

ARCTOP GUITARS – A PLAYER'S PERSPECTIVE

Phil Lewis

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INTRO

A few years ago I was feeling frustrated with my Heritage Eagle. I'd been in the studio tracking the *Bitter Suite* album and, upon hearing the playback, I was miffed. In spite of countless tweaks and modifications, the guitar had a slew of sonic and playability issues that I was powerless to correct.¹ It was a decent ax (carved spruce top, mahogany back and sides), and had served me well for uncounted gigs, but its limitations were beginning to cramp my style. I knew it was time to move up to a better instrument, and I figured that move was going to cost me. But I wasn't sure what I needed and what I would need to spend.

I played a few guitars and poked around the web to see what was out there. I found a multitude of L-5s and ES-175s, a number of "production" archtops from the major manufacturers like Gibson, Heritage, Eastman, The Loar, Ibanez, and Yamaha, and also guitars from various independent luthiers. Prices ranged from less than \$2000 to upwards of \$10,000. It was, quite frankly, overwhelming. I was bewildered by the subtle variations in archtop designs. What were all these guitars about? What did they have to offer? And, more importantly, how did their differences translate sonically?

To answer these questions I set about reading everything I could find on archtop guitar history, design, and construction. I talked to dealers, luthiers, and other players. And, as you might expect, I played a lot of guitars. Over time I developed a sense for different archtop guitar designs and the musical idioms to which they are best adapted. It took a while. But eventually the reasons behind the differing designs began to make sense and I developed a theory that most archtops fall into two categories which I like to call the Acoustic and Electric styles.

ARCTOP DEFINED

Archtop guitars are set apart from other guitars by their arched tops and backs, similar to a violin, which are typically ported with f-shaped soundholes.² They have hollow bodies, usually between 16 and 18 inches at the lower bout and three to four inches deep, and are known for their purity of tone and wide dynamic range.

Because the guitar's arched top must withstand the considerable downward force applied to its "belly" by the strings, the underside of the top is reinforced with wooden braces. The size, shape, and placement of those braces has a considerable effect on the tone. Most contemporary archtop guitars are braced with an "X" pattern.

1 These included refretting, replacing the pickup and nut, adding a tone control, etc.

2 Other soundhole configurations may also be found.

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Without question the majority of archtop guitars today are played amplified, so the instruments we'll be discussing are all equipped with pickups. Even though some are superb acoustic guitars, all are realistically intended to be heard through an amplifier.³

Another important distinction can be made between a true archtop and a "semi-hollow" design. Unlike a true archtop, semi-hollow guitars (of which the Gibson ES-335 is probably the best known) have a center block running through the body. Semi-hollows are extremely resistant to feedback when amplified, and a good deal of the guitar's tone comes from that center block rather than the acoustic chamber which surrounds it. This is easily illustrated by playing a semi-hollow guitar unamplified -- it sounds much closer to a solid-body instrument. The tops of semi-hollows are usually arched, leading them to sometimes being classified as "archtop." But for purposes of this discussion semi-hollow guitars are not considered archtop guitars.

Archtops were in the hands of jazz guitarists early on and have remained the preferred instrument of jazz players. The rich harmonies of jazz and similar styles are best showcased with a clean amplified tone (i.e., distortion-free) where all the notes of a chord are discernible, and archtops are known for that big tone that is full and satisfying when played clean. Their wide dynamic range makes for excellent definition when played at any volume.⁴

ELECTRIC VS. ACOUSTIC

Archtop guitars seem to fall generally into two broad categories, which I refer to as the Electric and Acoustic styles. As their names imply, each style is intended to optimize different characteristics of the instrument and to address the demands of different musical applications (or "gigs" as we musicians like to call them). Although a majority of archtops can be categorized this way, there are also hybrid designs which we'll consider later. For now, let's keep it simple.

The Electric style aims for a guitar that's optimized for amplification. Think Pat Metheny. His Gibson ES-175 is a prototypical Electric-style archtop. It's designed to be played almost exclusively through an amplifier. As a result it sounds great amplified and not so good acoustically.⁵

3 For most of us jazz players, acoustically "chunking" away in the rhythm section has become at best a part-time occupation.

4 This hardly an issue with distorted guitar where the sound is, by definition, clipped and therefore of limited dynamic range.

5 Metheny's acoustic guitar of choice being a flattop.

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In the other camp, the Acoustic-style archtop privileges the acoustic voice of an instrument. Howard Alden's Benedetto 7-string would be a prime example of that design approach. It's designed, first and foremost, to be a great-sounding acoustic guitar.

ORIGINS

For much of the guitar's history the universal problem has been getting enough volume out of the instrument. In the early 20th century guitars were growing in popularity, and more bands sought to add a guitarist to their lineup. But the acoustic guitar is not a particularly loud instrument. And in the days before amplification it was difficult for a guitar to cut through a large band, especially a jazz ensemble replete with brass and drums.

Guitar makers had been working on this problem for a while. Orville Gibson's solution, dating from around the turn of the 20th century, had been to apply European violin-making techniques to guitar luthierie. Instead of sawing the top, as with a flattop guitar, he began to carve the tops and backs of his instruments from solid wood, arching them outward, like a violin or cello. This increased the instrument's resonance and hence its projection. Later a Gibson Co. engineer named Lloyd Loar took this concept to its logical conclusion by adding the violin's floating bridge and tailpiece, along with its dual f-holes, to his new guitar design. These innovations allowed the guitar's top to vibrate even more freely. Then he began bracing the top in a parallel pattern which made the tone more incisive.⁶ The result was the Gibson L-5, released in 1923, and the beginning of the archtop guitar we know today (and also of what I call the Acoustic style).

But players wanted more volume. So in the 1930s builders started adding magnetic pickups to their instruments, allowing them to be amplified.⁷ Later, in the years following WWII, much more powerful amplification became available. Where the first generation of guitar amps produced 5 or 10 watts of power, these new amps were packing 40 or more watts on tap.⁸ And with big watts came a new problem: big feedback.

No surprise, a highly-resonant guitar is highly susceptible to feedback when amplified. Suddenly the high resonance of a carved archtop guitar became a drawback. Luthiers now had a new design priority: the making of an archtop guitar that was *less* resonant. Gibson was once again at the forefront and, in 1949, they released a guitar with a

⁶ Gibson continued to use parallel bracing on the L-5 except for a brief period in 1934 when they switch to X-bracing.

⁷ The first commercially available electric guitar, the Gibson ES-150, was released in 1936.

⁸ Leo Fender's Dual Professional 40-watt amplifier was released in 1946.

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smaller, laminated (i.e., plywood) body: the ES-175. With the ES-175 the next stage in archtop development began, what I'm calling the Electric style.⁹

THE ACOUSTIC STYLE

The Acoustic-style archtop is, quite simply, a fully acoustic archtop guitar outfitted with a magnetic pickup. These guitars are highly resonant due to their carved tops and backs, making for a magnificent playing experience. A well-carved archtop responds to every nuance of a player's technique. Played softly, the notes ring clear. When addressed more aggressively, the notes jump out, and the upper limit of the dynamic range seems almost unattainable. At low volume the sound is never muddy or, at high volume, compressed. Carved guitars produce a complex, "woody" tone with a punchy attack, and just minor variations in picking technique produce a broad spectrum of colors. When amplified, the carved archtop's true power is fully unleashed, and players are able to truly exploit the wide dynamic range and excellent note separation they offer.

Thus the Acoustic-style archtop is very well-suited to traditional and finger-style jazz where the overall volume level is low, the dynamic range is wide, and the subtle nuances of the instrument can be clearly discerned. Here are some of the important characteristics of the Acoustic-style archtop.

Carved tops and backs. Guitars in the Acoustic style feature tops and backs which are carved, typically from a single block of wood which is split and then glued together along the edge.¹⁰ A solid, carved top is highly resonant; it vibrates freely to amplify the frequencies produced by the strings. By hand-carving the top, back, and braces, a competent luthier is literally able to tune the guitar to emphasize desirable frequencies and de-emphasize undesirable ones.¹¹ Spruce of either North American or European origin is typically used for the top because of its strength, light weight, and pleasant overtones. Maple is the most common tonewood of choice for backs and sides.¹²

Carved wooden bridges. In most cases one finds the Acoustic-style instrument fitted with a bridge carved from a very hard wood such as ebony or rosewood. In all cases the bridge floats -- meaning it is not fixed to the top but is held in place by the tension of the strings.¹³ The bridge's main job is to transmit the vibration of the strings to the top as

9 The full realization of the Electric style actually came later with the advent of solid-body guitars.

10 This technique is known as "book-matching."

11 This is known as "voicing" the instrument.

12 Tonewoods are graded on their acoustic and visual properties. For more information, see [...]

13 One of Loar's innovations with the Gibson L-5.

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accurately and completely as possible. Therefore it must be very rigid but also light. Excess mass in the bridge absorbs energy and colors the sound. The low mass-to-rigidity of select hardwoods makes them well suited to this purpose. What's more, in carving the bridge the luthier possesses yet another tool (albeit a subtle one) by which to "dial in" an instrument's tone. A tunable metal bridge has the obvious advantage of its individually adjustable saddles, but many players favor the sound of a carved wooden bridge believing it sounds, well, "woodier."

Floating pickups. Most contemporary archtops in the Acoustic category feature a single, "floating," mini-humbucker in the neck position. A floating pickup differs from your garden-variety guitar pickup in that it is not fastened directly to the top. Instead it is affixed to the neck or pickguard and "floats" just above the top. This allows for a bit of space between the guitar's top and the underside of the pickup, preventing the pickup from interfering with the free vibration of the top. John D'Angelico was one of the first luthiers to recognize the advantages of this configuration and it's one of the reasons his instruments have become the stuff of legend.

In hand-carving and tap-tuning the solid top, guitar builders expend great effort to ensure the top is as resonant as possible. Fastening a pickup directly to the top impedes vibration due to the pickup's weight and the mounting hole it requires. Luthier Bill Moll has gone so far as to say,

"[...] I think it's a waste of the client's money to take a perfectly wonderful, and expensive, piece of solid spruce, delicately carve it, voice it, and hand tune it, then cut a big hole in it and screw down several ounces of iron to it."

But, you ask, what about all those great-sounding L-5s and other carved archtops with top-mounted pickups? Well, let's just say that the sound of a guitar is greater than the sum of its parts and, if properly compensated for, a top-mounted pickup can sound superb on a carved guitar. But many players prefer the more "acoustic" sound of a floating pickup, and that's what you'll find on most contemporary Acoustic-style specimens.

The usual configuration is a single pickup in the neck position. A mini-humbucker is generally selected for this purpose because its light weight does not require much support, and its small size does not detract from the visual appeal of a beautiful carved top.¹⁴

14 Personally, I'm not a huge fan of the mini-humbucker as I find it typically has a sound as small

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Pickguard-mounted controls. You will rarely find electronics mounted in the top of an Acoustic-style archtop. For the same reasons that many luthiers use floating pickups, one will generally find the volume knob (and tone control, if present) mounted on the pickguard. The output jack is usually hidden in the end-pin. If you see knobs on the top, you're probably looking at an ax of the Electric variety.

Needless to say carving and tuning an archtop guitar is tremendously labor-intensive and carved guitars garner prices that range from just plain expensive (around \$4,000 for an imported Eastman ax) to jaw-dropping (upwards of \$20,000 for a top-shelf Benedetto or similar hand-carved instrument). Additionally, many independent luthiers and small shops have waiting lists exceeding 12 months. There just is no way to rush the handcrafting of a fine carved guitar.

THE ELECTRIC STYLE

Electric-style archtops, on the other hand, are optimized for amplified use. They are intended to be heard almost exclusively through an amplifier and can often be amplified to considerable volume before feeding back. Although many have weak -- even I daresay, pitiful -- acoustic voices due to their less resonant design, they can sound fantastic when properly amplified. As a result, Electric-style archtops are very useful in louder situations, not just jazz but blues and rock as well.¹⁵ Today, the Electric style is definitely the more popular of the two. Let's move in for a closer look now at the significant features of guitars in the Electric category.

Laminated bodies. The reduced resonance of the Electric-style archtop is achieved mainly by fabricating the body from laminated woods, and often by reducing the body size as well. The ES-175, for example, measures 16" at the lower bout (compare that to the 18" bout of a Gibson Super 400). Occasionally one may find a laminated 17" body, but this is somewhat self-defeating. Most makers strive to reduce the amount of air inside the body and smaller, thinner bodies abound in this category of guitar. A smaller body constrains the tone of the instrument somewhat but it helps arrest feedback -- the idea being that a good amplifier will add a bit of color back into the sound and it will all come out a wash. Less resonance also translates into the production of fewer overtones, and a somewhat more limited range of dynamics. This is the trade-off with a laminate guitar.

as its profile. I tried about four different ones on the Eagle before settling on a Kent Armstrong floating PAF.

¹⁵ Lest we forget Steve Howe's trusty ES-175, for example.

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It's a highly effective design though, and a large number of notable players favor this style of guitar. Pat Metheny's signature sound is probably the best-known example of the Electric style in action. His '58 ES-175 has become something of a holy relic.¹⁶ Jim Hall is another aficionado of the design.¹⁷

The properties of individual tonewoods are less critical when the wood is laminated and laminated instruments can be constructed from a wider variety of woods. Benedetto Guitars uses spruce for their laminated tops. Maple is another wood widely used for laminated tops, such as the Heritage H-550 or Aria's D'Aquisto Jazz Line.

Top-mounted pickups. As the design priority for guitars in the Electric category is feedback control, most of them sport a pickup mounted directly to the top since impeding vibration of the top is of less concern. Top-mounted pickups provide two distinct advantages. The first is that full-sized humbuckers may be used, which produce much higher output and a more robust tone than their "mini" siblings. Second, coupling the pickup physically to the top transmits vibration directly from the body to the pickup. This results in more sonic fullness. It's a more electric sound, for sure (closer to a solid body than an acoustic), but it gives a good measure more "body" to the amplified tone.

Occasionally you may see an archtop guitar with a laminated body and a floating pickup (such as the reissue Epiphone Emperor Regent). This is pointless, in my opinion. The only reason *not* to use a top-mounted pickup is to preserve the acoustic sound of a carefully tuned instrument. I can't see any reason to use a floating pickup on a laminate guitar other than to try to make it look like a carved guitar.

Cast, tunable bridges. It's not uncommon to find Electric-style guitars outfitted with fixed, "tune-o-matic" style bridges. There's no question of the tunable bridge's superiority in maintaining intonation (you can adjust it yourself with a screwdriver vs. a luthier having to carve it). Some makers, such as Benedetto, opt for a carved wooden bridge on their laminated guitars as it tends to add in some of the warmth and responsiveness that is lost with a laminated body.

Top-mounted controls. Drilling holes in a laminated top does not affect the tone as it would with a carved top. Therefore controls can be mounted right on the top where they

¹⁶ Metheny has long since retired the ES-175 from touring.

¹⁷ Hall played an ES-175 for many years and currently uses one of Roger Sadowsky's instruments.

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are less likely to be accidentally contacted.

These features, particularly laminated bodies and top-mounted pickups, give the Electric-style archtop a distinctly different sound and response profile when compared with its Acoustic-style sibling. These are qualitative characteristics which are difficult to describe, but I think it's safe to say that in almost all cases Electric-style archtops have more sustain and sound slightly more compressed. Damping down an archtop's resonance makes it more compatible with louder amplification, but at the price of some of its frequency and dynamic range.

Electric-style archtops are perfect companions for use with nice, beefy amps which you might use in louder ensembles, larger venues, or where adequate sound reinforcement is not available. Some players just prefer the more electric, less "earthy" sound of these guitars.

One of the best things about Electric-style guitars is the price which is often considerably less than their Acoustic brethren (it's much easier to mass-produce laminated bodies). As a result there are a number of excellent, professional-grade instruments in the \$2,000 - \$4,000 range. It should be noted that not all archtops of the Electric type are produced in a factory. Jimmy D'Aquisto was one of the first independent luthiers to hand-build laminate guitars and many of today's luthiers offer a laminate in their lines. As a result, you may find some that run upwards of \$5,000 but generally not a lot more than that unless we're talking about a vintage, collectible instrument such as a D'Aquisto or Borys, or one outfitted with top-shelf accoutrements.

HYBRIDS

Now we come to the subject of hybrid designs -- archtop guitars which do not fall neatly within the categories outlined above. One such anomaly would be carved, "thinline" guitars. These instruments have carved, arched tops and backs and reduced body width (2" or so) which makes the guitar more portable, comfortable, and less prone to feedback. The old Gibson Byrdland, produced from 1957 – 1969, is probably the most notable example of this approach.¹⁸ It has a carved spruce top, 17" bout, 2.5" depth, and top-mounted pickups.¹⁹ Many contemporary luthiers are producing similar species of instruments which are prized for their rich tone and feedback resistance.

Another hybrid would be a guitar with a carved top and laminated back and sides. Steve

¹⁸ Reissued in 1977, 1978 and 1992.

¹⁹ Also a shortened scale length of 23.5".

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Holst up in Oregon is building some guitars like this. As he puts it, his idea was to "get an archtop that was 'most of the way there' to sounding like a fully carved archtop but at a lower price." This approach can put a guitar with a meticulously carved and tuned top in your hands for around \$4,000. A production guitar with this configuration is the Eastman AR503CE which retails for \$1,250.

Tom Ribbecke's Halfling guitars present an interesting design choice. The Halfling's top is arched on the treble side and flat on the bass side. These instruments sound amazing. The low end is huge without being boomy, making it perfect for finger-style and/or solo playing. When I last checked they were selling for around \$7,500.

Although you can find plenty of examples of "pure" Acoustic- or Electric-style archtops out there, there are probably as many variations of the basic design as there are features to be tinkered with. With independent archtop luthierie on the upswing I expect we'll see many more creative and unusual design adaptations to come.

ROUND-UP

Archtop guitars were originally selected for their superior volume and projection, resulting from the uninhibited resonance of their bodies. This the essence of the Acoustic-style archtop. When powerful amplification became the *de facto* standard, guitar builders tried to damp down some of that resonance in exchange for feedback control, hence the Electric style of archtop. What both approaches share is full tone, excellent note separation, and good (or great) dynamic range -- qualities that have endeared them to jazz players right up to the present moment.

But archtops are not limited to jazz. You can see them popping up quite a bit these days in traditional American ensembles (remember Mother Maybelle Carter's L-5?).²⁰ And let's not forget their role in blues and R&B. If you have a penchant for clean tone, I highly recommend test driving a few archtops to see if they can bring new dimensions to your playing and your sound.

As for me, most of the playing I do takes place in small clubs, private residences, or studios, so I rarely find the need turn the master volume on my Evans up past 3. What I wanted, first and foremost, was an instrument that inspired me. I like definition in the sound and tend to emphasize dynamics. These are some of the reasons why I decided to custom order a hand-carved guitar from Canadian luthier Peter Hopkins. Sadly, it was

²⁰ Maybelle's L-5 recently sold for almost a half-million dollars and is now in the Country Music Hall of Fame.

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damaged in transit by the carrier (UPS International) and had to be returned to Peter for repair. Two and a half years later, I'm still waiting for my guitar. In the meantime, I'm making due with the Heritage.