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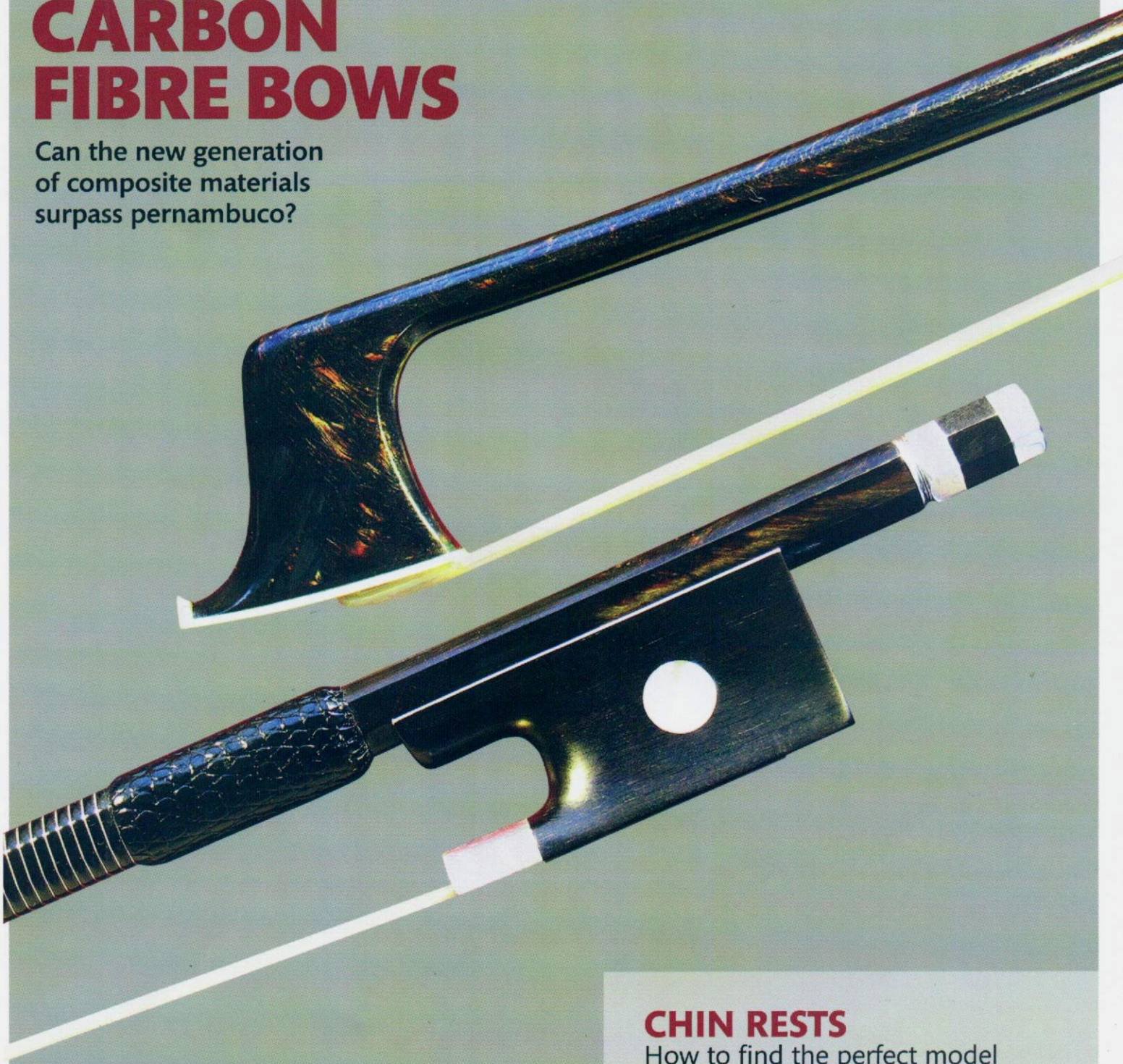
CARBON FIBRE BOWS

Can the new generation of composite materials surpass pernambuco?



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Supplement to The Strad, October 2014

An Arcus bow maker fits the hair in a new frog

A CHALLENGE TO TRADITION

Carbon-fibre bows have long been treated as the poor relation to pernambuco – but with the help of new composite materials, that attitude is changing. FEMKE COLBORNE finds out how manufacturers have responded to an increase in public demand

THERE WAS A TIME WHEN MOST STRING players would have been hesitant to turn up to an orchestral rehearsal with a carbon-fibre bow. When the material first came on the scene in the early 1980s, it was perceived as an inferior alternative to pernambuco, the wood traditionally used in bow making. But over the past 30 years, advances in technology have vastly improved the quality of synthetic bows. This, coupled with the skyrocketing prices of wood bows and restrictions on the use of pernambuco, has meant that carbon fibre is fast becoming a much more common sight on the concert platform.

Bernd Müsing, the engineer behind carbon-fibre bow maker Arcus, says: 'In Germany, our home market and the largest market for orchestras in the world, there has been a real breakthrough over the past five years. Today there are a couple of players with an Arcus bow in every orchestra. Five years ago those people were seen as outsiders, but that is no longer the case. We are receiving more direct requests from players now than ever before, from people who have been sitting next to someone with an Arcus in their orchestra and want to know more.'

Carbon-fibre bows have come a long way since the mid-1980s, when French bow maker Benoît Rolland developed the Spiccato, the first synthetic bow used by professional players.

Most manufacturers are now developing complex composite materials to achieve the best sound. For a long time, carbon-fibre bows have been recognised for their durability and relatively low price – they are virtually unbreakable and those at the bottom end of the market can cost as little as £75 – but now some makers claim their playability can match and even surpass the best pernambuco bows.

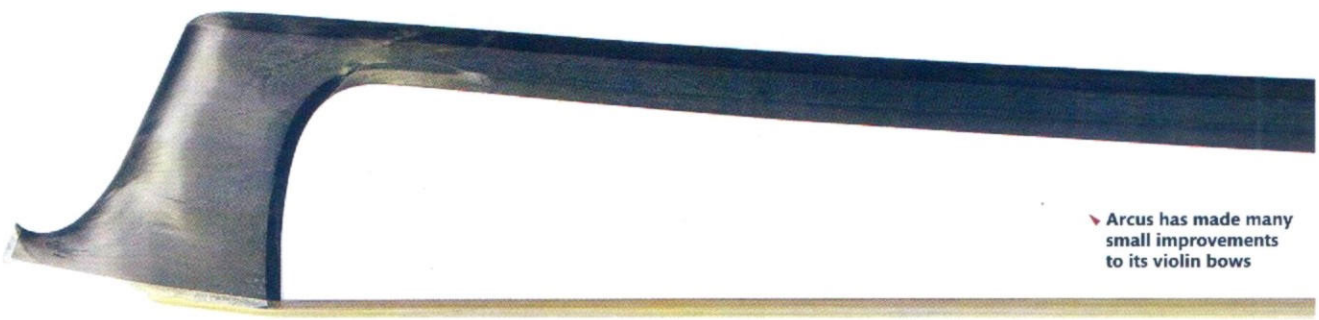
Five years ago, Arcus moved production from its original garage workshop in Klagenfurt to a new, larger workshop in Würzburg, investing in new machinery and manufacturing methods. Two years later it launched the S9 and A9 models – two similar bows with a slight difference in the tone quality they produce. Both models cost €8,000 and are among the highest-quality carbon-fibre bows on the market. 'We have made many small improvements through optimisation in the heating process and in training our makers,' says Müsing.

OTHER MANUFACTURERS HAVE also been working to improve the quality of their bows. The latest product from Chinese manufacturer Maestro Archetier, for example, is the Peccatte, designed to emulate the characteristics of bows made by the influential French maker Dominique Peccatte (1810–74). 'Our workshop is constantly trying to improve the performance and sound quality of our carbon-fibre products,' says workshop leader Ma Rong-Di. 'The Peccatte is designed to have a high level of elasticity, flexibility, responsiveness and balance. These bows have a variation in timbre and a spectrum of tonal colours that is comparable to that of bows made with a great piece of pernambuco.'

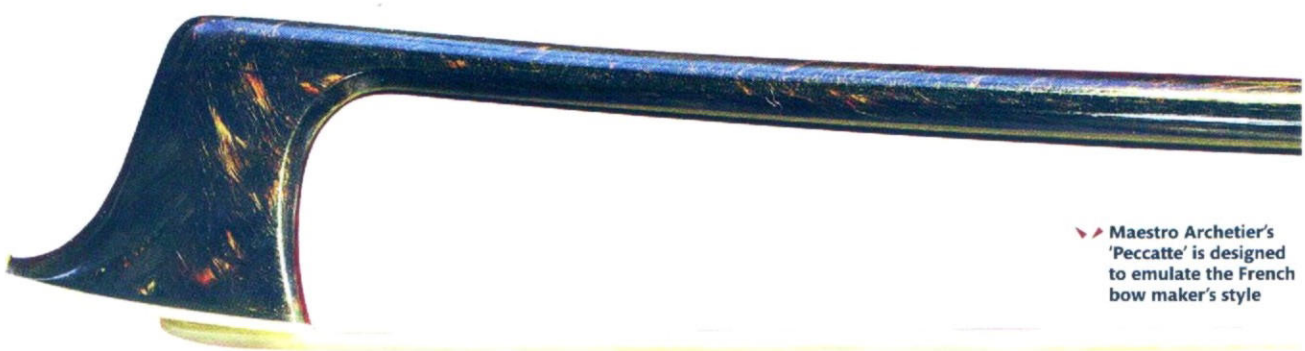
Founded in 1993 by Stan Prosen and Jeff van Fossen, American manufacturer CodaBow makes a range of synthetic bows for beginners through to professional players. Like Arcus and Maestro Archetier, CodaBow experiments with a wide range of composite materials to alter the sound its bows produce – most recently, it has started to use natural materials such as hemp. Its newest models are the Joule and Luma, both designed with specific playing characteristics in mind.

'Carbon fibre comes in a wide variety of types and flavours,' says Van Fossen. 'Talking about carbon fibre is a bit like talking about wine. The best solution is not always pure carbon fibre – it can be a blend. You can't work with just one ingredient and expect to come up with the best recipe. We can prioritise or increase specific playing characteristics in a way that would be impossible with a traditional bow. Using natural fibres is helping us to get a layered sound and we are improving every year.'

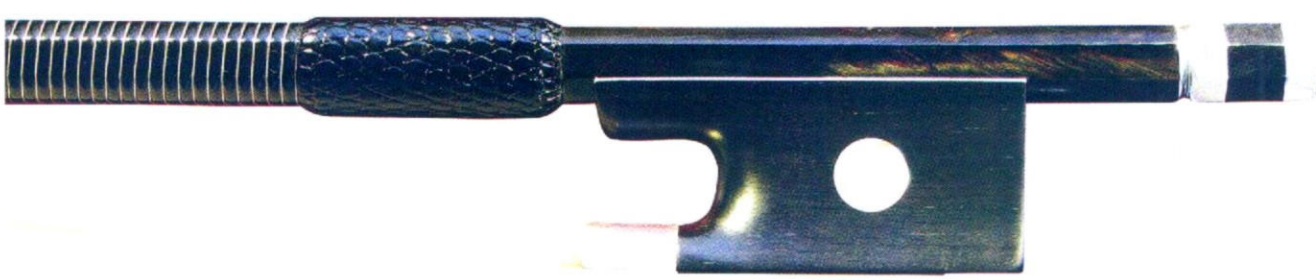
CodaBow also makes bespoke bows for players who have a very specific or unusual set of requirements – or even ask for a replica of their favourite wood bow. 'We are busier than ever making these bows and we have no shortage of interest,' says Van Fossen. ▹

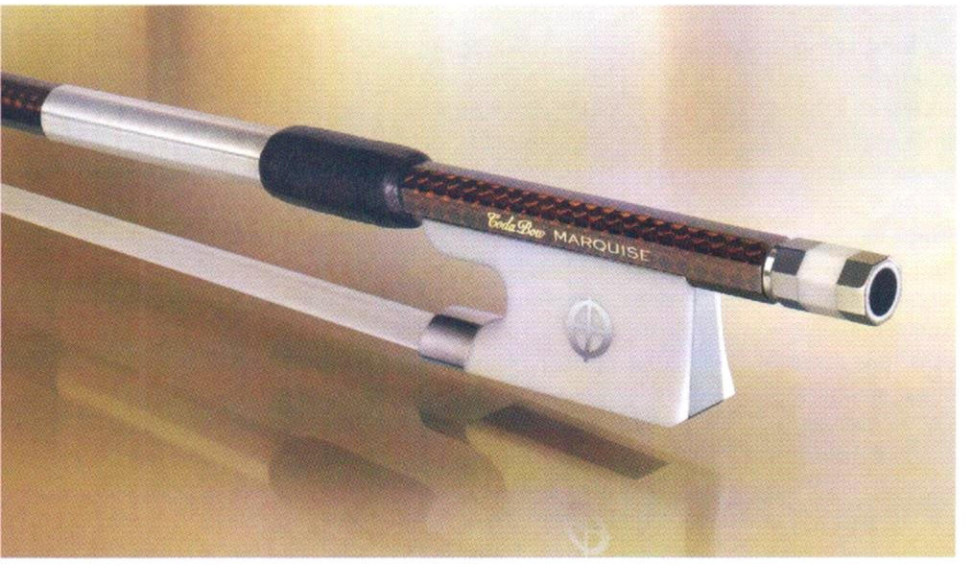


Arcus has made many small improvements to its violin bows



Maestro Archetier's 'Peccatte' is designed to emulate the French bow maker's style





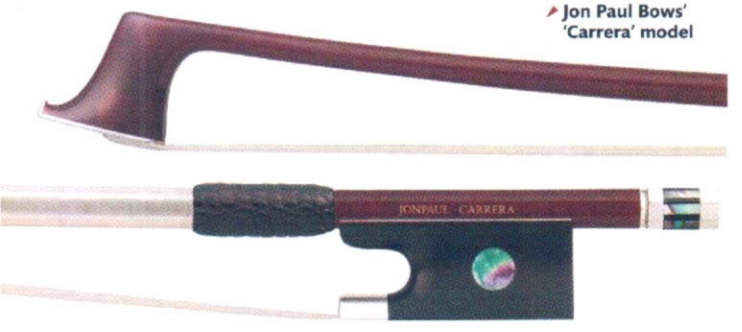
CodaBow has upgraded all its frogs to a natural composite using cellulose

'New materials are stronger, more durable and, importantly, more border-friendly'

JEFF VAN FOSSEN

Another contributing factor to the increase in popularity of carbon fibre is the scarcity of natural materials used to make traditional bows. Fifteen years ago, bow makers became so concerned about pernambuco depletion that, in collaboration with the France-based Confederation of Craftsmen and Users of Natural Resources, they created the International Pernambuco Conservation Initiative. More recently, a number of countries have implemented restrictions on pernambuco and other traditional materials used to create bows, including elephant ivory, ebony and mother-of-pearl. As well as driving up the price of wood bows, these changes have made it increasingly difficult for musicians to travel internationally with their bows.

'We are seeing increased interest from professionals who often cross borders,' says Van Fossen. 'There has been a lot of confusion about the materials used by traditional bow makers. Going across borders has become a high-risk scenario. Even people with synthetic bows are getting stopped.' CodaBow has upgraded all its frogs to a natural composite using cellulose fibres and by the end of this year it will have removed mother-of-pearl from all its models. 'The new materials are stronger, more durable and, importantly, more border-friendly,' says Van Fossen.



Jon Paul Bows' 'Carrera' model

The challenging economic climate of recent years has also led to some important changes in the market. Since the economic crash of 2008, Van Fossen says there has been an increase in the number of professional musicians who simply can't afford a half-decent pernambuco bow. 'Players at the top of the field have the time and resources to go out and find a wood bow, but there is a middle layer of performers who rely on their bow to make a living but also need a good-value product,' he says. 'That market is increasing as more players become more value-centric.'

Manufacturers have responded to this by striving to make their bows as affordable as possible, leading to better value across the spectrum. Van Fossen and Müsing both say performance at each price point has dramatically improved since 2008, thanks to an increase in demand for affordability.

JON PAUL BOWS, which manufactured the Spiccato bow between 1996 and 2004 and now makes a range of synthetic bows for students through to professionals, has brought out three new models since the start of the global recession: the Corona, Muse and Carrera. 'When the market crashed in 2008 we had to re-evaluate everything,' says co-founder Paul Prier. 'The market changed and there was a race to the bottom to create the cheapest possible product. So we decided to go the other way – we took a French bow made by Étienne Pajeot as a starting point and tried to match it.'

Prier says this strategy did well, leading to an increase in sales between 2008 and 2010. The cheapest carbon-fibre bows, he says, are available from manufacturers in China, but they don't remotely compare to the products available at the higher end. 'Those products have a great place in the market, fill a gap, and are better than cheap wood bows,' he says. They do exactly what they are supposed to do – but they are made of pure, simple carbon fibre.'

He agrees with Müsing that perceptions of carbon-fibre bows are starting to change. 'People have become a lot more open to trying them out and comparing them, to see which ones suit their style,' he says. 'This is happening all through the market, but particularly at the top and middle end. That's because of the quality of what's being made, and also because the prices for pernambuco bows have gone crazy. In the past, you could get a low-end French or German bow for under $1,000. They were not that expensive. But now they are completely out of reach for most people, and modern makers are also starting to charge a lot more.'

With improvements still happening all the time, do the manufacturers believe synthetic bows will ever match or surpass the quality of a top pernambuco bow? Some argue that they already have. 'If our bows were not significantly better than wood bows, we would have no chance,' says Müsing. 'They look quite different and people are not used to them. If they did not offer a significant improvement, we would be nowhere.'

Others, however, are more pragmatic. Ma Rong-Di of Maestro Archetier says: 'Our Peccatte bows are able to surpass average pernambuco ones and are comparable to those made of a great piece of pernambuco in certain aspects of performance and sound quality. But a carbon-fibre bow will probably never surpass a wood bow in aspects such as elasticity, flexibility, responsiveness, balance, sound quality, artistic and historical value.'

Prier of Jon Paul Bows agrees: 'There will always be traditionalists and as long as there are great pernambuco bows, they will set the standard. But the fact remains that wood bows are very fragile – if you are going into an opera pit, playing outdoors or teaching young children, you don't want to do it with a $30,000 bow. But you still have to have a good-quality bow to create the right sound, and that's where synthetic bows come in. I would not say they will ever overtake wood bows, but if the restrictions on pernambuco continue and the market is not opened up again, I don't see any other way.' ■

THE PLAYERS' VIEW

Four players who regularly use carbon-fibre bows explain what convinced them to make the switch

CHRISTOPHE ROMIEU

The French freelance orchestral musician performs with groups including Ensemble Henri Tomasi and Les Archets du Roy René

My carbon-fibre bow is now the principal one I use, in any situation: I use it for all kinds of repertoire (Baroque, Classical, Romantic, modern), in symphonic and chamber orchestras, and for modern popular music and jazz. It's very light with a quick response time and a solid, full sound – there is almost no peripheral noise, even high on the E string. It's sensitive and solid at the same time, which is surprising. Since I started using it, I have experienced less fatigue in my arms, even after long orchestral sessions, and my tendon and wrist problems have decreased dramatically. For a wood bow with the same acoustic properties, the price would be about three or four times higher.

ROMIEU PHOTO SOPHIE VERNET

ANDY STEIN

Best known for performing with US country rock band Commander Cody and His Lost Planet Airmen, the American violinist and saxophonist works mainly in jazz and pop. He also freelances in chamber and orchestral groups

I play in an eleven-piece jazz band and although I use a microphone 75 per cent of the time, I can be heard adequately without it because the bow gives such a clear, full sound. It seems to match the violin I use for these gigs very well, but I have also used it with my 'classical' old Italian instrument. And I don't have to worry about breaking the bow.

JONATHAN STORER

The British violinist is a former member of the UK's Royal Northern Sinfonia. He is now professor of violin at the University of Trinidad and Tobago

With carbon-fibre bows you can pretty much guarantee there are no inherent quirks. You can use your arm as it's supposed to be used, rather than having to adapt to the idiosyncrasies of the bow. They are particularly good for Baroque and percussive styles of music – they're very strong and manoeuvrable, light all over and well balanced. I now have three carbon-fibre bows, and lots of my students buy them – they are unlikely to get anything of remotely similar quality made of wood for the same price. The bows are particularly useful in the heat and humidity of Trinidad and Tobago.

BENEDIKT BRYDERN

Based in Germany, the violinist, producer and composer works in both jazz and classical music

I first started trying carbon-fibre bows in the 1990s. I was using a hundred-year-old Sartory bow but I didn't feel comfortable travelling with it and playing outdoors or under extreme conditions, so I looked for an alternative. The playability and responsiveness of carbon-fibre bows weren't too great during those early years, but they have improved a great deal. Because I play a lot of jazz, I like the slightly 'edgier' sound that carbon-fibre bows give. But the Sartory still rules in terms of immediate response to subtle changes and demands, either for short strokes or legato lines, and I use it in most indoor concert halls. It really depends on one's playing style and daily use.