial Bavaria. *Journal of Family History* 23:2, 124-35.

⁴⁹ Wrigley, E. A. and Schofield, R. (1981). *The Population History of England 1541-1871. A Reconstruction*. Cambridge, 407-35.

⁵⁰ Alter G. (1991). New perspectives on European marriage in the nineteenth century. *Journal of Family History* 16:1, 1-5.

losophers redefined the position of the individual relative to the universe and, in the process, legitimized the principle of individual freedom of choice.⁵¹

The present study has shown that physical attraction played an important role for marriage. Pockmarked persons married about two years later than persons without disfigured faces. Modern research often claim that women profess that physical appearance is not paramount in their attraction to a male,⁵² but in early-nineteenth-century Sweden pockmarked men experienced similar disadvantages to women at the marriage market.

We have also seen that pockmarked persons had a much greater risk of remaining unmarried throughout life. R. B. Dixon – studying the 1960s – stresses that the desirability of marriage is a variable that should include an assessment of the penalties of marrying late or never, in particular the penalties of childlessness, social isolation and stigmata, and the loss of opportunities for economic support and social mobility.⁵³ Studies dating as far back as the late 1800s have established repeatedly that unmarried individuals have less favourable health and survival outcomes than their married counterparts. Findings of Fu and Goldman in a study of the United States support the hypothesis that health-related variables are related to the timing of first marriage. Obesity and short stature causes lower marriage rates. Overweight women and short men are less desirable in the marriage market and face greater difficulties in finding an acceptable spouse.⁵⁴ These results are close to the conclusions of the study presented here; physical attraction – as indicated by facial marks from smallpox – was an influential factor at the Swedish marriage market in the beginning of the nineteenth century, and a significantly greater part of the pockmarked persons never married.

Seagalen claims that a relationship of affection did exist between young people in nineteenth-century rural France, expressed in a different way from ours, and leading most often to marriage. But that affection was as unquantifiable then as it is now, embedded in human nature, like a mother's love for her child or the fear of dying.⁵⁵ Nevertheless, the method used in the present study means it is possible to separate pockmarked persons from the 'healthy'. The results clearly indicate that the two groups constituted two different marriage

⁵¹ Lesthaeghe, R. (1983). A century of demographic and cultural change in Western Europe: An exploration of underlying dimensions. *Population and Development Review* 9:3, 411-12.

⁵² Lavrakas, P. J. (1975). Female preferences for male physiques. *Journal of Research in Personality* 9:4, 324-34.

⁵³ Dixon, R. B. (1971) Explaining cross-cultural variations in age at marriage and proportions never marrying. *Population Studies* 25:2, 222-23.

⁵⁴ Fu, H. and Goldman, N. (1996). Incorporating health into models of marriage choice: Demographic and sociological perspectives. *Journal of Marriage and the Family* 58:3, 740-58.

⁵⁵ Seagalen, M. (1980 [1983]). *Love and Power in the Peasant Family. Rural France in the Nineteenth Century*. Oxford, 15-20.

markets. A pockmarked person seldom married a person who never had experienced smallpox, and vice versa.

What was then the long-term impact of smallpox infections at the marriage market? We must remember that between the seventeenth century and the introduction of vaccination in the beginning of the nineteenth century the majority of people were pockmarked. Therefore the overall impact ought to have been limited until then. When vaccination became compulsory in Sweden in 1816 only a few children remained susceptible to smallpox. This means that the majority of people in the marriage market from the 1830s were now immunized and not pockmarked. Again the small proportion susceptible could not have a great overall impact.

In a review of Sköld's 'The Two Faces of Smallpox' Peter Razzell wanted evidence to show that the gradual elimination of smallpox through inoculation and vaccination reduced the age at marriage in Sweden.⁵⁶ In a long-term perspective it is very difficult to prove that smallpox scarring, as one among many factors, was responsible for a decrease in age at marriage. Nevertheless, it is possible that inoculated persons married earlier in the eighteenth century, but since inoculation was rather rare in Sweden it is doubtful if they had any impact at the national level. It is also plausible that those few who experienced smallpox after 1830 married later than others in Sweden, but again they hardly made an impact on the average age at marriage.

Watkins has stressed the importance of regional differences of nuptiality in Europe.⁵⁷ These are certainly important, but we must also consider that different factors have varied in importance at different times. Concerning smallpox infections the most interesting period is the late eighteenth and early nineteenth centuries. Schofield has noticed that changes in age at marriage were unusually large in this period. He states that changes in economic structure may have been responsible for the exceptional magnitude of the fall in age at marriage in the eighteenth century and the rebound in the following century. It is possible that the age at marriage rose again in the nineteenth century due to a further compositional shift from agricultural labour into craft and service occupations. The fact that so many married young in the late eighteenth and early nineteenth centuries, but at later ages in the mid-nineteenth century, indicates the importance of factors other than the narrowly economic in explaining changes in nuptiality.⁵⁸

⁵⁶ Razzell, P. (1997). Review of Peter Sköld's *The Two Faces of Smallpox: A Disease and its Prevention in Eighteenth- and Nineteenth-Century Sweden*. Umeå University, 1996. *Social History of Medicine* 10:3, 473-76.

⁵⁷ Watkins, S. C. (1981). Regional patterns of nuptiality in Europe, 1870-1960. *Population Studies* 35:2, 199-215.

⁵⁸ Schofield, R. (1985). English marriage patterns revisited. *Journal of Family History* 10:1, 17-18. For changes in nuptiality in the United States during the same period see Haines, M. (1996). Long-term marriage patterns in the United States from colonial times to the present. *The History of the Family*, 1:1, 15-39.

It is also the birth cohorts between the last decades of the eighteenth century and the first decades of the nineteenth century that are of most interest for the present study. During the period when these cohorts were acting at the marriage market there was a fairly equal balance between persons who had a previous experience of smallpox and persons without facial pockmarks. We have seen that this – historically unique – situation created a marriage pattern where previously infected persons married much later than ‘healthy’. Pockmarked persons also faced a considerably greater risk of never marrying and when they did so, they almost always chose a partner with a similar experience of smallpox. Correspondingly ‘healthy’ persons chose to marry each other. So, what seems reasonable from the results of the present study is that beauty – or the lack of beauty as indicated by pockmarks – was an important factor for Swedish marriage patterns, at least between 1790 and 1830. After this other factors dominated, but the influence of beauty probably continued, however by other signs than pockmarks.