Rehabilitation of Shippensburg University's Old Main Fountain by Gabriel W. Harrison and T. Scott Kreilick

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Church: Alright, so our next talk is Gabriel Harrison. Gabriel is currently a Senior Conservator at Kreilick Conservation. Gabriel maintains his own private conservation practice consulting outdoor sculpture conservation projects. Some of his work includes historic metals conservation for the Winnetka Cenotaph restoration and architectural metal conservation for the Museum of Science and History in Chicago. Gabriel began working as a conservator in 1997 with the Chicago Parks District and since has contributed to over fifty significant sculpture conservation projects. He holds a BSA in Sculpture from the Maryland Institute College of Art and a longtime associate of the AIC.

Harrison: Thanks for having me. I'm here to talk about a J.W. Fiske fountain that we restored last year mentioned in the last talk. It's actually kind of an extension of the last talk because she did mention about cast iron fountains and this is a cast iron fountain from 1896. We were the conservators and the general contractor for the project, Kreilick Conservation. We worked with the Robinson Iron Company in Alabama. They essentially did all of the hands on work with the iron including coming to the site, removing it from the site, and doing all the coating work under our direction.

Masonry and plumbing was addressed over there by a company called Outer Spaces. They are actually a very modern pool maker. They do custom pools and they're working with very modern plumbing and filtration systems. And then we had some analytical work done by Keystone Preservation Group in Pennsylvania and last week we were notified that the State

of Pennsylvania recognized that project as a recipient of a construction award from the Preservation Pennsylvania so we're happy to show that.

So essentially, this is the oldest photograph that we have of the fountain. It was donated by the Class of 1896 to the school. I think it cost $8000 back then, which is an equivalent of $100,000 now, or something like that. So this is one of several photographs that the university has in their library of the fountain from around that era. So this is the anecdotal evidence or photographic evidence that we have of what it once looked like. Let's see, so this is what it looked like in 2011 when we went to do our first assessment of the fountain. So the most notable thing that I noticed when I saw this fountain for the first time was, well I hadn't seen the old photograph so the first thing you would notice is that it's completely monochrome painted but what I noticed was the color of the pool, swimming pool blue basically, and in the black and white photo you can see it wasn't like that. Basically these were the outstanding, from a distance sort of things, and then as we get closer to the fountain and we looked, we find that all these intricate details of this Victorian sort of sculpting is completely washed over by thick dripping layers and layers of paint. It was the school's practice to maintain the sculpture by completely over painting, every year come in and paint it off white again and again and again. So the pool was the same way. You can see in the back there's a small section that's been cleaned off but it's probably just peeled off because when you go in we found, we could pick up a piece of blue paint that when you look at the side, you see the striations of various tones of this pool blue color and also all the walls on the interior are cement and they're all lined with these drawn in lines of clear silicone caulk and you can see that they've been trying and trying to keep this fountain functioning even though it was proved not to be right.

So the problems that the university wanted to repair were the leaking of water was pretty much their highest priority because they were losing a lot of water. Typically they would just feed the water into the fountain when they filled it up for the season and then ideally a small amount of water would be added as the water is lost to evaporation or a little bit of sense of water function is up in the air the wind would blow some out on a strong windy day. But they were losing a lot more than they anticipated and they were just gushing water in from their system to the pool.

The over painting became a problem . The fountain just didn't look good. After awhile this process of continuously over painting, even the guys who were over painting it weren't happy after they were done. And you know we have the alligator skinning paint and all types of different stuff on there. Anyway, they wanted to find a way to not have to do that and the iron was really starting to stain through the paint. The chlorine in the water was helping this corrosion process so the water treatment and they actual pump system from the water was completely outdated. Typically a tank holds a quantity of water to back up the pump system and that tank was basically a rusted steel container that was on the verge of completely failing itself.

This is our first time seeing the masonry structure underneath the cast iron wall. Essentially, all of the outside of the pool was lined with cast iron wall with urns and sort of corner sections holding up the twelve sides of this thing. So when we opened it up we discovered that it's actually a brick structure inside the wall and you can see on the right, there are gaps in here and holes. The concrete in the walls is not consistent so you have a lot gaps there where water is going to definitely find its way out if that splash coat on the inside of the pool were to crack, it would just flow right out. So here's the fountain after we removed all of the cast iron. Clearly crumbling away, you can see in the back, just removing the cast iron from the structure, the wall is broken back so this is obviously something that we wanted to update and modernize. We didn't particularly want to replicate this situation because obviously the guys who put this in in the first place had a hard time making a consistent wall, a consistent pool inside the cast iron wall. It's a challenge to sort of do that. One thing I want to just point out in this picture is at the very bottom of the brick wall, you have this gray stone. These are field stones or a

type of limestone native to the area in central Pennsylvania there. Some things we wanted to replace and change which is the way they built these walls; some things we wanted to keep the same, which is the layout of all the stonework. So all of these stones that you can see at the very bottom were taken out and catalogued so that we could put them back exactly where we had them, so everything that was visible from the fountain before we got there is back where it belongs when we leave.

Another thing that's notable is the platform in the middle, the plinth where the main water feature stands on top of, you can't see it in this picture, but the whole pool was built and cast around this plinth. This stone wall, the plinth goes all the way down into the ground so it interrupts the flow of the pool. The pool flow isn't consistent. It has this sort of column through it and there's actually a hole through the metal so water is actually going down, this is serving as a type of drain, so when the water comes and was leaking into the cast iron feature, it was going right out and into the ground and not into the pool as it was designed to do.

So that gives you a little overview of what we found there. Here's a great picture. In 1961, there was a campaign to restore this fountain. Here you have a picture similar to what I just showed you from 2011 and this is from 1961, the wall, it looks the same you know but when we look at this and we look at the wall that we tore down and replaced, it looks as if this was a brick too so they took it down and they put a new brick wall up. The university wasn't interested in going through that again and making a wall that was going to fail the same way as the old one was and since this was an interior structural part of the piece, we felt that ethically it was a good choice to upgrade to a more modern reinforced concrete situation so that they wouldn't experience the same kind of leaking for the same reasons.

So, what did we do? We came in like I said, we took all the stone that we wanted to retain and replaced it back where it was, we took that stone and catalogued it, palletized it, and took it from the site. We came in and we dug what's called turned down footing, basically kind of like a foundation for a cement slab, which would serve as the floor of the pool. So we came in and excavated. We didn't intend for it to be quite so deep, well deep but not quite so wide, but the ground here, whether it had been from the water flow was very soft and it was difficult to sort frame in a foundation so we did what we could here and so our turned down footing is actually much more rugged than we intended, which is actually good I suppose. That's the picture on the left.

On the picture on the right before we poured our turned down footing, we installed all the modern plumbing. This includes basically the water that's fed to the central feature, you can see that goes to the middle, the drains, you can see those off to the two sides. Those are drains that come into another PVC pipe that leads out of the fountain. We have a new skimmer which is the one that's poking up closest to me. That's a new addition to the pool to help them maintain and clean the water so that they don't have to do it. It just didn't have it before and it helps to keep the water clean so that people aren't trying other techniques like adding chemicals or what have you. It will help them to clean the pool. And then we have some other things like an access, an extra drain and PVC conduit for a 12 volt submersible lighting. So we installed all that and of course the rebar grid to stabilize the concrete. So here's the turned down footing being poured on the left and on the right so it ended up being a lot of concrete. After this turned down footing, then they reset the skirt stones, which are the ones that go around the sidewalk area and then poured the pool floor directly inside of that.

Essentially after the floor was poured and it was poured solid, we decided with the university that we had to make a judgment call, something between conservation of the stone portion of this fountain and the conservation of water that they were hoping to do. So we eliminated the column jutting through the base and into the ground and we poured the floor of the pool completely solid so that you have a containment of the water, you don't have this drain in the middle. On the

left you see that we installed the entire cast iron wall. The wall was actually supported by the masonry structure so we put it into place, connected the entire wall together and then we have our rebar, on the left you can see the rebar that comes from the floor. So essentially, we put a polyethylene sheeting to line the cast iron and then once that was all set up, we built a wooden framework and used that to level the shelf of the cast iron and with that we poured the concrete, we shot the concrete into this as a sort of mold or form mold so that the wall would be continuous and instead of the brick construction, now you have a cast concrete solid construction cast directly onto the pool floor, so you have this seamless construction.

After that was done, we basically waterproofed the entire floor and the walls with one continuous layer of Kerabond waterproofing which is a cementitious waterproofing material that is essentially wax coat or a thin layer of cement that's applied to all the cement surfaces. The result from that was that the interior of the pool looked exactly as it did when they had a brick wall with a splash coat of cement on there as it did before but now it has a more solid construction. Also, along with the university we chose not to paint this blue because the historic photographs and the aesthetic of the people at the university was to keep it in more of a natural cement color so that the water would look more like it did in the photographs, a dark sort of reflecting pool without this.

Here they are removing the forms. You can see the skirt stones are back in place. What we did is we took the top three tiers where the stone originally came out of the pool floor; we actually took those two tiers and sawed the bottom layer so it sat exactly as it did from the floor originally. So visually everything is looking just as it did but now you have this water retention of the pool instead of losing it down that shaft. As a side thing, the top stone for the base is actually one giant stone that when we started the process, we knew that it had to have had cracks through the entire thing. There are different ways to address that and so our conclusions were to place the stone back into a mortar bed as it was and address the crack after it was placed back in because it was so big and there is actually a square hole in the middle. It could have been addressed in many ways but we chose to do it this way because you have this being held together in this mortar bed. So what we did is after we installed everything and had it leveled and everything was true, we filled these cracks with an injection mortar, Jahn M-40 injection mortar, so that we wouldn't have any cracking from water freezing. Okay so that was the pool.

The color scheme was another one of the university's priorities. They didn't know what color they were dealing with here but with the original photographs, they were certain that they had this multicolor situation. Another historic photograph, it's actually a hand painted postcard and we can see the color again. We can't use this really as reliable evidence but it did lead us to believe that this wasn't just black and white. It looks like it has some green or something and anyway this is the sort of evidence we had so we had to go find more and better evidence. Here's all the iron from the fountain after it's been disassembled. It still has the off white paint on it. Robinson Iron had this in their facility and they tried as best they could to find any evidence of original paint but they weren't sure that they were able to do that so I went down there with a conservator's eye and went right into the nitty gritty you know and nitpicky and found some of these pieces.

It seemed as if the central feature had not been completely disassembled in the sixties. So when we took off some of the smaller elements, we could see where the elements were still stuck together kind of that there was evidence of this green and this red from something and so we actually harvested samples from here to be analyzed. Using microscopy, this is keystone methods of trying to discover paint colors that we wanted to use to recommend to the university. I'm not in the analytical business, so I actually wrote these down from what they had given me but essentially this is visual. They're showing us several layers of paint that they found here. You can see that the colors on the left F2, is this green color; F3, you know we're seeing these striations and they are detecting this green color but what I wanted to say about this slide

was this was very helpful when I was trying to explain to the people at the university that their maintenance process of over painting instead of properly cleaning and touch up painting was trapping these contaminants in the paint layers. So what they were thinking they were doing was adding an extra layer of protection but what they were really doing was undermining every layer of paint that they put on there and creating more of a problem. So it helped us to convey to them that what they want to do is proper cleaning, touching up the paint where they have problems and less is more and they received that well.

So basically what we found was that the reddish brown color that was at the bottom most layer. We didn't find that on the rest of the fountain. Maybe I didn't say that the entire fountain had been sandblasted. We found these colors only in those hidden areas. So we found the red color at the bottom most, the green color and the bright white color were the second most layers and then all the substantial layers , all the layers after that were all this off white color and they were pretty consistent with the off white color. They'd been painting it for sixty years or so. So we used these colors and we offered them to the university as evidence of the original colors and when I presented them with this, the red didn't really spark anything for them, it was the primer so no one would have seen that anyway, but the green, they told me that, "Oh, that's why everything in this building is that color." Because probably when they had the fountain painted originally, this was the color. This was the color of the university and probably when they installed the fountain originally they said, "Well we want the university color." So anyway, we had the evidence. They took it for what it was worth and they decided to go with that.

Keystone provided us with the Muncell chip color from their analysis. We used that to basically have a paint company mix the color for us and I'll talk about that in a minute. So our painting process started with a zinc rich primer. Essentially this is a paint that has 60% solids of zinc in the paint. It works as a sacrificial lamb and basically the zinc …okay so you have the zinc primer and then we went with another primer and then we essentially mapped out the color for the Robinson Iron Group. First we painted the entire thing with the Endurashield, that's a urethane topcoat and then they did the green and here you go. That's' the finished job. I actually had a lot more to talk about but I've run out of time. Sorry about that.

Church: I think we have time for one question.

Unknown: I just wondered if the perimeter of the basin hadn't been really painted to be the same color as the stone. It looked like that on the postcard.

Harrison: Yeah, well it did look like that on the postcard. It was a hand colored postcard. What we did was we took the stone, we pulled it off and we used the Muncell chips. We actually had a book of Muncell chips and we brought them there and the representatives from the university along with us, we looked at the chips and we tried to match the color of the stone and the thing is, the stone before had been cleaned and had a very light color. And then after the process it had been cleaned and some of that sunbaked, let's say, lightness of the stone had gone away and had darkened. So what will happen is those stones will lighten and match the color. That was maybe during the process. Maybe one of the things that everybody wishes is that we had chosen a slightly darker color for that but ultimately they were happy with it.

Unknown: And there weren't any paint remnants around the perimeter because of the rebuilding of the wall. I mean you couldn't find any paint chips there?

Harrison: No, no, from the original?

Unknown: Yeah.

Harrison: No, because they had intervened before, so everything had been blasted away.

Church: Thank you. He will be around.

Abstract

Cast iron fountains are very susceptible to corrosion in their aqueous environments. Due to the high level of maintenance these fountains can require, they often fall into disrepair. Such was the state of the subject of this restoration: The "Old Main" Fountain. Fabricated by J.W. Fiske, the "Old Main" fountain was given to Shippensburg University as a parting gift of the graduating class of 1896. It was dedicated during Class Day Exercises on June 30, 1896, where "speeches were given, poems were read and class songs were sung."

The multi-tiered cast iron fountain has functioned as the centerpiece of the historic Shippensburg University since its erection 115 years prior to this conservation effort. Previous restorations and multiple layers of over-painting, however well intentioned, had obscured sculptural detail and exacerbated dangerous conditions, the worst being catastrophic cracks found in the ironwork, which were repaired during treatment. Also, the masonry pool walls had developed cracks and pool water was being lost to leakage.

The project entailed a total rebuild of the fountain, including new concrete footing, pool floor and walls, waterproofing, and disassembly and re-assembly of over 80 cast iron elements that make up the ornate Victorian piece. The conservation treatment undertaken was designed to stabilize the cast iron elements and provide them with a zinc-rich corrosion inhibitive coating system. The masonry pool was reconstructed and updates were made to the plumbing technology replacing outdated and corroded iron pipes with PVC, adding a new intelligent pump system, and integrating modern water filtration and treatment to minimize biological and chemical attacks that work against the preservation effort. Also, limited historic data including black and white photograph plates and news articles indicated the original appearance of the fountain. Optical microscopy was used to discover paint colors from harvested samples in order to restore the Victorian paint scheme originally meant to define the historic gem of the Shippensburg University campus.

After conservation, the fountain stood fully restored in its original placement in front of the University's main building, and with its original color scheme. Damaged or corroded iron and masonry elements fully repaired, the lavish fountain boasted completely leak free operation, as originally intended.

Speaker Bio

Gabriel W. Harrison

Prior to enjoying his current position as Senior Conservator at Kreilick Conservation LLC, Gabriel maintained his own private conservation practice, consulting and executing outdoor sculpture conservation projects. Some of his work included historic metals conservation for the Winnetka Cenotaph restoration, and architectural metal conservation for the Museum of Science and Industry, in Chicago. Gabriel began working as a conservator in 1997 with the Chicago Park District, and since then has contributed to over 50 significant sculpture conservation projects. He holds a BFA degree in sculpture from the Maryland Institute, College of Art, and is a longtime associate member of the American Institute for the Conservation of Historic and Artistic Works.

T. Scott Kreilick

T. Scott Kreilick is President, CEO, and Principal Conservator of Kreilick Conservation, LLC located in Oreland, PA. Kreilick is a Professional Associate of the American Institute for Conservation of Historic and Artistic Works. Kreilick earned his MS in Historic Preservation with a Specialization in Architectural Conservation; and his BA in the History and Sociology of Science from the University of Pennsylvania. Established in 1996, Kreilick Conservation provides condition assessments, laboratory and field analysis of materials, emergency response and stabilization, treatment, documentation, and maintenance of architecture, monuments, sculpture, and objects; specializing in metals and stone. Kreilick Conservation, LLC has performed conservation treatments, assessments, or materials analysis at more than thirty (30) National Landmarks. The company has conserved more than 100 monuments and outdoor sculptures.

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