

John Logan, Artist Blacksmith



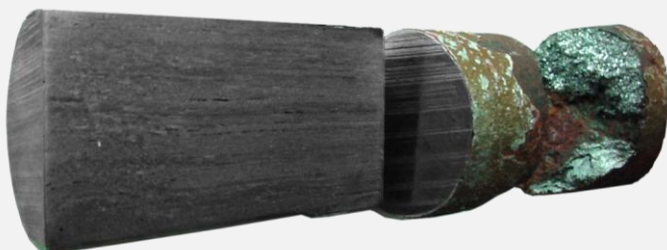
John Logan's Wrought Iron Phoenix

In restoring historic metals I've had the opportunity to work with wrought iron, a metal I had no experience working with as a steel fabricator. Wrought iron is a metal no longer produced on an industrial scale, yet for centuries it was used in most metal structures before steel was produced in large quantities. Steel, with its greater strength and unique properties, made wrought iron obsolete. Today wrought iron can only be found in historic metal structures, much of it in historic metal truss bridges. Unfortunately these wrought iron structures are disappearing fast. Wrought iron today is the least understood metal, and many nineteenth century structures such as bridges are often recorded as steel in official government documents. Today wrought iron, the material, is confused with lawn furniture and other items made of steel, steel shaped ("wrought") by hammering with tools.

Producing wrought iron was labor intensive and time consuming. The process began with charging a puddling furnace with pig-iron. (This process is described by James J. Davis in "The Iron Puddler.")

A. M. Byers Company in Pittsburgh, Pennsylvania, was one of the last mills to produce wrought iron. In the book "Wrought Iron: Its Manufacture, Characteristics and Applications," published by the company in 1939, the metal is characterized as follows: *"Wrought iron is best described as a two-component metal consisting of high purity iron and iron silicate-a particular type of glass-like slag. The iron and the slag are in physical association, as contrasted to the constituents of other metal. Wrought iron is the only ferrous metal that contains siliceous slag."*

To illustrate these distinctive elements of wrought iron I asked the artist blacksmith John Logan to create a metal sculpture from a section of 1880 wrought iron. Logan is a journeyman artist blacksmith in Eaton Rapids, Michigan, who has been blacksmithing since the age of twelve and has met all the requirements of the Artist Blacksmith's Association of North America (ABANA). In talking about the making of the sculpture, Logan says: *"Wrought iron has a grain structure much like wood. You push it far enough you can get the grain structure to separate. Knowing that, I wanted to do that..... so that you can actually see the grain structure."*



1895 wrought iron round bar, etched and polished to reveal the strands of iron and slag




Wrought iron bar that was heated and the iron silicate hammered out.

Logan worked with several ideas to bring out the grain structure and create a sculpture that would *“blossom an organic design into art, which I push the material into doing. Playing with the idea of what actually to do, I came up mentally with the idea of a phoenix, playing with the wing shape, the bird shape. I went through a couple different forms and forge welded and did a whole bunch of things. This is the third system that I found and I really like it.”* Laird & Lee’s Webster’s New Standard Dictionary, 1922, defines Phoenix: “fabulous bird said to exist 500 years single, to cremate itself, and to rise again from its own ashes.”

To create his Phoenix, Logan began with a piece of wrought iron bar from a bridge built in 1880 by Penn Bridge Works, Beaver Falls, Pennsylvania, left over from a restoration project at the Calhoun County Historic Bridge Park where parts from the bridge were used to complete the restoration of the Bauer Road Bridge. As you listen to Logan explain his work, you realize that there were two events happening during his creation of the piece: the physical work of making the sculpture and the mental play as each feature was hammered and forged into his Phoenix. As Logan began his work he incorporated an idea from one of his instructors at Penland School of Craft. *“My favorite teacher Marc Maiorana showed me to always leave something you began with. Whatever you’re forging you don’t totally forge it into something else. You can start with a one inch bar and forge it down to a quarter inch square but no one can see the difference between the forging practices. If you leave a little bit of that one inch bar you started with that shows the magic you went through to create what*

you finished. So in this piece this bottom bar in the concrete is the original material unaltered. I upset and polished the ends. The center of it, seven eighths by two, is unaltered material.”

Logan hot punched the two wrought iron bars that formed the base and drove a square ended punch through them, removing a chunk of metal out of the center. After he used a punch and drift tool, a harder piece of metal shaped the same way his finish mechanical joinery, he inserted wrought iron wedges in the holes.



A section of the original wrought iron bar *“shows the magic you went through to create what you finished.”* John Logan

Logan sees a connection between work in iron and in wood. *“No power hammers, all hand work, and rivet and wedges much the same as wood working. The first iron bridge in England if you look at it looks like they timber framed it even though it’s out of wrought iron.”*

Logan's approach to forging the body and wings of the Phoenix was to push the wrought iron to its limits until it fell apart and then *"from the ashes from it falling apart making it into a bird."* From the original seven eighths by two inch bar, the wings were hammered out to less than a quarter inch. *"These wings are made with that same material. So you can see now their three sixteenths thickest part going down to about one sixteenth. Probably their widest point is close to seven inches, so you can really see how much force how much work I put into pushing this around using a power hammer."*



For an artist the unexpected discovery of something unique during their work can only occur during the unscripted process of a handcrafted idea. For Logan it was the unexpected red patina.

"You can see the bird is red . . . it was totally an accident. After forging I wanted to show more of the grain structure. Something you can do is etch the wrought iron, soaking it in acid and the acid attacks the silica slag. I scrubbed it with an acid soaked rag for about two hours. It wasn't showing anything so I set it off to the side to let dry. When it dried it created a white, yellowish powder across the whole surface. Later, thinking about the bird and looking at it, I decided I wanted to tweak the head just a little bit. It's a little slanted, I wasn't happy with it. I stuck it in front of my forge the best I could just to heat the area around the head which heated all of the rest to probably 500 to 700 hundred degrees and the white powder turned bright red. I called Marc Maiorana to ask him about it. 'Well, I've heard about pickling wrought iron. Red, I've never heard of it.' So he had never heard of it before so I just waxed in into place."

Wrought iron has many unique qualities. For metal artists and blacksmiths these provide opportunities in art unavailable in steel. John Logan's *Phoenix* itself is special, but it is the idea, the craftsmanship, and the narrative of these events that make the piece complete.

More of John Logan's art can be seen on his webpage: <http://www.myspace.com/ironjohnsironwork>



Logan with *Phoenix* at his blacksmith shop in Eaton Rapids, Michigan



Logan's *Gnosis* forged iron and copper displayed at Lansing Community College



Logan's *Gnomon* iron and stainless steel displayed at Lansing Community College