The Identification of Classical Cremonese Instruments of the Violin Family

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Part I, Cremona

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Cremona

The history of musical instrument manufacture in Europe is many centuries old. In Renaissance Italy, long before the advent of Cremonese violin making, it was already a well-established technology. In particular Brescia, Bologna, and Venice had flourishing workshops producing a wonderful variety of instruments. Curiously, before the appearance of its first violins there is little evidence of musical instrument manufacture in Cremona. However, from the middle of the 16th century the name Cremona was synonymous with that of the violin.

The ultimate success of the Cremonese violinmakers, and the fact that in spite of their best endeavours this success eventually deserted them, is impossible to explain without some understanding of the wider social, political and economic context, within which musical instruments were conceived and manufactured. These things were of greater importance than any individual's skill with tools and materials. These factors governed every aspect of the instrument maker's work, including the type of instruments being produced, their quality and quantity, the materials employed, and above all their final marketing.

From the time of the Roman Empire until the nineteenth century Italy did not exist as a single political unit. Divided into many large and small independent territories, it was in an almost continual state of political unrest and change. Although many cultural and economic alliances existed between them, these territories were frequently at war with each other, and also with various external powers, in particular Spain France and Austria. Despite this political fragmentation, Italy's influence remained considerable, even way beyond the borders of the peninsular. Furthermore, it can be argued that the varied technical, cultural and artistic achievements of the Renaissance were a direct result of this fragmentation and the vigorous competition it engendered.

Cremona was an independent city until it was taken over by the Milanese state in 1335. Eventually, all of the peninsula's smaller territories suffered similar fates, until by the 16th century Italy was largely controlled by Naples, Rome, Florence, Venice, and Milan. In turn these states were subjugated by vari-

ous foreign powers. Having changed masters many times, at the onset of the 16th century, Milan finally fell to Spain in 1535. By 1600 the Spanish king ruled directly over 5 million of the peninsula's 13 million inhabitants. With the exception of a brief occupation by the Venetians, Milan remained under Spanish influence until the wars of the succession, in the early 18th century.[22] Throughout this time the city of Cremona remained under the jurisdiction of Milan. Coincidentally or otherwise, this period of Spanish rule largely concurred with the greatest period of Cremonese violin making.

War and political uncertainty aside, the economies of these various Italian states, although in gradual decline, remained strong, and until the final years of the 16th century, the Italian peninsular was the richest area of Europe. In particular its northern cities were manufacturing and exporting many luxury items including textiles of silk, linen, fustian23 and fine wool, leather, crystal glass, paintings, silver plate, jewellery, ironware, stoneware, pottery and musical instruments. Its bankers and traders held sway throughout much of Europe. Vast sums were lent, mostly to royalty. They viewed the obvious risks as a necessary burden in the pursuit of other business.

The economic, and ultimately the cultural importance of Italy, is illustrated by the fact that having recovered from the pan-European plagues of the 14th century, by 1500 urban development was already highly advanced. Europe boasted only four cities with populations exceeding 100,000, three of these, Milan, Venice, and Naples were on the Italian peninsular,[24] two, Milan and Venice, were dominated by the river Po. In 1595 Italy as a whole is believed to have had a population density of 44 persons per square kilometre. Whereas Spain, its major ruling power could only support 17.

Rising in the foothills of the Alps the Po is the longest river in Italy. A vast horseshoe of mountains surrounds its enormous alluvial valley stretching some 400 kilometres from east to west. These mountains supplied large quantities of timber[25] and stone of the finest quality. They were also rich in minerals such as iron, alum, rock-salt and copper. Mines, paper works, foundries and sawmills were driven by the power of their falling waters. The foothills provided fine grassing and slopes below the frost line were planted with mulberry bushes for raising silkworms[26] and olive trees. Finally the Po and its tributaries formed the most extensive and economically important plain on the peninsular. Like the Nile of Egypt, regular flooding had deposited layer upon layer of rich soil and the warm humid climate created ideal conditions for cultivation. Rye, wheat, barley, oats, maize, millet, sorghum, beans, chick peas, squash, cabbage and other vegetables were grown alongside nuts, vines and fruits.

Beekeeping, a wide range of poultry and farm animals completed the picture. Cultivation was labour intensive and those peasants who worked as menial shoemakers, woodcutters, weavers, smiths and the like spent much of their time toiling the land. Even the more sophisticated city dwellers were keen to supplement their diet with fresh products from their own "suburban farms". Antonio Stradivari appears to have held land for this very purpose although he is unlikely to have worked it himself. Travellers noted the intense cultivation of the Po valley, especially around cities, but this cornucopian image was misleading. Most people existed on frugal diets and because population growth often outstripped food supplies famine was a re-occurring dread.

Apart from the fertility of its soils, the Po the rivers flowing into it from the North and several supporting canals, constitute the only navigable river system in Italy.[27] Its potential for transporting delicate, heavy or bulky goods should not be underestimated. At the time of the first classical violinmakers, transporting merchandise overland could be difficult with journeys often measured in weeks. Travel could also be dangerous. Bandit gangs, mostly made up of outcasts from various cities, terrorised the countryside.

For all these reasons, long before the 16th century the river Po had become a great European highway. Amongst other towns and cities on the plain the river linked Cremona directly to the towns of Pavia, Mantua, Ferrara, Piacenza, Brescia, Milan and the great seaport of Venice with its eastern connections. Although the importance of Venice was gradually diminishing, even well into the 18th century it was still a prominent commercial centre.

In spite of the threat of bandits, road connections in the region were generally serviceable, the land being flat and to a degree drained. These roads complemented water transport further increasing trade possibilities. To the south west of the Po valley, the city of Genoa grew in importance as the sea routs around Africa to the Far East were extended, and the newly discovered Americas were exploited.[28] Like Milan and Cremona, Genoa was governed by Spain and as such it constituted the major maritime outlet

for the cities of Lombardi. (Venice, being a separate independent power, was often difficult to trade with and through). Strictly seasonal, connections were also possible to the north over the Alps. A carriageable road crossed the Brenner Pass, linking this great river valley to that of the Danube and the heartland of Austria and southern Germany. Cremona also lay close to the old 'silk-road' that ran from the ancient port of Rimini in an almost straight line northwest across the Lombardi plain.

Although largely overshadowed by Milan, Cremona was no mean city. The second most important of the state, it was large by contemporary standards, with a population of more than 41,000 in 1538.[29] While never the sight of a court or a seat of learning, it boasted a flourishing cultural and artistic tradition. Several convents housed important libraries with manuscripts and books on mathematics, astronomy, history, philosophy, and theology. The cities school of painters was well known and in demand throughout the region.[30] One in particular, Sofonisba Anguissola was the daughter of a modest but aristocratic, Cremonese merchant. She became court painter to Phillip II of Spain, and a favourite of his wife Isabel. Isabel was the eldest daughter of King Henry of France, and Catherine de' Medici of Florence.[31]

The City was well fortified, and had a strong castle.[32] Its ferries and pontoon bridge made it an important crossing point on the river.[33] Commercially and militarily, Cremona dominated and controlled traffic travelling on and across the Po. Theoretically, all products and wares passing along these routes would have been available in the city. In effect encompassed virtually every item of commerce in the then known world.[34] These items including building and construction materials, spices oils and foodstuffs, pigments, dyes, ancient artefacts and manuscripts and inevitably musical instruments. With these products, came fragments of civilizations and cultures as far away as Byzantium, Arabia, India and even China. There is perhaps a tendency to think of these walled communities as being extremely isolated. In fact there was a tremendous interaction between them. Not only did they live on the great trade roots, they lived because of them.

The whole of the inner city was slightly elevated, being built upon a low natural platform on the rivers northern shore. In clear weather anyone venturing onto its massive defensive walls would have been face on all sides by panoramic views of the Po's vast flood plain. Although cultivation was advanced, wetlands were still abundant. Acres of course reed grass, the poor man's roofing material, were interspersed with areas of indigenous trees. These woodlands yielded the poplar and willow woods often used by the cities instrument makers. They also provided fodder for farm animals and especially oak leaves and acorns for the much prized pig.

Below the southern walls the rivers broad presence must have been awesome. Judging by contemporary iconographic works its banks were littered with wooden walkways, stakes and jetties. Boats of every shape and size were moored or lay upturned on sandy beaches. Other vessels went about their daily business, powered as required by heavy cloth sails, oars or paddles. As in any busy port, traders and their wares intermingled with women of easy virtue, thieves, vagabonds, and fisher folk. By night these fisher folk worked the river with lanterns as they still do on the lagoons of Venice.

Before the 19th century the Po flowed much closer to Cremona's walls, but the aura it created was not simply a result of its proximity. It was the cities life force. Without the river Cremona and its people would simply not have existed. Directly and indirectly it supplied everything they required. It had an almost sacred presence. Unfortunately, like most deities, occasionally, without warning, it displayed its might.

Throughout history the Po has overflowed its banks with catastrophic consequences for harvests and homes. Amongst its countless victims the first known son of Hieronymus Amati was drowned in its waters while doing military service. On a more insidious level, the Po its surrounding wetlands and even the cities moat, harboured transported and nurtured diseases such as typhoid, cholera and malaria. Domestic water was largely drawn from communal wells. It was seldom pure and rarely drunk neat. In fact, the importance of wine as a means of barter had more to do with its antibacterial qualities than with its flavour or its inebriating effect. People of every status relieved themselves in streets and alleyways, but especially in the poorer areas, latrine hygiene was often ignored altogether leading to contaminated wells and groundwater. Metalworkers, tanners, weavers and dyers used chemicals excrement and urine in the preparation of their wears. This effluence was simply dumped into rivers and streams. Meanwhile, below the stone floors of the cities cathedral and its numerous churches putrefying corpses slowly added themselves to the soup. In essence

water almost everywhere was polluted by human and animal wastes.

Apart from poisons and waterborne diseases tuberculosis was a prolific killer, and the infamous bubonic and pneumonic plagues decimated the populace on a regular basis. In a perverse way the pan European plague of the 14th century changed the course of Italian history positively. Though unquestionably horrific it relieved demographic stress, leading eventually to steady growth and colossal economic prosperity. Paradoxically, the plague of the 1630's had the opposite effect, instigating slow but unremitting economic decline. Nevertheless, in spite of this general downturn, and in spite of the fact that this 1630's epidemic reduced Cremona's population by two thirds, it also ensured the pre-eminence of Cremonese violinmaking for a further century.

In northern Italy the average lifespan was between 30 and 40 years. Most children would not have known their grandparents. Childhood was especially hazardous as was childbearing, and following accidents, inferior medical treatment left many people either dead or bearing severe physical deformities.[35] Although on average people died younger, for those with a steady income, who survived childhood or childbearing, the prospect of a long and fruitful life was fairly good. The approximate average age of the senior violinmakers of the Amati, Guarneri and Stradivari families was a staggering 73 years. This calculation comprises all thirteen (male) members, known to have been working violinmakers. Remarkably it also includes Joseph Guarneri del Gesu who died aged only forty-six. This longevity may have had much to do with their healthy if somewhat tedious diet.

In the narrow streets of the regions walled cities horses and horse drawn vehicles often created as much filth and chaos as does today's motorised transport. Traffic congestion was a serious problem. Several prominent renaissance engineers, including Leonardo Da Vinci, were asked to design schemes to relieve traffic congestion and dispose of vast amounts of horse manure. Doubtless horses, with their trappings and their droppings, contributed to the noise and odours of Cremona, but for the general populace the pungent smell of horses and poor sanitation probably went virtually unnoticed. Nevertheless, in all probability fresh air was as welcome as it was inevitable.

Both inside and outside the city life was exposed to the elements. Through their open fronted shops traders and craftsmen could be both seen and heard. Carpenters, candle makers, basket makers, weavers, smiths, leather workers, furriers, wheelwrights, brewers, butchers, bakers, scribes, launderers and many more plied their trade with little or no protection from the open air.

No doubt a hustling bustling place by day, Cremona would have been dark and smoky at night. Braziers, torches, oil lamps, lanterns and candles provided the cities flickering and usually sooty lighting. If the cities violinmakers worked at night they can only have done so by the light of flames. However, even on the hottest and brightest of days fire was probably the violinmaker's constant companion.[36] Apart from family cooking and baking, without fire violins sides could not have been bent, or gelatine glues kept hot and fluid.[37]

Though higher in status than peasants and normal tradesmen, life for Cremonese violinmakers was unquestionably hard. Fear of poverty, war, famine, disease and infirmity was very real. In spite of the longevity of some, insecurity was ever present. As the life of Hieronymus Amati II woefully demonstrates, there were no social services and the only refuge in old age was the church and or the extended family. The last of the Amati makers Hieronymus II died in poverty just a few days short of his 91st birthday.

The family was of supreme importance. It provided the only real security for an individual. Being without family meant being an outcast. In the 16th century Italian states had little or no centralised justice. Instead loose systems of moral and political safeguards were developed around patriarchal family groups in which the bloodline always took precedence over all other relationships. Often highly complex alliances between families were forged through marriage contracts, and arrangements of this nature were in force at all levels of society.[38] Occasionally rivalry between these extended families boiled over into the kind of feud immortalised in Shakespeare's "Romeo and Juliet".

In the absence of a viable judicial system confrontation was generally preferred to litigation. Family honour and vendetta were the overriding premise. Murders were commonplace. Murderers generally fled across a nearby political border and were sentenced to death or banishment in their absence. The perpetrator could eventually make petition for pardon if the family of the victim agreed. Such agreements were usually obtained by a show of force or some financial recompense. In Cremona, only when

situations escalated beyond all vestige of control did authorities function as arbitrators. However, judges who were too zealous risk retribution themselves.

Although factional infighting slowly diminished throughout the 17th century, this reliance upon the patronage of a family meant that a large number of social outcasts continued to be expelled for both major and minor misdemeanours.[39] Because banishment without family connections meant almost certain death, such outcasts were forced into a life of banditry and throughout the peninsular bandit gangs' wreaked havoc. Periodically action was taken against them. Some were publicly executed and their heads placed on display, but these measures were largely cosmetic, since many bandits were employed as mercenaries by towns, cities and the nobility. Though usually small, towards the end of the 16th century bandit groups were sometimes many hundreds strong. They harassed travellers and ravaged many smaller communities killing and looting as they went.

Gradually the judiciary became more powerful and towards the end of the 17th century violent crime began to fall. In part this was due to a vast moral campaign instigated by the church. Basically it terrorised the populace with the consequences of sin. The church had always enjoyed sweeping jurisdictional powers over ecclesiastics, but it could also prosecute such crimes as witchcraft, adultery, and sacrilege of all types, and it did. In addition the church imposed its will in more insidious ways through excommunication or removal of the sacrament. Such moves were surprisingly effective revealing both the insecurity of the populace and the enormous persuasive power of the established church. Because of their contribution to social order such actions were generally supported by the state. Nevertheless deals and counter deals between church and state continued to help habitual criminals avoid retribution. Only in the late 18th century did trials lead to incarceration for criminals and debtors. The aristocracy of course continued largely to do as they pleased.

Social order and justice being what it was, Cremona's violinmakers sought their safety within the family and within the city walls. But here, they were not only subjected to patriarchal rule, they were also subject to the arbitrary demands of a fundamentalist church and the dictatorial power of the aristocracy. It is somewhat ironic that the enormous wealth and aspirations of these two institutions were instrumental in funding and fuelling the great regenerative process that led to the development and success of the violin.

The artistic period to which the term 'Baroque' refers began in Rome around 1600. It was characterised by highly ornate detail and extravagant style. The violin is generally thought of as a baroque instrument. Indeed it has many features that suggest baroque design. Certainly, the designs of the 17th century inlaid instruments of Nicola Amati and Antonio Stradivari belong to the baroque tradition, but throughout the classical period, the basic concept and continued development of the Cremonese violin remained firmly rooted in renaissance tradition.

The term Renaissance means re-birth. It applies to trends in intellectual life that gave rise to the Humanist movement. This movement revived interest in ancient Greek and Roman thought and led to the celebration of individual achievement that still typifies western society today. By the 16th century the Humanist movement had created a number of free thinkers and for a while Humanism gradually moved Christianity away from the medieval view of death as the "goal of life". Nevertheless, in spite of its secular leanings Humanism generally thrived within as well as beyond the Christian church. In fact until the 19th century no clear boundaries existed between religion and science or even between rational and mythological thought.

The Italian Humanist movement mobilized a mainly masculine elite, and principally in the northern cities they busied themselves with places of learning and serious scholarship, studying especially law, philosophy and medicine. It is estimated that by the late 16th century, in Venice and the cities of Lombardi, probably a third of males and a tenth of females could read and write.[40] With the help of Indo-Arabic symbols numeracy developed alongside literacy. Indo-Arabic symbols, which had first appeared in the 14th century, had already simplified Italian bookkeeping leading to huge advances in business and banking. And, as a result the renaissance cities of northern Italian excelled at both. In

addition two important Italian devices greatly influenced commercial expansion both in and beyond the peninsular; they were the cheque and the letter of exchange. These items reduced the need to transport gold and silver coinage between distant states.

The Italian renaissance saw the emergence of a large number of technical inventions often by individuals with wide ranging skills as artists, sculptors,

engineers, architects, writers and philosophers. Leonardo da Vinci (1452-1519) being the most obvious example. In addition to their own creations these entrepreneurial folk readily adopted foreign ideas. Around 1438 Johannes Gutenberg probably invented the first mechanical printing press, but less than fifty years later "there were 73 presses in Italy as apposed to 51 (in Guttenberg's Germany), 39 in France, 24 in Spain, and 15 in the Low Countries"[41]. Inevitably printed books further accelerated the spread of knowledge. Aside from religious works, manuscripts of ancient Greece and Rome including philosophy and mathematics were especially popular in Italy.

In the 16th century Italy, Galileo was able to understand and support the theories of the East Prussian (now Poland) mathematician Nicolaus Copernicus about the movement of the planets around the sun. He was able to do this in spite of the fact that the he was born some twenty years after Copernicus, and lived more than one thousand five hundred kilometres away in a different society with a different language. What made this possible were the invention of the printing press with movable type, and the printing of books in Latin, a language common to European scholars.

Like the other north Italian cities renaissance manufacturing and trading gradually made Cremona's leading citizens extremely prosperous. They invested much of this immense wealth in a life of luxury, the extent of which is virtually impossible to comprehend today. Armies of artists' craftsmen and artisans, both local and foreign, were employed to erect and adorn private palaces. There were many of these magnificent buildings in Cremona. Constructed of terracotta brickwork[42] and tiles they were faced with imported stone and marbles of various colours.[43] Monumental entrances, stairways, fireplaces, walls and ceilings were sculpted, decorated with dramatic frescos, or hung with vibrant paintings and tapestries. Expensive imported perfumes helped mask the odours of the neighbouring streets and unwashed bodies. Wooden furniture and doorways were carved painted and gilded. Walkways and alcoves were bedecked with sculptures of stone and wood, many of which were also gilded and painted. Windows were filled with frosted and coloured glass to temper the intense Mediterranean sunlight. For darker periods, huge ornamental glass chandeliers hung from ceilings magnifying the delicate light of numerous candles. Meanwhile mirrors and polished metal reflected the more lucid light of oil lamps. Private gardens were furnished with exotic plants birds and animals. Secret pathways led to mazes labyrinths and grottos with automated figures and scenery. Fountains, waterfalls and streams powered ingenious mechanical organs and other musical devices. For those who had access to such wonders it was a banquet for their senses.

Indeed, banquets and pageants were extravagant beyond belief. "Duke Vincenzo of Mantua would not be outdone by his peers in Turin or Florence. In 1608 he built a temporary theatre seating 5000 people for a performance of Monteverdi's[44] opera Ariana. Wondrously complicated spectacle machinery underneath the stage required more than 300 men to work it."[45] Pyrotechnics, tournaments, horse races, and theatrical performances were followed by sumptuous meals many of which went on for several hours. In addition to capons', venison, wild boar and the like, delicacies such as lark and peacocks tongues were interspersed with novelties like naked children emerging from puddings, and live nightingales flying out of pies. All the while music and singing accompanied such feasts. In many instances amongst the rich and powerful, including Popes and Cardinals, these feast ended with bouts of sexual debauchery. In most cities prostitution was rife, as was the exploitation and disease that has always accompanied the profession.

In spite of, or perhaps even because of this extravagance, the fear of war, famine, disease, poverty and infirmity was ever present. Even the most prosperous must have been extremely aware of their mortality and inevitably they turned for succour to religion. As if to make amends for their opulent lifestyle Cremona's leading citizens built ecclesiastical buildings on a grand scale. A 1704 map of the city locates 68 religious establishments within the city walls. They included the cities splendid Cathedral, 17 convents and 5 'hospitale'. However, there were many more than these both inside and outside the city. Just eighty years later the Austrian Emperor Joseph II caused the closure at least 40 convents and 80 churches in Cremona, apparently without diminishing the religious activities of the populace. Many of these places were extremely large, and like the palaces of the rich they were lavishly furnished and decorated, the most outstanding example being the church of St. Sigismundo. Here, powerful biblical frescos, whose figures paradoxically resembled ancient Greek and Roman gods, adorned the walls and ceilings. Elsewhere gold shimmered and glowed from almost every available surface, the effect was calculated to illustrate not only the glory of god, but also

the enormous power of the church.

In the 1630's the wars famine and plague that stuck northern Italy in rapid succession were followed by serious economic decline. But astonishingly, these horrific events appear only to have provoked an audacious reaction from the aristocratic establishment. As with today's aristocracy, appearance display etiquette and ritual were of paramount importance to the nobility of northern Italy. In keeping with their palaces, they dressed themselves and their cortege in sumptuous costumes of silk and linen laced and braided with gold and silver. They wore extravagant wigs and hair pieces and of course splendid jewellery. They did all this in order to gain recognition and status amongst their peers, and they continued to do so even when risking financial ruin. In the decades that followed the plague they responded in the grandest manner.

"In Cremona conspicuous consumption drowned in debt the entire stratum of modest nobles in the later 16th century."46

Alongside their extravagance in dress residence and worship, Italy's nobility loved pageants. They had enjoyed them throughout the renaissance but the 17th century witnessed an enormous increase in events and festivals of every kind. In particular they developed an immense appetite for music and music related spectacle.

Like the rest of Italy, Cremona's musical scene was initially centred upon the church. Bishop Nicolo Sfondrato, who later became Pope Gregory XIV, was resident in the city from sometime before 1566. He was a great patron of music. Also the young Monteverdi who lived in Cremona until 1591 probably received his musical training at the cathedral and he was not the only fine musician and composer the city produced.

Throughout the period of classical Italian violin-making, the demand for musical entertainment was almost insatiable. From Madrigals to Opera, a massive and thriving tradition developed, enjoyed by both paupers and princes. Music crossed social and racial barriers in a way that nothing else could. Aristocratic ladies and gentlemen toyed with expensive lutes and keyboard instruments, while peasants strummed guitars beneath the windows of young women. Orphanages and convents trained and supplied musicians and singers.[47] Where female singers were considered unsuitable, a surgeon removed the testicles and spermatic chords of boys to create castrati. Indeed some castrati became extremely wealthy international stars, although this was probably small comfort for their loss.

The extent of this enthusiasm for music can be judged by the fact that between 1580 and 1620 Italian music printers were turning out around 80 volumes of songs every year. In the early 17th century the Venetians were producing Opera, on a commercial basis, and by the end of the same century musical events were attended with an intensity approaching that of modern rock concerts. Indeed musical aficionados of the 17th century were hardly more reserved in either their behaviour or their attire. In some places the fervour was so unbridled that the Church attempted to take decisive action. Several strong edicts were issued, particularly in Bologna, forbidding music of any kind, but especially in the presence of women, (restrictions not unknown in the world today). Fortunately these dictates failed entirely to dampen the fanatical enthusiasm of the populace.

With their great passion for music the Italians, dominated the European music scene. By the 16th century, the fame and superiority of Italian music and musicians, was well established. The violin family materialized in this world of sophisticated music and musicians and from the moment of it conception it was a huge success. Although an invention of its time, it held within itself a musical potential way ahead of contemporary playing techniques. Above all it proved adaptable, combining musical versatility with the curious ability to be both repaired and regularly modified. Towards the end of the 16th century, as the violin became the most fashionable European instrument, like the music and musicians of Italy, it also became a valuable export commodity.

That Cremona emerged, as the most important centre of violin manufacture was simply an accident of history and geography. Its eventual dominance owed as much to such factors as the devastating plague[48] of the 1630's, as it did to the vagaries of political boundaries. In fact it can be argued with some force that the 1630's plague pandemic was the single most important factor in the history of the violin. Before the advent of the 16th century there were several centres of instrument manufacture in Europe, and many recorded instrument makers. Where, when and how, the first violin appeared will almost certainly remain a mystery. Its origin has been accredited to a number of places, including Fussen in the Algau, (now a part of Germany), Czechoslovakia, Poland, and

the towns of Venice, Brescia, and Cremona in Italy. It is now generally accepted that many artisans played a role in its development, evolving as it probably did, from a number of instruments. Certainly virtually every feature of the violin occurs, either on surviving instruments, or in iconographic material made before the time of Cremona's first known violinmaker, Andrea Amati.[49]

Whatever the historical arguments favouring other towns and other makers, only in Andrea Amati's 16th century Cremonese workshop does the entire violin family appear, in a complete and highly sophisticated form. Consequently, without significant evidence to the contrary, it must be accepted that Andrea Amati and his two sons Antonio and Hieronymus, created and developed the designs and constructional methods, which Cremonese violinmakers heeded for more than two centuries, and the world has emulated ever since.

For the art of violinmaking to become established and to evolve, an enormous network of supportive trades would have been essential. These must have provided everything, from highly sophisticated tools, tone woods, chemicals, oils, resins, gums, pigments, and even precious metals and stones,50 to such mundane items as, horse-hair, twine, wire, nails, glues, gut, leather, parchment, paper, inks and cloth. That which could not be produced on the spot was imported. Although there is no evidence that Cremonese violinmakers ever used them, these imports could have included maple from the Bosnian forests, spruce from Norway, turpentine from the Carolina's of North America, and shellac, as both a colour and a varnish, from India.[51]

Apart from making actual instruments, the day to day running of a violin workshop, would have involved the manufacture of specialist accessories. Pegs, tailpieces, strings, rosin, bridges, bows and cases, must have been produced in, or close to the main workshops. The purchase or production of these items required time, energy, and a considerable variety of skills. That all this was possible in Cremona, illustrates the advanced commercial and industrial base, which the city afforded. However, even this ready supply of tools and materials would have amounted to nothing without a strong customer base.

Fortunately, the violin was developed at a time when the aristocracy of the Italian peninsular possessed financial possibilities, which more than matched their humanistic ambitions. At the birth of the violin they were already predisposed to support music and fine craftsmanship and as a result the violin swiftly made its way into the realms of affluent society. Initially highly ornamented, the violin almost became an "objet d'art" in itself,[52] but this rapidly changed as its musical prowess was recognised. Ornate or plain, the violin and its family were soon transformed into consumer goods of considerable commercial value.

From the earliest times, there are documents referring to the export of violin family instruments from several centres, including Brescia, Venice, and Cremona. These instruments were not only sold within Italy, as we now know it, but also throughout the wider European market. In Cremona local customers probably represented only a small portion of the violinmakers' clientele. Certainly Andrea Amati the first known Cremonese maker was dealing with foreign clients. Shortly after 1564, thirty-eight of his instruments were purchased for Charles IX of France.[53] Between 1637-38 correspondence between the astronomer Galileo Galilei, (1564 – 1642), and his former pupil Fra Fulgentius Micanzio records the pre-eminence of Cremonese instruments. Galileo wished to acquire a violin for his nephew, and asked the reverend father to organize the purchase of a violin, of either Brescian or Cremonese origin. Micanzio recommended a Cremonese violin declaring that they represented the non plus ultra.[54]

It was in this exchange of letters that the celebrated reference to "the strong heat of the sun being required to bring the instrument to perfection" appears. The date is April 24th 1638. The previous letter complaining of the delay because of the cold weather is dated March 20th, 1638. This allusion is generally seen as proof that Cremonese makers used an oil-based varnish, requiring ultra violet light for the drying process. In fact these letters say as much about the climate of Cremona as they do about the type of varnish preferred by the Cremonese makers. The winters would have been cold with a high humidity, resulting in the kind of damp, misty, and somewhat unpleasant climate, to which the city is still subjected. Assuming that ultra violet light was essential, the sultry summer months would clearly have been more suitable for varnishing violins.[55]

The Galileo letters also reveal that commissions often required considerable correspondence, much of it foreign. (Though close by modern standards Venice was a foreign state). In addition, such commissions involved dealings with banks, exchange

rates, court and or church officials, shipping agents, customs and tax officials, (by no means all modern inventions). Moreover, virtually all visitors from outside the city, be they customers or their agents, would have required some form of accommodation and almost certainly some wining and dining. Ultimately, these organizational problems would have been the responsibility of the workshop head. It is difficult to imagine these people finding any time for making, varnishing and fitting up instruments. In fact, the volume of trade, especially in the larger workshops, suggests that none of the great Cremonese makers could have accomplished such a gruelling programme unaided. In the main this aid must have emanated from the traditional extended family.

Whichever way the social structure of the Cremonese violinmakers was composed, throughout the 16th and 17th centuries, they continued to flourish. But eventually the enormous success of the violin created a new set of conditions. Market forces paved the way for new names, and eventually new schools. By the end of the 17th century, the Cremonese monopoly had begun to evaporate, with almost every town in Europe boasting a resident violinmaker. Compounding the malady, Cremona's importance both socially and politically was declining. As river traffic became less important it failed to make use of its central position in the Po valley and was even bypassed by the major road routs.

Towards the end of the 17th century virtually all of Italy's various territories had reached an advanced state of decadence. The legacy of war famine and disease had placed enormous pressure on northern Italy's manufacture and trade. There was no recovery as there had been in the 16th century. Populations already weakened by events succumbed more readily to normally less threatening illness. Compounding the malaise, Italy began to lose its cultural edge as the church oppressed the more dynamic intellectuals that the regions universities were producing.

Italy had become a place of external pomp and ubiquitous poverty. The commercial success of northern Italy in the 16th century, had provided ideal conditions for the early Cremonese violin makers, but its relentless economic decline was now apparent in the demise of the final generations. Those instruments which are today most revered were still to come, but the cultured elegance, implicit in Cremona's early period was never to be repeated. Even considering the remarkable peak of stylistic and acoustical development achieved after 1700, it can be argued that these instruments never quite matched the aesthetic qualities of Cremona's 16th and 17th century creations.

From the beginning of the 18th century a further series of complex political alliances and skirmishes, mainly between the French, Spanish, Austrian, and Piedmontese, kept Italy and much of Europe in turmoil. These became known as the 'Wars of the Spanish Succession'. As had often occurred in the past the floodplain of the Po river, became a favoured place for military campaigning, a situation aggravated by a series of devastating floods and an outbreak of cattle disease in 1713. In previous centuries, officers of the garrisons that variously occupied Cremona had purchased instruments from time to time, but in the 18th century the malaise caused by the military far outweighed any small gains engendered by their presence. In 1703 in a letter to the historian Muratori[56] described the situation in Cremona.

"Here we are seething with Spanish soldiers, and at the beginning of next May we shall have 5000 Savoyards, 4 French cavalry battalions and five infantry regiments."

Following this conflict, Milan and consequently the city of Cremona were freed from almost two centuries of Spanish rule. From 1707 onwards Austrian soldiers were garrisoned in Cremona. Unfortunately, domination by the Austrian empire was not a positive development for northern Italy generally, and for Cremonese violinmakers in particular. Many noble families whose prosperous ancestors had been so munificent in their support of the arts were no longer able to finance their musical desires. Private concerts and extravagant soirée became a thing of the past. Where once lavish banquets had been served to hundreds of guests, Italy's nobility were reduced to organizing small card parties or 'conversazione', with little more than lemonade tea or coffee and the occasional ice-cream for refreshment. Visible signs of decline were apparent to tourists, especially the English aristocracy, who visited Italy in droves in the 18th and early 19th century. They reported the once magnificent city of Florence being 'poor gloomy and disconsolate.....full of beggars, vagabonds and monks, passing in dreary procession beneath dark buildings with windows of torn oiled paper'.[57]

Reflecting the ignominious demise of the nobility, the last of Cremona's great violinmakers were subjected to even harsher fortunes. The classical Cremonese school had lasted more than 200 years, during which an enormous number of cultural eco-

nomic and technological changes occurred. In spite of this Cremona's early violinmakers were better educated, better remunerated, socially superior, and altogether far more sophisticated than their descendants. In fact given the circumstances it is sometimes difficult to understand how Cremona managed to produce the most venerated musical instruments of all time in the first half of the 18th century.

Perhaps the answer is to be found in the schools ridged social structure. Although baroque in appearance the Cremonese violin was based upon radical technology and bold innovative designs, more in keeping with renaissance philosophy. Throughout the 17th century the schools continuing success lay in a dogged adherence to its established working methods. And, when the economy finally turned bleak, it was largely this tradition that sustained the cities remaining makers. Unfortunately this powerful tradition eventually resulted in reluctance or an inability to change that subsequently contributed to the schools demise.[58]

It can be argued that all of Cremona's 18th makers, including Antonio Stradivari, were being left behind by a number of important developments in violin technology. This was especially true of developments in 'southern Germany'[59] where playing techniques were advancing more rapidly. These developments included improvements in string manufacture, which led to the lengthening and narrowing of fingerboards almost everywhere except Cremona. Moreover, even well into the 19th century Cremonese makers doggedly continued to fix their necks by nailing, while most of Europe had changed to mortising.[60] On a brighter note this particular resistance to change helped late 18th and early 19th century Cremonese instruments to retain something of the flavour of the old school.[61] Once modified to suit modern requirements, these instruments rapidly became the most sought after of their era. Once again the reason for this belated success lay as it always had in the schools unique method of construction, tiny vestiges of which can still be found in a few Cremonese workshops today.)62

In the second half of the 18th century little is recorded about Cremona, reflecting its rather insignificant and somewhat provincial status. There can be little doubt that the cities role in the violin business had also been dramatically curtailed. The precise moment at which this great school dissolved is impossible to fix. The many factors which led to its decline, also led to a scarcity of instruments and documentary evidence. Indeed, in some respects it has proved more difficult to establish social and stylistic links between the late Cremonese makers than it has between their forerunners. Compounding the problem Cremona's later makers were probably producing instruments other than violins, including guitars and mandolins, which because of their fragile nature have not survived. There is also some evidence that the emphasis had shifted from making to dealing and repairing,[63] as it had elsewhere in Europe. In spite of these observations it does seem that fragile links still existed between Cremona's great classical makers and those of the late 18th century, and from this point on up to and including Enrico Ceruti at the end of the 19th century.[64]

1 In the 1980s, a Stradivari violin could be acquired for less than USD 200,000; now they often cost in excess of USD 4,000,000.

2 In standard UK English, the term fiddle still means "to swindle, cheat or defraud." The term comes from the poor reputation that buying a fiddle gained in the 19th century. "Fiddle 5, a swindle, a fraud; a piece of cheating. Colloq." 'The New Shorter Oxford English Dictionary vol. 1', ed. Lesley Brown (Oxford: Clarendon Press, 1993), p. 942.

3 ,Meisterwerk der Geigenbaukunst', ed. Rudolf Hopfner (Vienna: Oesterreichische Nationalbank, 2002).

4 For some time now, it has been possible to identify the human voice electronically. Although it may eventually prove possible to identify the tone of a specific instrument, the problems of identifying the complete works of a whole school or of an individual through tone are, for the moment, insurmountable. There are too many factors which must be taken into account when analyzing the sound of a series of violins: damage to the varnish layer, repair or restoration, the differing pieces of wood and models employed, the player, bow, bass bar, bridge, soundpost and strings being the most obvious.

5 See, Roger Hargrave, "Identity Crisis: Why the 'Sainton' del Gesu Divided the Experts," 'The Strad', July 2005 pp. 50-56.

6 Coincidentally, this is approximately the extent of the classical Cremonese school.

7 There have always been fewer women violin makers, but it is known that some records were deliberately destroyed in the 19th and (seemingly) early 20th centuries; consequently, the works of many women remain unknown. It is even possible that there were women violin makers working in Cremona, in particular, the wife of Guarneri del Gesu. See Carlo Chiesa and Duane Rosengard, "Guarneri del Gesu: A Biographical History," in 'Giuseppe Guarneri del Gesu' vol. 2, ed. Jane Holloway and Jennifer Laredo Watkins (London: Peter Biddulph, 1998), pp. 12, 15, 16, 18, 20-21; Hargrave, "The Working Methods of Guarneri del Gesu and Their Influence on

8 The Mantagazza family of makers and restorers. The best known violin maker was Pietro Giovanni Mantagazza fl c. 1757-c1800.

9 See the chapter on Giovanni Baptista Guadagnini. See also "I Percorsi di Giovanni Battista Guadagnini" (The travels of J.B.Guadagnini) Pub. Ente Triennale Internazionale Degli Strumenti Ad Arco Consorzio Liutai-Archettai Antonio Stradivari Cremona. 1999. See also "Giovanni Battista Guadagnini" by Duane Rosengard. Pub. Carteggiomedia, Haddonfield NJ USA 2000.

10 Make notes who and what.

11 Make note.

12 Pietro Giovanni Mantagazza fl c1757-c1800 Milan.

13 Carlo Ferdinando Landolfi fl c1748-c1775 Milan.

14 The Hill Brothers were themselves descended from a long line of English violin of makers possibly dating back to London in the 17th century.

15 "Antonio Stradivari, His Life & Work, (1644-1737)" by W. Henry Hill, Arthur F. Hill & Alfred E. Hill. Pub. 1902 by W. E. Hill & Sons, London. "The Violin Makers of the Guarneri Family", by W. Henry Hill, Arthur F. Hill & Alfred E. Hill. Pub. 1931 by W. E. Hill and Sons. London.

16 Regardless of what many may consider a generally right wing political agenda, including McCarthyism, the Vietnam war, and racial discrimination, American liberalism was on the move and it was pulling the old European states with it.

17 Rembert Wurlizer, 1904 - 1963, He learned violin making in Mirecourt with Amédée Dieudonné and later with Alfred Hill of W. E. Hill and Sons of London. Arguably he became the most prominent American dealer / expert of the 20th. century. He kept comprehensive records of the many fine instruments he handled.

18 Simone Fernando Sacconi 1895 - 1973, violin maker and restorer. See "From Violinmaking to Music: The life and works of S. F. Sacconi", pub. A.C.L.A.P. Cremona 1985. See also Sacconi's own work, "The 'Secrets' of Stradivari", pub. Libreria del Convegno, Cremona 1979.

19 "Antonio Stradivari, His Life & Work, (1644-1737)" by W. Henry Hill, Arthur F. Hill & Alfred E. Hill. Pub. 1902 by W. E. Hill & Sons, London. "The Violin Makers of the Guarneri Family", by W. Henry Hill, Arthur F. Hill & Alfred E. Hill. Pub. 1931 by W. E. Hill and Sons. London.

20 In the early1970's there were three main schools of violin making. They were all in Europe. These were: the Newark School of Violinmaking in England, the School of Violinmaking in Mittenwald in Germany, and the School of Violin making In Cremona in Italy. Less than two decades later there were at least ten times this number of across the world training increasing numbers of skilled and ambitious violin makers.

21This may not apply to the skills of violin making and restoration.

22 From the beginning of the 18th century a series of complex political alliances and skirmishes, mainly between the French, Spanish, Austrian, and Piedmontese, kept Italy and much of Europe in turmoil. These became known as the 'Wars of the Spanish Succession'.

23 A cloth of wool and linen mix.

24 The Times Atlas of World History. Pub. 1984, Times Books Ltd. London, p. 180.

25 This would have included tone woods, the trade in which was well established.

26 Italy was producing some of the world's finest silk.

27 Several canals were constructed which extended the navigability of this river system.

28 Columbus sailed to America in 1492, less than 50 before Andrea Amati opened his shop in Cremona. By which time amongst other things, timber and turpentine were already being exported from the Carolinas

29 Bonetti 'Il mancato baratto di Cremona' p.113. According to Bonetti in 1521 Cremona had 35,503 inhabitants. Information from the central library of Cremona cites the census of 1538 where the population of the city is 41,104. This included 34,104 ordinary citizens about 9,000 children under 7 years who were unregistered (Di eta inferiore ai sett anni) 2,000 serfs (Miserabili) 3,000 ecclesiastics (Ecclesiastici) 2,000 church laypersons (Esentilaici)

30 Cremona's school of painters was lead by Camillo Boccaccino, Bernardo Gatti and Bernardino Campi, and his sons Giulo, Antonio, and Vincenzo.

31 The arranged marriages of Isabel and her mother Catherine dè Medici linked three of Europe's most powerful families.

32 Most of Cremona's magnificent walls were demolished by Italy's fascists in the 1930's. Influenced by futurist movement they considered them unsuitable for a modern city.

33 The pontoon bridge system was necessary because the river frequently changed course. The first depiction of such a bridge known to the author is on an early plan of the city dated 1648. This plan is illustrated in 'Cremona nelle antiche stampe', Cesare Sinistra- Max e Bianca Fink, Cremona 1980. However, bridges of this nature spanned the river in earlier times probably even as far into antiquity as the Roman Empire. The remains of two Roman roadways found in 1967 suggest that a bridge crossing of some kind was located near the town running in the direction of Piacenza.

34 This refers to the world, as it was known to 16th century Europeans.

35 Although in the 17th century Italy medical practice was in the European vanguard with medical schools in Padua and Bologna by modern standards it was still primitive.

36 Fire was also a constant danger. Many houses were constructed of wood and thatch. As a result activities such as varnish cooking were confined to areas outside the city walls.

37 It is possible that hot glues were not employed as universally as they are today and that cold casein based adhesives were preferred. See 'The case for Casein' Strad magazine February 1984 p.706

38 Arranged marriages were often disastrous for the couples concerned, especially the women. Couples were even married by proxy. Maria de'Medici and King Henry IV of France were married by proxy in 1600. Marguerite-Louise, the daughter of Gasto d'Orléans was also married by proxy to Cosmo Medici III. The marriage was arranged to please several distant family members. In 1661 Marguerite-Louise was fifteen and in Paris when the marriage took place. Cosimo was eighteen and in bed with the measles in Florence.

39 In Cremona Andrea Guarneri the head of the Guarneri family was almost certainly involved in a deadly vendetta and may well have been banned. (See chapter about Andrea Guarneri) In addition the first husband of Antonio Stradivari's first wife was shot by her brother who was certainly banned. (See chapter about Antonio Stradivari) Also, a few years later Giovanni Battista Grancino the son of the famous Milanese violinmaker Giovanni Grancino was also a violinmaker. In a feud he killed another maker Antonio Maria Lavazza and was initially banned but returned after petitioning the governor.

40 See page 40, 'Early Modern Italy, 1550-1800', by Gregory Hanlon, Pub. Macmillan Press Ltd. London 2000.

41 See page 41, 'Early Modern Italy, 1550-1800', by Gregory Hanlon, Pub. Macmillan Press Ltd. London 2000.

42 Bricks were one of Cremona's most successful exports.

43 Almost all of this facing stonework has now gone, stolen or sold in more demanding times.

44 Claudio Monteverdi, baptized May 15, 1567, Cremona, Duchy of Milan, died November 29, 1643, Venice. He lived in Cremona until 1591.

45 P. 149,'Early Modern Italy, 1550-1800', Gregory Hanlon, Macmillan Press Ltd London 2000

46 P. 174 Early Modern Italy, 1550-1800 by Gregory Hanlon, pub. 2000 by Macmillan Press Ltd. London.

47 One of the Medici Banks profitable sidelines was the provision of choirboys.

48 The plague pandemic of 1630-31 killed one quarter of the population of northern Italy. It killed half of the population of Milan, about 600,000 people. In Cremona it killed one third and another third fled the city. See also chapter about Nicola Amati.

49 There may have been violins before those of Andrea Amati, as shown, for example, in the paintings of bowed stringed instruments in the work of Gaudenzio Ferrari, and in the culture of bowed strings already existing in the late 15th century in the court of the Este family in Modena.

50 Precious stones were used to decorate several early violins, in particular those inlayed by Nicola Amati. See illustration 'King Louis XIV' violin by Nicola Amati 1656 p. 11-20 "The Stringed instruments in the Corcoran Gallery of Art" pub. Gakken and Co Ltd.-Hiroshi Furuoka, Tokyo 1986

51 Although these items were available, there is no firm evidence that Cremonese violinmakers ever used them.

52 Many were highly decorated and set with precious stones.

53 See chapter about Andrea Amati p.???.

54 Page 240, 'Antonio Stradivari, His Life & Work, (1644-1737)' by W. Henry Hill, Arthur F. Hill & Alfred E. Hill. Pub. 1902 by W. E. Hill & Sons, London.

55 Linseed and walnut type drying oils and the varnishes based upon them, require interaction with ultra violet light to dry them.

56 Lodovico Antonio Muratori 1672-1750 (Archivist and librian)

57 Page 306, 'The rise and fall of the house of Medici', Christopher Hibbert. Pub. 1974 by Allen Lane.

58 Parallels can be drawn with the British motorcycle industry of the 1960,s

59 Like Italy Germany did not exist as a state at that time.

60 A violin by Enrico Ceruti dated 1880's was exhibited in Cremona in September 2000. It has retained its original neck which is nailed in the classic Cremonese manner.

61 See chapter about nailing the neck and its effect on the outlines of Cremonese instruments.

62 Once modified to suit modern requirements, these instruments rapidly became the most sought after of their era. The reasons for this belated success lay as it always had in the schools unique method of construction, tiny vestiges of which can still be found in a few Cremonese workshops today.)See chapter about nailing the neck and its effect on the outlines of Cremonese instruments.

63 In Venice, in 1734 Domenico Montagnana was requested to draw up an inventory for the deceased maker Anzolo Sopran. Amongst the many items were 40 new large guitars, 16 small broken ones, 172 guitar bellies, 66 new German violins and 4 old ones. This list raises several important points. The presence of broken instruments suggests that repairs were being carried out. The new German violins confirm that Venice was importing instruments and the guitar bellies suggest that Anzolo Sopran was a guitar maker rather than a violin maker.

64 See "The Late Cremonese Violin Makers" by Dmitry Gindin, pub Edizioni Novecento Cremona "2002.