

## Stradivari, Cremona and violin mystique

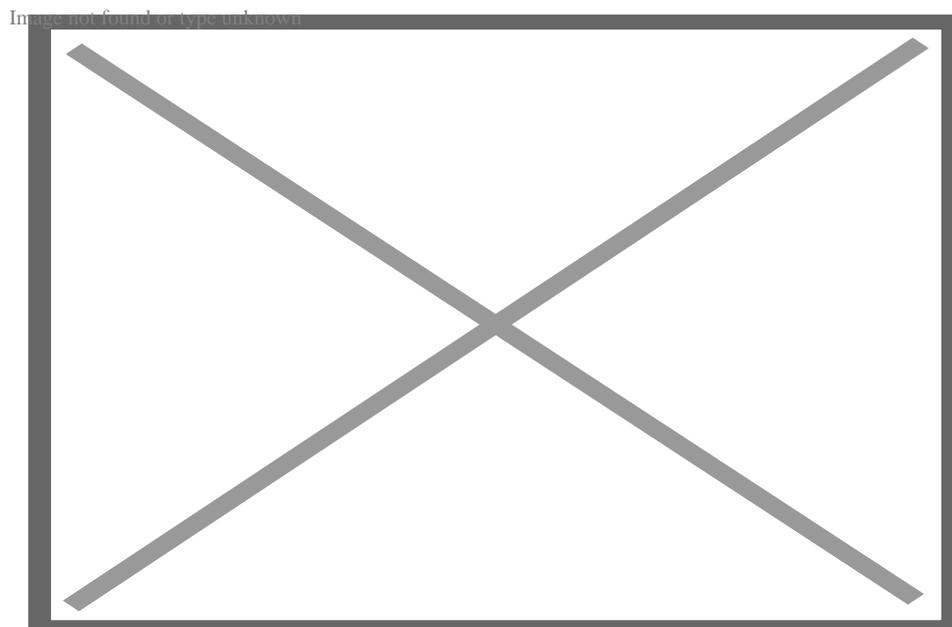
### Description

*What makes classic violins made by Stradivari and others so good, and how is climate change relevant to this?*

In this post, I'm straying a bit from the focus on guitars to consider another wooden stringed instrument, the violin. There are a number of threads to this story and it does relate to the overall themes of the Nature of Music (trust me on this...).

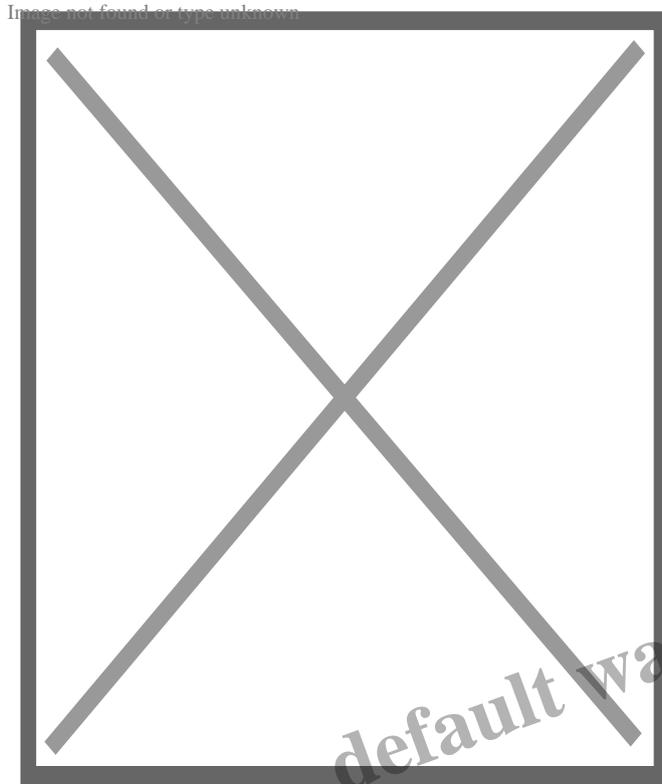
A few things to clarify to begin with. First off, I think playing guitar well is difficult – but have you ever tried to play violin? Man, those things are hard to master, especially in the early stages of learning. They may only have 4 strings, but the neck has no fret markers – making finding the right notes pretty much guesswork – and you have to use a bow. Hearing a violin played well is a wonderful experience – but I can only guess at the amount of practice and dedication that goes into achieving that.

You can pick up a guitar and make a reasonable sound by learning a few simple chords, but then doing it well and progressing beyond beginner stage gets harder. There is no instant gratification with the violin – only pain, heartache and sorrow, or at least horrible scratchy sounds that bear no resemblance to music until you've practiced a heck of a lot. Both my son and daughter had a skirmish with violin at an early age, but then moved on to other slightly more forgiving instruments. My daughter played clarinet at school, but now plays her [EJ Henderson ukulele](#). My son moved onto saxophone and piano. He's now been learning to play guitar in locked-down England for the past year or so, with a very nice [bog oak Lowden](#).



[Classicfm](#)

Second, I'm going to focus on violins rather than fiddles in this article, and so it's good to know the difference between the two.



*The difference between violins and fiddles?*  
Source: [Bestquotes](#)

*'Have you ever seen a photo of a violin and a fiddle side by side? Were you able to tell which one was which? If you answered "yes," then brace yourself for some bad news: they're the same instrument.'*

*But is there a difference between violin playing and fiddle playing? Yes. As a general rule, a violin is used for classical music and a fiddle is used for folk, country, and bluegrass. In the rock and jazz idioms, the terms are used more interchangeably. But however you play your violin or fiddle, you're still dealing with the same four-string wooden instrument that dates back to sixteenth-century models from northern Italy.'*

[Music 101: What Is the Difference Between a Fiddle and a Violin?](#)

*(But one opinion is that the difference is "One has strings, the other has strangs". )*  
[Violinist.com](#)

## Cremona: City of violins

OK, so joking aside, this post focuses on the violins made in northern Italy, and particularly in the town of Cremona. Cremona is a beautiful place, and is famous for being a centre of [violin making](#) for centuries. It's where perhaps the most famous of violin makers worked – even if you know relatively little about violins, you probably know the name Stradivarius. Stradivarius violins were made by [Antonio Stradivari](#) (1644-1737), who we'll talk about in more detail later.

I had planned on visiting Cremona last year as part of a trip starting with a visit to my son (and that Lowden) in Oxford followed by a month's Writing Residency at the [Rockefeller Foundation's Bellagio Center](#) in Northern Italy.

We were due to visit Oxford in early March and then spend March and half of April in Italy. A week before we were due to leave home, we started seeing news reports of the increasingly worrying situation in Italy, with its epicentre exactly where we were due to be staying. We made the difficult decision to pull the pin on the trip and stay at home. A lucky choice, as it turned out, as things went from bad to worse in Italy and elsewhere.

Cremona featured in [news stories](#) focusing on the rapid engulfment of the health system and the heroic efforts of the front-line health workers.

*News story from 16 March 2020*

The city, like many other places to follow, went into lockdown, with strict rules about staying at home except for essential activities. The city of violins fell silent. That is, until violinist [Lena Yokoyama](#) played at the top of the city's bell tower while a drone took footage of the deserted streets, creating an art-piece of serene and poignant beauty.

*"The city of Cremona, once home to Antonio Stradivari, Guarneri 'del Gesù' and Nicolò Amati, was hard hit by the Covid-19 virus. Here, violinist Lena Yokoyama, who frequently performs at the city's Museo del Violino, plays Charles Gounod's Ave Maria at the top of the city's Torrazzo – at 112.9 metres, the tallest bell tower in the country. The deserted streets of Cremona were filmed using a drone camera. 4 April 2020" [The Strad](#)*

Two weeks later she performed again, this time on the roof of the Cremona hospital for the healthcare workers, her music giving them a moment of beauty in an otherwise tragic situation.

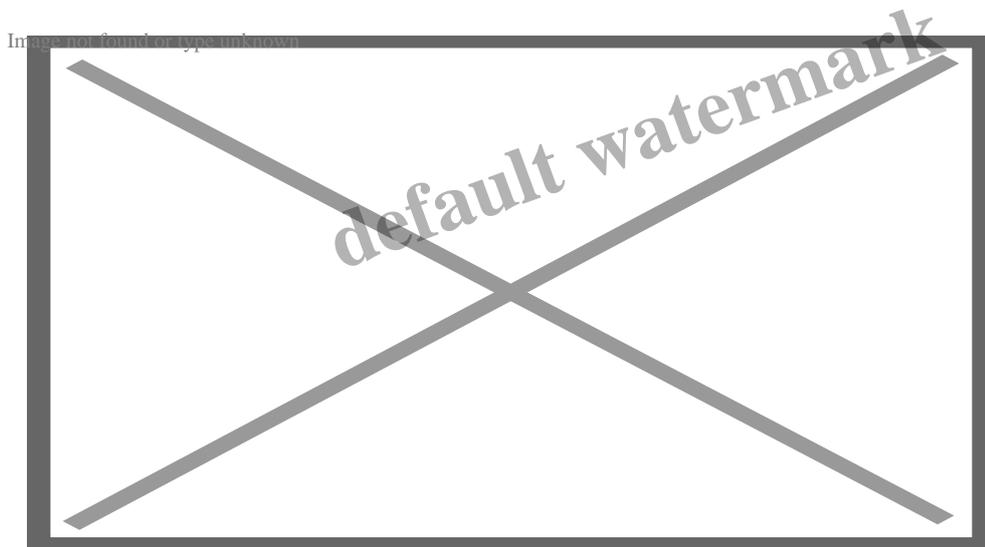
*Lena Yokoyama performing 'Gabriel's Oboe' from Ennio Morricone's score for the 1986 film The Mission, on the roof of the Cremona Hospital for the assembled healthcare workers. 17 April 2020. [The Strad](#)*

At that stage, few people grasped just how much Covid would change everything or just how long it would last. Over a year on, and the world is still gripped by it, with glimmers of hope alternating with new setbacks, and a checkerboard approach with some countries doing well and others falling deeper into the pandemic mire.

The lasting effects of the pandemic go beyond the immediate public health issues and influence just about every aspect of life. In Cremona, the effects are felt in numerous ways. Tourism has crashed, as has demand for instruments crafted by the city's violin makers. Orchestras have been silent around the world, musicians have been unable to perform to live audiences, and hence there are fewer orders coming in to the Cremona workshops. Whether the craftsmen can survive [remains uncertain](#).

## Stradivarius violins

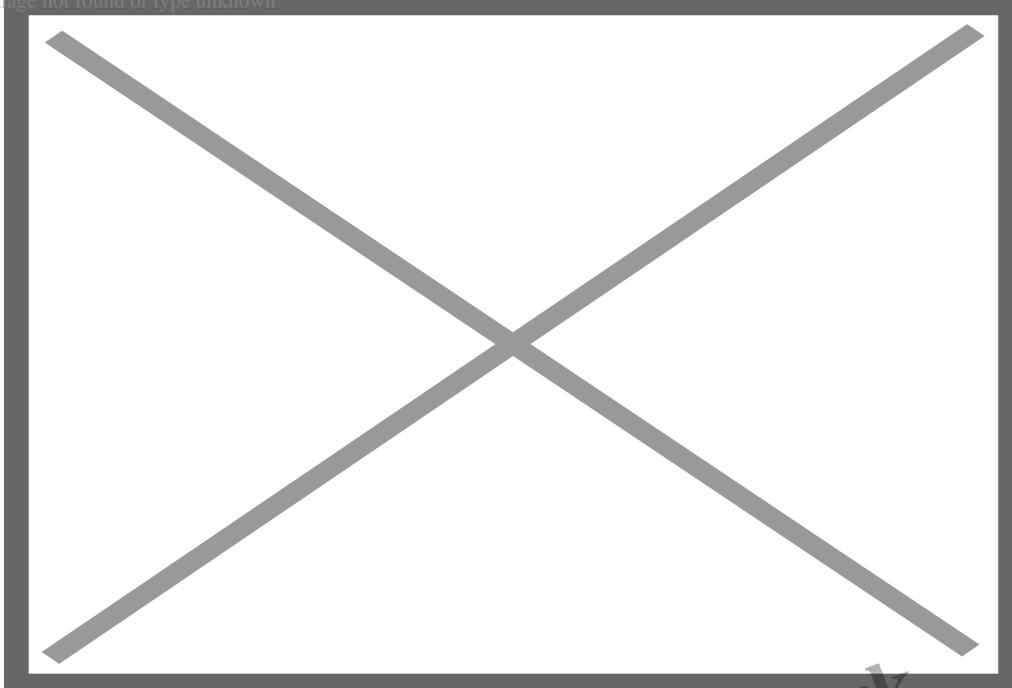
I hope the violin makers of Cremona can make it through this and continue their craft, and I hope still to be able to visit the city one day. The main reason I wanted to visit the city and surrounds was the story surrounding the violins made by Antonio Stradivari.



A Stradivarius. Listen to it being played at: [Classicfm](#)

Cremona has been home to many amazing violin makers, and Stradivari himself apprenticed with the Amati family who are credited with starting the whole tradition of modern violin design and making. Other makers from the same period, particularly Giuseppe Guarneri and his son Giuseppe Guarneri del Gesù, are also noted for their exceptional violins.

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*Painting of Stradivari by Edgar Bundy – [Unknown source, Public Domain](#)*

Stradivari produced over a thousand instruments, of which 960 were violins (he also made a handful of guitars, [only a few of which survive today](#)). An estimated 450-500 violins still exist – estimated because an unknown number are in private collections and rarely if ever appear in public – and these instruments are regarded as amongst the finest bowed stringed instruments ever created. They are highly prized, and some are still played by professionals today. Only violins made by Giuseppe Guarneri del Gesù are regarded as highly. Both men’s violins today [sell for millions of dollars](#)

Stradivari violins are colloquially known as “Strads”, just like Fender Stratocasters are known as “Strats”.

## What makes a Strad so good?

You might think there would be an easy answer to this, but things do not appear to be that simple. It’s the same sort of conundrum as pinpointing what makes [pre-war Martins](#) so highly regarded and sought after.

It should be possible to build a violin with almost the exact same specifications of a Stradivari. Virtually everything about Stradivari’s violins has been [studied and debated](#) in the context of what makes the violins so good. The shape of the scroll, the size of the corner blocks, the curvature of the middle ribs or sides, the arch of the belly or top, variations in thickness of the back, the design of the f-holes... the list is almost endless. Then there is the mysterious varnish and three-phase varnishing technique.

Most commentators agree, however, that there is probably no simple answer. There are just too many variables to consider, and it’s likely that there’s not a simple cause and effect relationship to be found in any one variable. Violins are complex systems of interacting elements. Ecologists encounter the same issue in trying to understand how ecosystems work and how to restore them. It seems we always

want to find “the” answer or pinpoint “the” cause of something, even in the face of evidence that many different things interact and often lead to unpredictable outcomes. William F Fry, a physicist who devoted several decades of research to examining and quantifying the physical and acoustic properties of Stradivarius guitars [concluded](#) “*It took me a long time to get over the idea that there were one or two simple secrets.*”

This is echoed by American concert violinist [James Ehnes](#) who, in a DVD called Homage, performed on 12 instruments in the Fulton Collection in Seattle — probably the greatest collection of Stradivari and Guarneri violins in the world. Each Strad had its own voice, [he said](#), although there also existed a “family resemblance” throughout the collection. “When I played these instruments I got the feeling that there were a thousand reasons why they were so great. There will never be one secret,” he concluded.

## Maybe he was just very good at it

Added to this, of course, is the simple fact that Stradivari’s violins are all **old**. Even moreso than for guitars, there is a strong belief in the violin world that violins get better as they age. Commentaries such as Tony Faber’s book “[Stradivari’s Genius](#)” on Stradivarius violins include statements from those who own or play these instruments that they take on something of the persona of past and present players and develop a “memory” – to the extent that the instrument almost plays itself or anticipates the player’s intentions. Obviously, newer instruments have less accumulated history, even if they are otherwise acoustically similar.

As well as just being old, though, many violins from Stradivarius and others of that era have “had work done” since they were originally made: a lot underwent extensive restoration and “improvement” in the 19th century.

Finally, an obvious observation is that Stradivari was probably just exceptionally good at what he did. Building off a century of tradition build by the Amati family in Cremona, he experimented and was an adept craftsman. Talent, dedication and skill must count for something.

This all leads Tony Faber to the conclusion that “It is absurd. Stradivari can never be matched through imitation. All we can copy is Stradivari’s approach: single-minded devotion to the aim of producing instruments better than any predecessor’s”.

Indeed, trying to imitate Stradivari is made more difficult because no two of his instruments are exactly the same. He most likely used a set of guiding principles to craft his violins, but those principles evolved over time, and how they translated into practice varied from instrument to instrument.

[As an aside, this idea is equally relevant in my field of restoration ecology, where we’ve been arguing that a set of principles that can be adopted and applied differently in different contexts is possibly a better way to go than laying down detailed and uniform standards and prescriptions – but that’s [another story!](#)].

“How can it have been possible for Stradivari and his ilk to make so many violins with top-notch sound and playing characteristics (or at least the vast majority of them), without ever trying to copy a particular successful model exactly? It would seem from the surviving Stradivari instruments that their archings and models were constantly evolving, whereas his

plate thicknesses seem to be unique to each and every instrument.”

[Dirk Jacob Hamoen, The Strad 2018](#)

## Real or just perceived?

An interesting wrinkle in all this, however, is the question of whether all the fuss about Stradivarius violins is based on actual differences between the acoustics of these and other, more recent violins. [Several studies](#) have been conducted using blind playing and listening tests and various acoustic analysis and these mostly suggest that Stradivarius instruments cannot be reliably distinguished from other high-quality instruments

This is perhaps comforting to the many violinists who cannot hope to ever play or own a Stradivarius. It's also a discussion that will be covered in a future post in the context of guitars – how much of the received wisdom regarding the superiority of certain wood combinations or production eras results from subjective preconceptions versus actual measurable differences?

There is, of course, the potential for a bit of a clash of cultures between the aesthetics and mystique of violin making and the rational analytical approach of modern science. Just because something is not measurable doesn't necessarily mean that it doesn't exist. Quantitative analysis of a famous work of art wouldn't necessarily make any sense out of why it is such a good painting. Similarly, maybe trying to reduce the magic of instruments capable of producing beautiful music to a series of numbers is also futile.

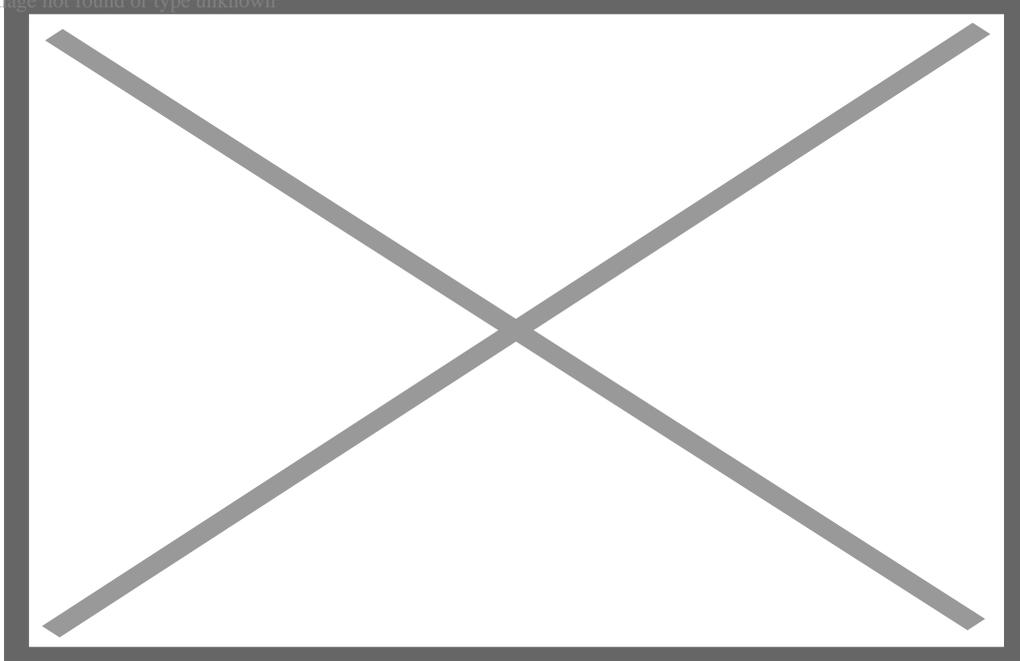
The gulf between how a violin is perceived by a musician or craftsman and how it is approached by reductionist science is perhaps nicely encapsulated in a quote from the article [“Science and the Stradivarius”](#) by physicist Colin Gough: “Surprisingly, many players still believe that their instruments improve because they are loved and played well, which would be very difficult to explain on any rational scientific basis!”

## But – what about the trees?

There's a lot to think about in all these discussions of the properties of Stradivarius violins that make them so sought after. But let's not forget the ultimate source. Like guitars, violins grow on trees. And trees grow in forests. Let's look at one especially relevant forest here.

The forest of Paneveggio – sometimes called “Il Bosco Che Suona” — [The Musical Woods](#), or the Violin Forest – is located in the Province of Trento in northern Italy, and is part of the [Parco naturale Paneveggio – Pale di San Martino](#).

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### [Parco Naturale Paneveggio](#)

The forest is comprised mostly of [European spruce](#), *Picea abies*. Growing in the forest is a special type of tree called resonance spruce (in Italian, abeti di risonanza), trees which are sought after by luthiers from around the world. [Resonance spruce](#) has particular wood density and grain characteristics, and is also recognised as a valuable resource for luthiers in other parts of the world. It was this precious spruce wood that was preferred by Stradivari, and it's said that he went to the forest of Paneveggio to personally choose suitable wood with which to create his violins.

There is a lot of tradition and mystique around the selection of resonance trees and how and when they should be harvested. It is said that the best time to cut wood from the resonance spruce is in the winter, in the days following the new moon in December. This special cut of wood is also called "Mondholz," meaning "moon wood." Trees cut at that time of year are not actively growing, meaning that the porosity and sap content of the wood is reduced. Moon spruce is occasionally used for guitars, but there is also a degree of scepticism about its value. [One commentator](#) sarcastically dubbed it "*Markitus gimmicus*"

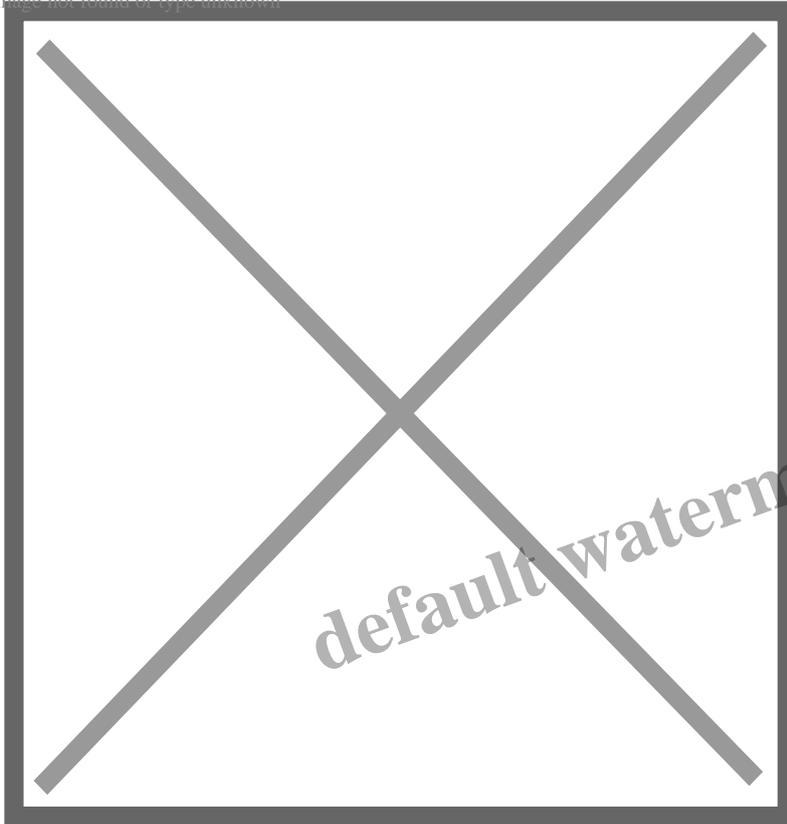
## And climate change?

Whatever the validity of the moon wood idea, it's certainly true that the spruce forests of Paneveggio remain highly valued for their provision of fine wood for musical instruments. [There has even been speculation](#) that the wood the forest produced at the time of Stradivari was quantifiably different from the wood produced today. Stradivari worked during Europe's "[little ice age](#)" of the 15th-17th centuries, in which low summer temperatures led to slow but uniform growth in the Spruce trees used for instruments. Some argue that the wood's uniform density helps explain the instruments' high quality of sound. Medical imaging technology has been used to confirm that the wood came from slow-growing trees. It's possible that spruce growing in the north of Sweden is now the closest to the wood from Paneveggio in the Stradivari era.

Of course, this idea joins the queue with all the other ideas for why Stradivarius violins are (or are perceived to be) so good. And as with all the other hypotheses, [it has been discounted by some](#).

The Little Ice Age is ample evidence that climate is variable, and that relatively small changes in temperatures can make a big difference to everything.

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*During the “Little Ice Age” the River Thames in London regularly froze solid enough to hold “frost fairs”. Painting by Thomas Wyke – [scan from FT magazine, 2007-09-30, Public Domain](#)*

So, it’s fair to conclude that the directional climate change now being experienced (yes, folks, human-caused climate change is real, even if some folks don’t believe in it) are likely to impact all sorts of things. What are warming temperatures doing to the Musical Woods? Interestingly, the most obvious impacts are likely to be because of changing weather patterns rather than straightforward temperature changes. Across the globe, changing weather patterns are resulting in increased droughts, floods, wildfires and more frequent and unusually severe storms. Just recently, in 2018, [an unusual massive storm](#) hit the Paneveggio region, knocking over large areas of the forest.

The potential impact of this destruction on the continuity of supply of wood for instruments [was quickly recognised](#). In the storm’s aftermath, a collection of skilled foresters, instrument makers, materials scientists, and dedicated government officials gathered to work together on salvaging valuable timber. At the same time, this proved an opportunity to work out fascinating innovations to keep Cremona’s rare tradition of artisanal excellence alive.

[Italy's Endangered Violin Forest](#)

## Coda

Circling back to the start of this article where we looked at the impact of the pandemic on Cremona and its violin makers, it's clear that changing climates and ongoing environmental alteration also make the future an uncertain place for instrument makers (and many others). It's smart to start thinking carefully about the future as well as the past to ensure that forests continue to flourish and fine instruments can continue to be made.

Also check out [a companion post on violin bows](#).

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