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CONVERSATIONS WITH CONTEMPORARY ARTISTS: DENNIS LANSON, FILMMAKER, AND GREG BOVER, C.B. FISK PROJECT MANAGER LECTURE FINDING AID & TRANSCRIPT

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Video Description

This lecture was offered as part of the Cape Ann Museum's *Conversations with Contemporary Artists* series and features independent documentary filmmaker

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Dennis Lanson and C.B. Fisk, Inc., project manager Greg Bover. They speak about the organ making process as a combination of the principles of physics and artistic sensibility within the context of Lanson's film *To Hear the Music*, which was released in 2014 and chronicles the building of Opus 139 for the Memorial Church at Harvard University. Founded in 1961 and located in Gloucester, CB Fisk, Inc., is one of the few companies in the country that designs, builds, installs, and maintains mechanical action (tracker) pipe organs and prides itself on a collaborative work environment. The video includes a short trailer that was made to introduce the film, which was still under production at the time of this lecture.

Subject list

Charles Brenton Fisk (1925-1983)	CB Fisk, Inc.
Dennis Lanson	Memorial Church, Harvard University
Greg Bover	Mechanical action (tracker) pipe organ
Shepley Bulfinch Architects	Ctesibius
CB Fisk Organ, Opus 139	Electro-pneumatic pipe organ
CB Fisk Organ, Opus 46	<i>To Hear the Music</i>
	<i>Conversations with Contemporary Artists</i>

Transcription

Courtney Richardson 00:02

I'd like to encourage you to grab our fall calendar on your way out if you haven't seen one already. We have a few great programs coming up over the next few weeks. We're kicking off a new series next weekend: Who We Are As Who We Were, Historic Businesses of Cape Ann. Bob and Kathy Ryan will be joining us Saturday, November 5 at 3:00 to talk about their distillery and to give us a little sample of their rum punch. The next Saturday, the 12th at 3pm, Peter Wood, who's professor emeritus of Duke University and author of *Near Andersonville Winslow Homer's Civil War*, will be here to discuss Winslow Homer and the Civil War. We have his book available at the museum shop. If you haven't read this, it's hot off the presses and it's very interesting. The following weekend we have an opening reception for our special exhibition, Jay McLaughlin, 55 Years of Woodworking, and that reception is free and open to the public at 3pm on the 19th. And sadly, our special exhibition: Sam Feinstein, *Evolution of a Vision*, which is

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upstairs now comes to a close next weekend on the 6th. So if you haven't seen it, try to get up there.

One more business announcement here. We have the SEARTS surveys. For those of you who don't know what SEARTS is, it's a society for the encouragement of artists on Cape Ann. We are a cultural partner with them and they have asked us to distribute these surveys at our programs to get some information for them, which helps everyone on Cape Ann get grants for programs. So if you have a chance, these are up at the front desk. So, on your way out Hannah can help you with that. Thank you.

Today we present Conversations with Contemporary Artists. This series, which began in 2008, highlights the current work of Cape Ann artists within a variety of media. We are lucky to have two artists with us today, filmmaker Dennis Lanson and CB Fisk Project Manager Greg Bover.

02:18

Dennis has been writing, producing and directing film and videos since the '80s. His award winning work has been featured on Discovery, the History Channel and PBS. He's a graduate of Columbia University School of the Arts, has taught at numerous colleges and works today as a full professor at Endicott College. Craig is Vice President of Operations at the CB Fisk Pipe Organ Company of Gloucester. Educated at Pinkerton Academy and the University of New Hampshire, he began building musical instruments in 1975. He started working with Charles Fisk a few years later. After a brief leave in '83, which took him to Germany to restore an 18th century organs, he returned to Gloucester as project manager and has supervised of design and construction of more than 30 Fisk instruments today. Sorry, period. Today Greg and Dennis will be discussing Opus 139, To Hear the Music Better, the documentary celebrating the first 50 years of the CB Fisk pipe work company of Gloucester and Opus 139, the organ created for Harvard's Memorial Church. Please join me in welcoming Dennis Lanson and Greg Bover.

Dennis 03:40

Okay. Hi, can you hear me all right?

03:45

I think there's a lot of similarity actually between making a film and building these organs because they both are considered art, or certainly I consider the building of an organ art. But they take a long time and they're involved with all sorts of other procedures; production problems, mechanical considerations, technical considerations, fundraising. So it's been interesting to be involved with this project. Let me just tell you how I got into it and then I think Greg should say a few words. I want to show you a couple of the clips we have for this Opus 139

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project, and then we can talk a bit about what's involved with making an organ. Greg is obviously the person to go to on that one.

I have a neighbor, who is the tonal director for C B Fisk. His name's David Pike. You may know him; some of you may know him. He's married to Morgan Pike who did the sculpture down on the waterfront of the woman waiting for her husband to come back. We don't know if he does or not, am I right?

05:05

And I went over to David's and he said, "Okay, well, you might be interested, as you're a filmmaker, you might be interested in doing something about CB Fisk because it's going to be our 50th anniversary." And I thought, oh great a gig! However, Fisk doesn't really believe in promoting its projects in the normal way. They are mostly a word of mouth company. They're world-renowned but they don't really do advertising. They don't do promotion. An organ takes something like two years to build. They usually have one at the beginning stages, one in the voicing stages at the end, and one in the middle that's in the process of being constructed.

05:56

They call that pace glacial. So it turned out that what Fisk really would like, would be a film like the one about the Steinway piano that some of you may have seen, Note by Note; an independent documentary. And independent documentary means, of course, lots of lots of looking for funds and lots of struggling with limited resources. The company itself has been great with us. And it's really been an eye opener in terms of learning something I knew nothing about until I spoke to David. And approaching the project, I think with a sense of awe in terms of what they do, I'd never been over there until after I spoke with David, and to just see what's involved with casting, with voicing, with all the many intricate parts of the process as has really been mind blowing for me. So what I'd like to do is show you the trailer, which will tell you more about the project than I can. And then maybe we can talk a little bit about what your interests are, just have some question and answer about the process of building an organ. But before we do that, I'd like to introduce Greg, Greg Bover.

Greg 07:26

Thank you, Dennis.

I think I'll let the organ speak for itself. But just let me welcome you all on behalf of CB Fisk, and thank you for coming this afternoon.

I don't know that we're going to have as good weather when we leave as when we walked in the door. But I'm glad you decided to brave that anyway and show up this afternoon. Organ

building has been my life. It's a great life. There's nothing like it. I was at Harvard yesterday afternoon with David Pike. And we're most of the way done with that instrument. It's been installed in the church; it's physically complete. We're now in the middle of the voicing process, which is adjusting each one of the more than 3,000 pipes to the acoustics of the building. That process will take us until Easter. So we have a ways to go. We're somewhere just south of 30,000 person hours on the job now and we've got about another 3000 hours to go; so, lots of work to do. Let me invite you now to Harvard around Easter time when the dedicatory recitals will be and also invite you to look at the CB Fisk website, cbfisk.com anytime you'd like. We also invite people to come to our shop. When we're just finishing an organ in the shop, we make and build the whole thing in the shop, make it play. And then we have a big party on a Saturday afternoon typically. Then we take it apart and ship it where it's going to go. So our next one will be sometime this winter. We don't have a firm date yet, but probably February or March. So if you're interested in that I can take your contact information today and send you an invitation when that time rolls around. But other than that, why don't we wait and see what questions you have after the documentary. Thank you.

Dennis09:42

Hello again, just a few things about the numbers. Opus 139 is the project for Harvard in the gallery of Memorial Church, Harvard Yard. Opus 46 one of these documents the last few of the Opus 46 was another Fisk organ that was at the time was the largest mechanical tracker organ in the world, I think or the United States. Was it the United States or the world? It was the largest, at least in the United States, okay, the largest mechanical tracker organ, which means that there's a direct connection between the finger on the key and the voice of the pipe. So that's, 46; 46 is gone now. It's gone to Texas, to Austin, Texas, which opened up the Palladian window there. Charles Fisk always wanted to build the organ in the gallery with the acoustics were much better. So, finally, many years after his death, he's getting his wish. Opus 139 is that organ. What you'll see here is an organ that preceded Opus 139, because we were beginning to shoot the beginning of the process. And that organ is Opus 136, which went into a church in North Carolina. So, so you're not confused. What you see at the end will be a model of the Memorial Church space, the Harvard University space with a blank wall. If you go to our website, which is www.tohearthemusic.com, you can see an updated trailer that will show you the current instrument, and that's not what you're going to see today. Okay, so it's about nine minutes and I'm sure you'll have some questions after you see it.

Video11:55

I would call myself spiritual rather than religious and this work is like worship for me. I rarely go to church, except when I'm working in one. But I know that there's more to this than just

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putting parts together. And the musical expression in the end and the way that affects people's lives and their worship is also a really special thing to be involved in.

12:37

(Music and chatter in video. Each paragraph represents a different speaker in the video.)

14:34

I think I was speechless when I see something and I was in total awe at the size of it and of the beauty of it. What has motivated me I think is to give, give generously to the church and especially to this project, is from the time I was very small even though as I said earlier, I was born in the Depression; we really didn't have much money. But Daddy said you always ought to give the money you're going to projects that you really believe in, in the church, off the top, because if you wait to spend all that money, you never had any money to give.

Video15:20

Charles was drafted into the army but was selected from this group to work on the Manhattan Project and worked first in Chicago, and then in Los Alamos and was a member of that nation team headed by Oppenheimer. They would meet as a group and they would exchange ideas and they were treated, all members of the group were treated as equals.

Respect for other people's ideas because what they're going to give you the possibility of coming up with a solution; it's just an amazing way to work. I had five years with him here before he died. And in those five years, I learned a tremendous amount, not just about organ building, but about approaching life in an artistic way with integrity

We listen to ideas from everyone. And the people in the company appreciate the fact that their opinions are valid. And it works. It's very successful.

If you have a problem, you get a bunch of smart people together around the table and talk it over. And the synthesis that comes out of that. So people have ideas, and they feel free to put them out, even if they're ridiculous. They may set off something in somebody else that wouldn't have been sent off. So we have seen, how what are like jam sessions. When we run into a problem, we have something we want to solve, just throw out ideas and people riff off of somebody else's idea just like jazz.

17:19

Enigmatic, committed, totally committed to this place and to his people. Extremely musical, incredible ear. At times a joy to be around and at times very frustrating.

He was a very intense man also, particularly when it came to organ building. He just loved the instrument. He was most often disappointed by the sounds came out of instruments, even his own, and was always trying to make them better.

He taught me how to look at what had been done over the past 2000 years of organ building and use that as a jumping off point for our work; taking the principles that were involved not, necessarily the details.

When we first started out in business in the '50s, he was not building tracker organs but then he went to Europe. He studied the old organs that Bach would have played, and others, Buxtehude, Frank. He came back to America and completely switched gears and decided that mechanical key action was the way to go. The reason is, is that the player has complete control over the attack and the release of each pipe in the organ. It's a mechanical connection between the keyboard and the valve and the pipe.

18:38

Everyone shares in the decision making of designing an organ. It's a communal job. In many shops, you know, there's one boss who dictates what's going to happen because all the ideas come from him and the workers simply do his or her bidding. And this shop is very important to me, as it was to Charles Fisk, that everyone have ownership in the project.

19:06

Harvard was the first formal tracker organ built in the United States in the 20th century; some very important people were involved. And that they chose Charles Fisk and his new company, was a really big deal and in the small arcane organ world.

19:34

The most rewarding part for me is working with this group: these people who I respect so much, who have so many different abilities, and who have so many different backgrounds, and have so much different training. How much fun it is to bring that all together in one place, and to work with everybody.

None of us can do this by ourselves. Lots of businesses pay lip service to teamwork, but here it's essential. We can't get the organ job built without relying on each other to do our parts.

Video ends

Dennis21:10

Anybody asking me questions

Unknown21:22

What's the stage of this project? Did I miss that? When do we get to see the rest of it?

Dennis21:29

Well, the organ as Greg said, is going to have a dedicatory concert on Easter Sunday on April, April 8. And that's the last piece of the chronology we're going to shoot. We still have some interviews, who, when. It's really, the movie, it's about three separate things. It's about Charles Fisk, his life and his work. It's about this company, this extraordinary company, and the way they work, as you just saw. And we're trying to incorporate as well the story, which is quite colorful, of 20th century pipe organ history, which is a bit of a battle between the devotees of the electro-pneumatic organ. Probably Skinner is best known for that. And the mechanical tracker advocates, this kind of organ with its direct connection between the player and pipes. So, those three aspects will be mixed, and then the spine of the film will be the creation of 139 from beginning to end. So, that process ends in April. But we still have interviews we need to do and I personally would like to go around at some of the personnel at Fisk because they all have their own lives that are intimately connected with music. So, they're working on building these organs, but at the same time, they're running choirs, they're staging Gilbert and Sullivan plays, they're performers on organ, piano or other instruments. They have a very wide, very diverse group of activities that they pursue outside the shop. And I think that's an important part of the project as well. So when will it be done? I don't know. I'm hoping by the end of 2012, but it's a question of getting the finishing funds really, but we hope to be editing next summer. And we need about three months or so. Do you have anything you want to add?

23:32 Greg

I just wanted to say that the organ itself is in the stage of voicing, that is adjusting all those pipes to the acoustics of the building. I handed out some of these which is an article from American Organist celebrating our 50th anniversary and on the last page of text at the bottom is a photograph of the model that we built to design the organ. So that's one of the Harvard project's going to look like. It's installed now. If you go to Harvard, if you find yourselves in Cambridge and you walk into the yard go into Memorial Church, which is open during the day,

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and if you're quiet you can go into the sanctuary and see the instrument complete, physically complete, just not musically complete.

Unknown

If I understand it correctly, the organ is in a different place now than the previous 46 organ because it is in the back of the balcony, and I think Peter Gomes said that Charles Fisk wanted it there.

Greg

Sure, that building, Memorial Church, is a memorial to the World War I and World War II now, dead, and it was built in 1932. It's a Shepley Bulfinch building. In what I always thought of as Harvard University style, it's brick with white trim. And so the original organ was a Skinner, an instrument, an electro-pneumatic organ. It was in chambers on both sides of the chancel, which they call Appleton chapel. Harvard is one of the only places where they still have a daily, one of the only universities where they still have a daily religious service every morning; morning prayer at nine o'clock, which goes back to 1632 unbroken. So the organ is used every morning for morning prayer, and it also, though, the sanctuary is much larger than this little chancel, Appleton Chapel. And the original organ of 1932 was not up to supporting congregational singing in the sanctuary. So, in the '60s, they asked Charles Fisk to build an organ there and he said, "Okay. But the first thing you've got to do is you've got to put the organ on the center line, on the major axis of the building". And that's something that he learned and we still try to do in every case, either right down the middle, or if there's a transept, it's got to be lined up so that it can speak freely to the whole building. Well, because of the acoustical properties of the Appleton Chapel, Opus 46 at the other end of the building, wasn't successful completely either. He wanted to put it in the gallery. But as the story has come down to me, Nathan Pusey, who was President of Harvard refused to give up the amount of seating that would be lost in the gallery if the organ was put up there. So he told him it had to go in the chancel. It did, and it never really worked as well as it could have. And I think it's one of those things that Charles was a little disappointed by, because he worked so hard on this really massive, in those days, instrument. And it wasn't fully successful. 45 years later, Peter Gomes, who some would say was probably more powerful than the president of Harvard, decided along with his musicians at Harvard Memorial Church that it should, now, a new instrument should be built. It should go in the back and a separate instrument should be in the chancel for use of morning prayer. No longer are they trying to do all things with one organ. Now they've got a smaller one up in the front. It's a restored Skinner from the '20s, so a period instrument for that building. And then we have our instrument in the back in the gallery where it can speak the full length of the sanctuary from the best position in the room. And although there were some challenges in

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fitting it into that space, it's going to be very successful. What we've heard of it so far, is, well, we're all pleased. I was there yesterday; I think I mentioned that with David Pike, who's the tonal director, and it sounds great. It's going to be really magical in that space. They'll never have had the musical situation that they have now. They have the proper organ promoting prayer and the proper organ for congregational singing and recitals.

Unknown

But now will the choir also be moved?

28:49

Yes.

Unknown28:51

What are we listening to now and you're listening to a restored Skinner? If you go to Memorial Church today for weddings. What is that?

Greg

That's the restored Skinner in the chambers on either side, you can't see any of the pipes just the console is visible. And there are there's a very large grillwork on both sides of that chancel, of both sides of Appleton chapel and the organ is in the chambers in that space.

Unknown29:17

So where will the choir be seated?

Greg

In the choir stalls in the chapel as well. The pulpit has been restored to its place under the window, rather than, it had been also moved in the '60s. So the whole chancel got changed around. They had quite a job putting things back the way they were supposed to be.

Unknown29:45

I assume almost 46 has gone somewhere.

Greg29:49

Well, actually still in storage at CV Fisk. It's not in Texas yet, but it's owned by a church in Austin, Texas, who bought it from Harvard. We've taken it out, and it's in storage at our shop in West Gloucester. And we're just waiting for them to finish their church building so that we can refurbish it and take it to Texas

30:14

And Roger Martin's carvings?

Greg

Roger Martin's beautiful carvings are still with it and they will go to Texas and have a wonderful place there. Yes. Yes, sir.

Unknown

Where exactly is the toning, the voicing?

Greg

Oh, I'm so glad you asked that. I came prepared.

30:54

Organ pipes come in all different shapes and sizes, but most of them in a given organ are made of metal, and they're all whistles. And that is the wind goes in here at the toe, and the pipe is sitting like this normally. And it rises up through the foot here and then at the top of the foot, there's, it's blocked off. It's completely blocked off, except for a little tiny, and you can come up afterwards and I'll show you, that there's a little tiny slit right between this indent part here and the blockage at the top of the foot. So the wind is forced to come out of the top of the foot in a flat sheet of air. And that sheet of air strikes the upper lip here. And if it's aimed properly, it waves into the pipe and then that creates a compression inside the pipe, which kicks the wave back out, which creates a low pressure inside the pipe, and that sucks it back in and gets kicked back out, back and forth. And that makes the column air in the pipe vibrate in a wave. And the length of the wave, the wavelength determines the pitch. So the length of the pipe determines the pitch.

32:27

So it's a whistle. It works just the way a recorder works. When you blow on a recorder, there's a blockage there, it's called a fipple in a recorder, and the air is a flat sheet and there's an upper lip and a lower lip, and it waves in and out of the recorder and when you want to play different notes, you'd block up the holes and make the pipe make the record longer or shorter to make the notes higher or lower. Well, each organ pipe only plays one note. And you tune it, in this case by moving this sleeve up, down, moving the sleeve up and down to make the pipe longer or lower in pitch, or shorter and higher in pitch so that you can tune all the pipes to each other.

33:14

So tuning is just adjusting the length of the pipe so that the standing wave inside the pipe is vibrating at the right speed and get the pitch that you want. That's tuning. Voicing is everything else about the sound of the pipe. So, some pipes when they start up, they cough first and then they speak and other pipes have a sound to them that's almost like frying bacon in the background pitch and lots of other things about the tone of the pipe can be changed, the loudness and softness. The relative loudness of the pipe can be controlled by how much air gets in the toe. So there are a number of different things that the voicer can adjust to affect the speech of the pipe. In the Harvard organ in the new one, there are 44 sets of pipes, 44 different sets of pipes. Most every one of them has five octaves worth of pipes or 61 pipes in created length. And so each pipe within the set has to have a common sort of speech. And then the sets have to blend together properly and the tone director, David Pike, and the other voicer have to know how all those different sets of pipes are going to be used together in the music. So they have to have a knowledge of what liturgy is and the literature as well. So it's vastly complex. It's, it's a real art and black magic almost to me; I'm not a voicer.

How is it measured, by the human ear?

Greg

That's right.

One person?

Greg

Voicing, tuning is physics. A pipe is either in tune or it's not and there's no, it's an objective decision; you can do that with an oscilloscope. Voicing is an artistic decision and it's subjective. All those decisions are made by listening carefully to how the pipe speaks and how it blends with the pipes, the other pipes in the set, and how the sets blend together in ways that you want them to. So it's one of the most amazing processes and that's why we arrived at Harvard in June with the disassembled organ and a bunch of moving vans. And started putting it together, back together, as it had been assembled in the shop. A crew of six took us seven weeks to reassemble the organ and put in most of the pipes. The voicing started August 1, and it won't be done until April. And that's a two-person job 56 hours a week. One pipe at a time, 3049 pipes. So it's a big job. And the training and the artistry involved is phenomenal.

Unknown

Do you always use 3000 pipes? The size and the number of pipes?

Greg

That's a good question, well; of course money plays a role.

37:02

Well, people come to us, typically. And they say, "We want an organ for our church or our concert hall or our university recital hall." And one of the first things we look at is how big is the room? What's the cubic volume of the room? And how much instrument, how much organ power will it take to fill that room with sound? So that's one way of thinking about it. Then, the other way is, how is the organ going to be used? Is it going to be strictly for playing hymns on a Sunday? Or is it also going to be for recitals? Are people going to teach on it? Is there the desire to play music written in the 15th century as well as music written in the 21st century? Or is it a specialized instrument that's just going to play one narrow kind of music. So all those things come into play. And we try to give people the most flexibility we can so that organ is as useful as it can be. And if money were no object, we wouldn't just build the biggest thing we possibly could. We'd build the most flexible instrument that we possibly could. More stops, more sets of pipes, means that the organ can be louder, but that's not really why you have many sets of pipes. You have many sets of pipes because the organist can mix and match those different sets of pipes. Harvard has 44 sets of pipes, 44 voices we say. So the possible combinations, that's 44 factorial. That is a huge number. I should figure it out someday, but it's millions of possible combinations of different sets of pipes used at the same time. So it's like a painter has a palette to start with, and it's got some titanium white and some yellow and some red and other colors on it. And if you take some red and you take some yellow, you get orange. And likewise, an organist sits down to a console. And there are all these knobs on both sides of the console and each one controls a voice or a set of pipes. If you pull out just the nature of flute, you get one set, you pull out an eight foot flute or four foot flute and something else, you get a sound that's a mixture of those three, just like when you mix paint on the palette. So you get to, the organist gets to paint with sound and mix and match all those different sounds that they can make.

40:03

Air?

Greg 40:08

The organs that we build are on quite low pressure. Typically somewhere around three inches or three and a half inches water column. That's a 10th of a psi. So it's quite low pressure. But some of the pipes the biggest pipe in the Harvard organ, is two feet of wood like this one only is two feet square and it's 32 feet long. And it's got a wind-way on it that's about three eighths of

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an inch wide and the amount of air that comes out of there to create that flat sheet is huge. So there are electric fans, squirrel cage fans that power this organ at Harvard. There are two of them in total. Five horsepower, I think. And they put out about 2000 cubic feet per minute. So it's a very large amount of air at quite low pressures. You can generate enough pressure to make a pipe speak with your lungs. Just not for very long and the organ, unlike almost any other instrument, as long as you hold down the key, it speaks, it just keeps on playing. So you have to have a constant supply of air. So these fans supply air to a reservoir which regulates the pressure and also makes up for any greater demand or lesser demand, sort of like shock absorber in the system so that you always get a constant flow of air when you need it. It's always at your fingertips.

Unknown41:57

So you spent eight months approximately voicing the organ. When it's done, is it done forever? Does it need to be revoiced?

Greg42:08

Very rarely, very rarely; it needs to be tuned every once in a while, especially at the beginning and end of heating season. Because it's the, what's vibrating is not the pipe, it's the air inside. So if the temperature changes, the density of the air changes, and so the pitch changes. So if you tune an organ pipe at 70 degrees, and then it goes down to 50, it's out of tune. But if you bring it back to 70, it's back in tune so you don't have to keep the temperature constant 24 hours a day. You just have to keep it constant. You have to bring it back to whatever temperature is tuned that when you want it to be in tune. So you turn the heat on early Sunday morning, so the whole place is brought back up to temperature. So we typically would tune before a recital or something like that just the touch up tuning, but we go in and really check it out carefully twice a year. We usually have maintenance contracts, but contracts with our clients who are all over the world. And we visit those organs at least once a year if not twice, and also have somebody local who will check up on them periodically. So, voicing, if the pipes are clean, and undamaged, and there are insects or bats or things get in them, that you don't usually have to be revoiced.

Unknown

What material is that?

Greg43:47

Yes, that's another good question. Most organ pipes at C.B. Fisk are made of alloys of lead and tin. Pewter is an alloy of lead and tin. It's not one of the alloys that we use, but it is one. This

particular one is 50/50 lead and tin and it's called spotted metal. It looks like kind of like an alligator. And that's just the way the metal cools in the video you saw metal being melted and then the guys casting it onto a granite table that we have at the shop this wide and 16 feet long. And makes beautiful long sheets of metal and then those are cut up into pieces that then get rolled around the form and soldered and the foot starts out as a triangle and they roll that up and you get a cone, and then the languid, the blockage at the top of the foot, is soldered on. And then the two pieces are soldered together and then the mouth is cut open and ready to start voicing. So some are very high tin content. Some are very high lead content, there are three or four alloys that we typically use depending on the kind of pipe we want to make, and the kind of sound we want to have.

Unknown45:18

So voicing takes place in the factory and tuning takes place in the church?

Greg

No, actually, we really voice everything twice. We make the pipes and then voice them to a level that we expect will work in the church. But you can't do finish voicing until you get to the building where the organs going to live and adjust the pipes to the acoustics of that building, because every building is different. So some frequency ranges will be, the building is kind to some frequency range and it's unkind to others. And so you might have to make the pipes in the unkind range a little empirically louder, so that you'll perceive them as the same loudness as ranges where the building reflects the sound better. So voicing, we voice everything to a level at the shop. And then when we get to where ever it's going to go, everything gets completely revoiced to the specific level that needs to be the work in that building. So if you move an organ, it has to be revoiced.

46:49

In the old times when we first built the first organs, how did they make the pipes?

46:54

Well, some people would say that the pipe organ was invented in order to show off an air pump. The Greek engineer Ctesibius, in about 300 BC, is credited with building the first pipe organ. And he had invented a pump, an air pump with a reservoir that would supply a steady stream of air. Because before that, there was always a cycle in the delivery of the air. So he invented a pump that had a reservoir and would give you a steady stream of air and essentially hooked it up to a set of panpipes. And the pipe organ was born. So well over 2000 years ago,

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and ever since those have been refined and refined and refined. Until the 19th century, almost every organ was pumped, and we've built a few that are pumped by person power. Our instrument at Wellesley College was built the way people build organs in 1620. And it includes two giant bellows, like fireplace bellows to get your fireplace going, only they're four by eight and you climb up a series of steps and stand on the end of a lever and you go down and the end of the bellows goes up. And then you get off that when it begins to fall and give air to the organ, and you climb back up the stairs real quick and get on another lever and you go down, the other bellows goes up and so you keep two bellows going like this all the time. The original Stairmaster I guess. It's quite a workout and yeah, the organ in Winchester Cathedral, one of the first really big instruments took dozens of people to keep it supplied with air.

Unknown

The film mentioned the teamwork that people there have. Can you speak to some of the talents that you look for? And the people that work there and what you need in order to do the work that you do?

Greg49:21

That's a very interesting question. I guess number one would be problem solving and the skills. Very rarely do we have somebody walk in the door who is already an organ builder. Although it happens, we get people coming to us from other organ builders. Most of the time people either have a background in woodworking or metalworking, or music, and then they kind of have to learn the other half. When I got there I was a woodworker, but I knew almost nothing about music except rock and roll that doesn't help much. So there was a lot to learn, for me on the musical side. And some people came to us with degrees in music of one kind or another, and had to learn the mechanical and structural side of things. So it takes a wedding of those two things. It's one of the only places I know of where you don't have to choose between art and science, because you really need to have both. And so people who come stronger on one side than the other, stronger on the art side than on the science side or practical side, have to pick up the other, but we have an apprenticeship program that runs five years. We have college age interns who come and see what it's like. And so it's a continuous learning process. I've been there 33 years. And there's still parts of it that I really need to learn more about.

Unknown51:16

You must have a tremendous amount of electronics equipment to get the tone down to exactly, you must have big electronics lab to analyze these.

Greg

No, no, that's all done by ear. We've got some little oscilloscopes that helped us tune, actually, there's an app on the iPhone that makes a great tuner. That's really all you need to tune an organ. But the voicing part of it is done by ear and that's just practice, practice, practice. Charlie Fisk said that somebody asked him why he didn't use oscilloscopes to voice organs and he said that he'd never seen one in a concert.

52:00

When, when someone needs a new organ is it a competition between C.B. Fisk and another company?

52:08

I missed the first part, did you say at Harvard?

52:11

Well, anywhere, if someone wants an organ do did they send out to various organ making companies and visit the competition?

52:19

Very often it is occasionally someone will come to us and we're the only people they talked to because they know what we do and they want what we do. But most of the time, we're one of three or five or 10 organ building companies that would be approached or asked for proposal. And then we make proposals specific proposal to them for their space. Yeah, there's much more competition than you might imagine.

Unknown52:53

If the keyboard is not near the pipe, how do those organs relay the signal to the pipes?

Greg

What you're talking about is probably an electric or electro-pneumatic organ. And those, well, all organs, were mechanical action before the 19th century, and then electricity made it possible to have the key be a switch, and for something else to open the valve. A solenoid or a pneumatic pouch or a combination of the two, so that the console could then be anywhere you wanted. And the pipes could be anywhere you wanted, and they were spread all over the place.

53:43

That flexibility of location is what draws some people to that kind of organ. But it means that the player has only two choices when it comes to how the pipe speaks, on and off. And that's it.

Because they can't control how the wind goes into the pipe. With mechanical action, you're actually opening that valve with your finger. That's a direct mechanical linkage. So you can affect the speed at which it opens, and, equally importantly, the speed at which it shuts. And those two things have an effect on how the air goes into the pipe and how the pipe stops speaking. And a good player can use that control to create nuances in the music that are not possible in electro-pneumatic organs. But it does place somewhat of a limit on the size of the instrument. A lot of people are really into where's the biggest pipe organ in the world, and we have the biggest one in Massachusetts or Texas or what have you. And those are almost always electric-pneumatics because they can be absolutely massive; 10s of thousands of pipes. The biggest organ we ever built was in the Lausanne Cathedral in Switzerland. And it has somewhere, I forget the exact number, but it's around 6000 pipes and why anybody would want a bigger one than that I don't know.

Computers must have made a difference in organ building.

Greg55:26

Sure. Most of the work that I do is design nowadays. And we use computer aided drafting, CAD, a program called AutoCAD. And it has had the effect on design that the word processor has had on editing and pre-production of text. You still have to come up with the ideas. You still have to put them down on paper, but you can edit and change much later in the process than you could back in the days.... when we were. When I first started at C. B. Fisk, we were still using slide-rules. And we were just getting into calculators and then computers a few years later. So we make a drawing and it took a week just to draw what we wanted to have built. Then if you had a better idea late in the week, you had to decide whether you're going to throw that drawing out and start all over again. Now, you can do that in the blink of an eye because until it's printed and out in the shop, the drawing has no value in and of itself like it used to have, it's just pixels so you can change the design way later in the game. It also helps us with some of the physics involves some of the calculations that are necessary for pipe making and so forth. But organs were built for a very long time without computers. So it hasn't made a profound change in organs themselves, but it's made a lot of change in the process.

Dennis57:19

Just wonder if I could steal five minutes here because we have like to show another as we're getting late here. I'd like to show another piece which is about visual design. Oh, yeah, that's great. And then you could come back to these questions after that five minutes, or so.

Video

We never do the same thing twice, because we're never in the same room twice. Every room is acoustically different. Every room is architecturally different. Every client has different desires for what they want the organ to do. So each organ is unique. Everything we do is one-off; everything is a custom job of figuring out what to do. And then everything has to be made on at a time by hand. So it just takes some time.

59:00

From the tonal director, I've gotten the diameter and length of every pipe in the organ, and I represent them in 3D, in this AutoCAD drawing package that we use. Now I'm finding a home for each one and making sure they all work. I'm also working with the visual designer. He's working in the physical 3D model. And we go back and forth, finding more volume in the case, it's either gonna be deeper, taller or wider. But typically, they look best when they're tall and narrow. So we go back and forth and find what's the most felicitous solution for that problem.

These two are drawings at long scale that is one to 16. So these two drawings, this is a plan and this is a side elevation, correspond to the model.

For me the joy is working with this group, these people, who I respect so much; that we have so many different abilities and who have so many different backgrounds and so much different training and how much fun it is to bring that all together in one place, and work with everybody. None of us can do this by ourselves. So lots of businesses pay lip service to teamwork, but here, it's essential. We can't get the organ built without relying on each other to do their part and we help each other with our separate parts of the job. So that's really fun. That really can be exciting and makes me want to get up in the morning and come to work.