

Project: Trash Talk: Workers in Vermont's Changing Waste Management Industry  
Narrator: Robin Ingenthron, CEO and Founder, Good Point Recycling and American Retro Works  
Interviewer: Virginia Nickerson  
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Transcribed by: Teresa Bergen

00:00

Nickerson: Okay, so this is Ginger Nickerson. And I am interviewing Robin Ingenthron.

Ingenthron: Ingenthron. [with hard g sound]

Nickerson: Ingenthron. Thank you. At the Good Point facility in Middlebury, Vermont. And today is October 23, 2018. So, Robin, I usually start just by asking people if you could tell me the name of the town and the year in which you were born.

Ingenthron: I was born in Wareham, Massachusetts in 1962. I have no memories of there. But my dad had just gotten his degree in journalism and took a one-year job reporting there. Brought my mom to marry him there. And they moved back to Columbia, Missouri a year later.

Nickerson: So that's where you mostly grew up, Missouri?

Ingenthron: Yeah. The Ozarks. My dad became a college professor. He took jobs in a number of colleges before getting his tenure at University of Arkansas. But all of my summers were spent in the Ozarks at his parents and grandparents, or at my mom's parents' houses. My mom was born in Arkansas and raised a half mile on the Missouri side of the border. My dad was raised by his grandfather, William Freeland, my middle name, who started the county newspapers. So he was expected to go into journalism. And he wound up becoming a professor. But I spent all of the summers on the farm.

1:55

Nickerson: So can you tell me what you do now, and what your pathway was to get into this work?

Ingenthron: Well, sure. The immediate thing that brought me to Vermont was I had been a regulator for the Massachusetts Department of Environmental Protection for nine years. And had told my wife, Armelle, who got her PhD in French and African literature I didn't want to be a lifer working for the state. She should apply any tenure track job she wanted. And then damn, she kind of called my bluff. Got offered a great job at Middlebury College. So I had to follow her

up here with two things. Nine years of regulatory experience and four years of truck driving, or five years of truck driving. I'd driven recycling trucks both in college and when I got my MBA collecting office paper in Boston while going to night school.

When I came up here, the last thing I'd been working on at Massachusetts DEP was the first in the nation waste ban on cathode ray tubes, or CRTs. Those are these big heavy glass bulbs that are inside the old-fashioned televisions. They were very, very high tech five decades ago. But at the time I was leaving Mass DEP, flat screen TVs had been invented, were on the horizon. And the 1996 Telecommunications Act had been passed, which was going to switch all the TV stations from analog to digital to free up airwaves for this new cell phone technology that was coming out. And basically all these tube TVs were going to become obsolete if they relied on rabbit ear over the airwaves. So the last thing I'd worked on at Massachusetts DEP was to try to come up with an infrastructure. So if we tried to keep the CRTs, which have got lead in the glass, out of the landfills, that we didn't do it just end of pipe regulation is the word for it when you ban what's happening to them getting disposed without creating a solution. You know it's going to back up somewhere.

So I had just done, with a grant from EPA, a two-year project research all the options for the TVs. What the Goodwills and Salvation Armies were managing, what the Massachusetts and New England TV repair sector and computer repair sector were doing. Met with the manufacturers.

A lot of it really brought back memories to me of where I'd come to before Massachusetts Department of Environmental Protection [Massachusetts DEP]. I had graduated college, Carleton in Minnesota with a degree in international relations and a plan to get into recycling. Because I'd been a volunteer at the Fayetteville, Arkansas recycling center in 1979 and 1980. Back then, we recycled to save trees and to save mountains. Nobody was really talking about waste disposal. But I had this idea by the end of college, this could really be an interesting career to get into. And my parents and most other people, you know, kind of stared like I was telling them I was really excited about laundromats. (laughs) Or a career in oil changing. They just thought of scrap, as being why would somebody with a college degree want to get into that?

But for me philosophically, I'd gone through a very philosophical and religious period when my mom was getting her degree in world lit. And when I was 14 years old, she'd say, "Here, I'm finished with this one," open my bedroom door and throw Plato's *Apology* on my bed. And then, "Here, this one's pretty interesting, it's the *Tao Te Ching*. *Bhagavad Gita*, you know, I'm done with this." So my mom was throwing me these philosophical and religious textbooks. We had no cable TV then. And especially in the summers on the farm, you had a lot of time on the farm. We had the gift of boredom. You know, the privilege of not being constantly entertained. And that allowed me to get pretty deep into some of those books. And yeah, in this one period I actually considered being a monk. But decided, and this is my central philosophy, Ginger, is that we can best approximate how we would judge ourselves by imagining somebody 500 years from now, and how that person would reflect on how we'd spent our time. And I

thought well, gee, if I go and become a Buddhist monk or something, a Vedantist, I would have a very, very shiny, shiny conscience at the end of my life. But I wouldn't actually have done anything to really contribute to future generations.

And that's what attracted me to the environment, you know, extinction, obvious. Obvious. And having grown up watching with my parents Jacques Cousteau and Jane Goodall and all these documentaries Disney used to always run, nature documentaries before the drive-in cartoons, you know. Having grown up with that, extinction was obviously something people 500 years from now would care about.

When researching forest destruction, I was shocked to find that mining and forestry is the number one toxic polluter. It's an industry that because it's so polluting, even if you found a very rich copper ore or gold ore mine outside of New York City, you couldn't ever mine it. Because the toxins from mining hard rock metal—which we need, I'm not saying we don't all use them—but it's such a polluting industry that the industry is forced to invest in faraway places, like the Ok Tedi mine in Papua New Guinea. Fourteen of the fifteen largest superfund sites in the US, at least 20 years ago, were on hard rock mining out in the west. When you've got an activity that's so environmentally dangerous that it's got to be done faraway, you know, in the Amazon, well, that builds roads into rainforests.

And with roads, I learned in Peace Corps after college, I went to Cameroon, Africa and became very aware that the roads they built to get to the hardwood in the rainforest just opened the gates to bush meat and hunting tourism and all kinds of things.

So anyway, I got interested in recycling in Arkansas in high school, based on it being a measurable way to put my philosophy to the test. Studied international relations at Carleton. Sorry?

10:41

Nickerson: [unclear]

Ingenthron: Yeah. At Carleton College, where I volunteered and ran the college recycling program. It was there that I realized that the cost of the college's garbage disposal was one of the factors in me getting a recycling budget. The Carleton superintendent, Oliver Younger, wanted to shut down the recycling program because the guys in the class before me had dropped the transmission out of his favorite 1950s bread truck that they used to collect bottles and cans and newspapers at the dorm. Younger couldn't afford, it turned out, to shut us down because he would have had to double his garbage pickups. So that led me to keep this thought while spending two and a half years abroad in Cameroon, Africa in the Peace Corps thinking about what I'm going to do next.

That led me, when I returned from Peace Corps, to realize I should find a place with more expensive garbage. So I looked at grad schools in Connecticut and Boston. I realized hey, if I'm serious about this, then I've got to do math. I'm going to have to cut my ponytail, get an MBA, really expose myself to business. Got a job at this kind of hippie coop, paper recycling company in Boston, Earthworm Recycling, established Earth Day 1970. Would drive the truck there, collecting paper during the day from these office buildings. Including US EPA and Massachusetts DEP were two of our big clients. And collecting their paper to recycle it during the day, and then going to MBA classes at night.

One of the funny anecdotes, which is true, is that learning to be efficient with my time, going to grad school and working 40 hours a week, I would write down things like what's the average weight per kilo of computer printouts? What's the average weight of [these things?] tap cards? White office paper, collecting from the side of the copy machine. So I'd write down these things that we were collecting during the day, and then write it up as an operations business class study in the evening. Turn it in for credit.

And then I discovered this big secret. The guy who hired me, Jeff [Coin?] at Earthworm, told me that the funny thing about recycling jobs is that it's a lot better to make your money talking about recycling than it is to be one of the people that's actually doing it with your hands. But I learned from that that these papers I was writing, I could actually sell as a consultant back to EPA and Mass DEP. And that wound up opening a door to me to get later hired into EPA as the head regulator.

Then that jumps back to the story of how I followed Armelle up here and started this company.

14:28

Nickerson: So can you tell me about the early days of Good Point? Particularly what were the materials that you were taking in?

Ingenthron: Sure. Well like I said, the last thing I had done at Mass DEP was to study the cathode ray tube, the infrastructure. And what really interested me was the fact that the reuse value of the electronics was, it's similar to chop shops with automobiles. That 20 percent of junk automobiles are worth 80 percent of the money, because they can be reused as secondhand parts, or use two cars to put together to build one.

That had intrigue me because in Africa as a teacher, I really cared what my students might grow up to be doing. I would think about well, if I come back here in 15 years, what would I hope that Abubakar or Kali or one of these kids might be doing? And agriculture's everywhere. It's very honest work. It's hard to imagine that they would have any wealth, and they might be dead when they're fifty. But you know agriculture's there. Nothing against it. If you wanted to imagine one of these students actually owning a television and a car, like my

landlord, well, the easiest thing to imagine was working for government. My landlord was in the Cameroon Army. They might work as a fonctionnaire, a regulator, you know, a police chief. The problem with that is you might not like them very much. (laughs) That culture in Africa was a very, I call it a sharp elbows culture. Someone coined the term “the curse of natural resources,” describing how countries that are very, very rich in oil or something wind up autocratic. And I could see why that would happen. Because to be the closest to the person that signs a billion dollar a year oil contract, you need to be aggressive, a bit of a bully. And so the government wound up cultivating kind of a bully boy culture.

Anyway, so you’re left thinking what’s another way that these people could make money? What I became very, very keen on was the repair center. The shadetree mechanics, Cameroonians didn’t have computers back then, you know, 1980s. We didn’t in the US, either. But they had TVs. They had VCRs. They had tractors and motorcycles. And that really brought me back to my Ozark roots. Because I was always, on my grandpa’s farm, he would have me underneath his pickup truck, saying, “You’ve got to know how to do this, Robby.” The timing belt, the such and such, this is how you change the oil. And I was scared to death and I had no talent at it. But it was really drilled into me that hey, we can’t afford to go buy a brand new car. We can’t afford to go to a mechanic. And from spending a certain amount of time seeing him fix everything, I became really attuned to the fact that that’s the highest value-added that a person can give to something in an hour is take something that’s broken and fix it. And you by yourself with that knowledge and that skill have turned something from waste into the equivalent of a manufactured good. My grandpa told me how before the roads were paved, nobody in the Ozarks owned a new car, could afford a new car. He said people either bought a used car or, he said, like his older brother Charlie, he said if you were really good at it you’d go to Saint Louis or Memphis or Chicago, one of the cities, and find a car that a rich person didn’t know what was a wrong with it. He said if you got real good, you knew already by this model what the weak part was, what goes wrong. So they would go up to Chicago and look for used cars of a certain, Model T or whatever, now the sound of what commonly went wrong with them was, and make somebody an offer of 500 bucks who thought they were getting rid of a headache. And that’s what I observed going on in Cameroon, in west Africa, the same repair culture.

So I came out of the Peace Corps. Actually this statue (pointing to a statue in his office), people wonder why that’s there. That was a gift from Aaron Bakucho, who was the older brother of another English teacher at the village where I taught in the Peace Corps. I’d put his younger brother up in my house when he arrived. And to show his appreciation, his older brother Aaron invited me to northwest Cameroon. And I spent a week. And his older brother had a Mercedes and a television with a VCR. You know, he wasn’t fabulously wealthy. But by Cameroonian standards, this guy was doing pretty well. And you know what he did was found the coffee hulling machines. It was a big coffee bean harvesting place. And the coffee hulling machines have this cylinder that removes the husks. You know, the shell from the coffee. They turn it to high speed and those things wear down. Buying a new one, Aaron Bakucho told me, cost 68 dollars from France. But he was buying back the worn out ones and refurbishing them, and from doing that, learned how he could take a type of steel can, steel food can. And if it was the right

size, buy them back. And with his own people, create these sharpening things. And he was selling them for 40 bucks. So the coffee farmers were saving 28 bucks, and he was selling something for 40 bucks that had cost him only labor and ingenuity to make. So that statue was a gift he gave me as a thank you for putting up his brother. And I've got it here in my office because in some ways that anecdote clicked for me with the electronics business. That if I could find a way to make inroads to the tech sector, wherever they were. I don't care if they're in China or in Mexico or in South Saint Louis or the Ozarks, just find those people who know where the 20 percent of stuff that's worth 80 percent of the money is, and work with them.

When I came up here, getting around to your how did Good Point start [question], I thought I was just going to consult. I was consulting for EPA, some state governments, for one of the computer manufacturers. But when I would drive to my largest client, a TV repairman, actually, that I'd gotten into the business with in Massachusetts, I didn't want to just drive a car back and forth to this consulting job for three hours. So I told my wife "hey, I'm going to buy a used Penske truck with the money that's supposed to be for renovating my bathroom." So that when I drive down to my consulting job, I can make use of this CDL, commercial driver's license, that I still had from grad school, and start picking up Vermont electronics on the way. And turn it in.

So I'd climb in the truck on Monday. Pick up from Brattleboro or Rutland or someplace their TVs. Deliver it to my partner in Massachusetts. Tuesday, put on my necktie and start doing the consulting gig. But when I drove back up, it would be back in the overalls commuting.

Eventually the trips, the trucking picked up more and more. And at first, I thought of the trucking as this could be a drag on my consulting gig, so I should give this job I'm doing a separate name, you know, American Retro Works, Inc., will be my corporate name. But I don't really know what this trucking and running a warehouse is going to turn into. So I'll give it its own separate name. I got the trade name Good Point Recycling.

So, yeah. While commuting to do consulting, I did more and more pickups. Largely what I found myself doing as a consultant for the large recycler in Massachusetts, the growing one, was finding buyers for reused parts. Using both his skill as a 30-year TV repairman and my international skill, we would be able to look at what overseas markets were, what they were buying and why, and kind of truth it out. And anyway, managed to form a very good reputation among the tech sector overseas for being a very honest seller of used goods. Somebody who really cared not to ship junk along for the ride. And from them buying more from me, me using my partner's plant in Massachusetts to cultivate an even larger supply, that's how I went from one employee with one truck to the 40 we've got now in the two facilities, the one here in Middlebury, Vermont, and the one down in Brockton.

24:50

Nickerson: And so, what year did you switch over to focusing mainly on the reuse and recycling materials?

Ingenthron: Well the big thing was in 2001, 2002, there became this murmuring that people were shipping the 17-inch desktop monitors to China, and this guy from Seattle had gone there in 2002 and issued a report saying oh, what the Chinese are actually doing is breaking them and burning them just to get the copper. And this is all externally a waste. It's the pollution haven hypothesis that what drove the export of the CRTs to China was China's dismal environmental standards. And Americans who exported were doing wrong. They were shipping junk to be burned.

Having done this by that point for a year or two, and having lived in Africa and knowing the cost of shipping and everything, it didn't sound, something sounded wrong. I saw these people as environmentalists, you know, they're my kin. We're environmentalists, we want to stick together. But I started contacting [guys?] in Seattle and saying, "There's some stuff that doesn't make sense here with your theory or hypothesis." And number one was why does every purchase order from China accept only 15-inch and 17-inch monitors? Why no 19-inch? Why no monochrome? Why no large 27-inch TVs? Why would they be paying ten dollars apiece for this 17-inch desktop, and not accept, for any amount of money, this 19-inch?

26:56

Nickerson: So the Chinese who were your customers were not saying "we'll take anything and everything". They were saying that they only wanted specific things.

Ingenthron: Right. I was just starting the business of looking at them as customers. But I'm looking at the purchase orders on like dial up internet to Alibaba.com, this young guy, or recycle.net, that the internet was creating ways where even from Vermont I could look at a purchase order from China or Peru trying to buy something. And read the purchase order. What exactly, how much money are they offering? What are the specifications? And the amount of money was five times more than what the copper was worth. And the ones that they would not accept for any, even at zero, had just as much copper as the ones they were paying ten dollars apiece for.

So I wound up in 2002, I think it was, I got a speaking invite from the Chinese EPA to go to Guangzhou. It was just a few months after this Seattle report had reported that Chinese was importing it just to externalize the pollution for raw materials. And the Chinese EPA, China wasn't an economic powerhouse at the time. Not yet. I'd studied China at Carleton and knew that it was going to be. But it was primarily an outsource contract manufacturing for things that the Japanese or American companies didn't want to produce, which had largely turned into display

devices. Everybody was putting their money into the chips, and outsourcing the manufacturing of displays to Taiwan and China.

So anyway, they couldn't pay for my plane ticket. They said they would pay for my housing while I was there. Couldn't pay for my time. But the deal I negotiated with these folks from China EPA and [Guang'Anmen?] Electric Appliance Research Institute, one of the Maoist household appliance bureaucracies, you know, that invited me was, well, I'll come. I'll present on this. But I'm going to stay an extra week after the conference and go around and visit places. So they provided me a translator and got me these meetings at aluminum smelters. And I got to see what the people buying the CRT desktops were doing.

29:39

Nickerson: The cathode ray—

Ingenthron: The cathode ray tubes. And it was like, of course. HP wasn't making the monitors. Dell wasn't making the monitors back then. It was these subcontractors, like ProView and ViewSonic, there were a few of these very, very large, Foxconn, everybody knows Foxconn now, but they weren't known then. And I walk into these factories which have a thousand employees and they're buying five thousand used CRT monitors a day, breaking them down and explaining to me, say, "Oh, this one was manufactured by the Asahi furnace this year. And these have an average life of 25 years. But the Americans are getting rid of them after an average of four years. And during the last year of the four years, they're not even using them. They're moving to the flat—"

So these guys are able to say exactly what they're looking at. The place they were replacing was replacing a \$110 part. And they were like, "Why would we pay \$110 for a brand new CRT, you know, lined, refined, at these massive temperatures at great environmental cost, when for \$10 we can get one that's good for 20 more years?" And so they were replacing these just like Cummins Engine with the engine blocks in Memphis. And to me it was a Peace Corps volunteer's wet dream. You know, here they were actually making a product. They were a combination CRT monitor and a television. Because certain countries they were selling to, like India or Egypt, had to make a choice between whether to buy a CRT monitor or a TV. And these Chinese factories were making ones that could do both with just putting a second board in it. Anyway, I found that just to be genius.

And while I was still deferential toward the anti-export, anti-globalists, at the time I thought well, we don't want to send them into back alleys. We don't want to have a war on drugs type of thing. So what we'll do from Vermont is have the very best reuse standards. We labeled it fair trade recycling. We'll go there, invite the buyers here to inspect.

We learned so much from them. Certain ones that I thought hey, this is perfectly working, this is great to send, in China I found no, that one's made by the Trinitron factory in Japan. And

it's the wrong shape for this raster, we're not going to be able to use it. So that working one is waste. Whereas these other ones that I was plugging in and saying oh, that one's no good, oh, those were actually very valuable because they're replacing the power supply anyway.

So we learned from the experts, the tech sector overseas, what it was that they wanted. And I guess I feel like my secret was, having seen my grandfather's generation for what they can do, not for what they can't do. And when other people were saying hillbillies as the subject of TV comedies and comic strips like *Snuffy Smith*, we saw that kind of as, with some resentment, as racial profiling. Not seeing people for the good that they were doing. Seeing what they didn't have. And that's what I feel like I was able to see in the emerging markets that Good Point traded with.

Did we ever export 80 percent of the stuff? No. Top ever was 20 percent. Even if we'd wanted to export the junk, the folks overseas who were paying for the shipping wouldn't have accepted it twice. So I'm not saying that the shredding and the processing of raw materials shouldn't be done in this country. You know, it can be. I'm just saying it wasn't true that the people overseas who were buying were primitive, wire-burning, destitute, dystopian—these were factories, these were the best jobs they had. And my advantage as a company was by seeing people for what they could do rather than for what they did not do.

34:30

Nickerson: So I'm just going to back up a little bit and ask you some questions to try to give folks a sense of what actually happens here on any given day. Do you need to take a break? And how that may have changed over time since you started. So when you started in 2001, 2002, what were the sort of the bulk of the types of materials that you were bringing in?

Ingenthron: The early 2000s, desktop 17-inch monitors were just, people couldn't get rid of them fast enough. I learned things like, people would say, "What's the lifespan of them? When do they wear out?"

I said, that's not when we get the phone call. It's when a hospital gets the new flat ones in, everybody at their desk wants a flat one. And suddenly says, oh, the pixel's off! Or the color. The upgrades were driven by, I call it elective upgrade. Not that something broke, I wasn't able to fix it, therefore I'll send it to the recycler. No, somebody had an opportunity to electively upgrade to something better. So we would see these things not by all coming in the same age, but when a university or a hospital or a bank got the new stuff in. That's when we would get the old stuff out.

So basically what we ran the first five years was a cherry picking operation. I would have the staff here in Vermont know which were the things which I was brokering deals for refurbishers, usually overseas, and which things were going to be torn down. And so we would remove the stuff from our straight trucks, which are the smaller, 24-foot trucks, run them through sorting, pull out the things that we knew, the factories that were buying to refurbish them. Put

everything else back in a box, put it into tractor trailer to run down to my partner in Massachusetts. From his place, we would be cherry picking the same thing we wanted. So the tractor trailer would come back to Vermont with the type of 17-inch or 15-inch displays that we had a buyer for.

So the first years were hiring people just to know what the specifications for the purchase order that we found on Alibaba was. But we started developing a program with, the first employees were from the counseling service of Addison County. They had a voc rehab program for differently abled people with a spectrum of disabilities who were still able to work. And I developed a partnership with them early on. Because they said, “Robin, you’re rare. You’re able to see our people for what they can do, rather than for what they cannot do.” And I’m like “yeah, that’s what I see that with the devices. Why not see that for people?”

So we would have a certain number of people. The first hires were from the counseling service, testing things. Then we started to de-manufacture, remove the screws of the computers. Which are fairly simple, high value, separating the motherboards, soundcards, video cards from the steel, the aluminum heat sinks and the power supplies.

Nickerson: She can come in [referring to someone at the door]

Ingenthron: It’s okay (referring to an interruption). So de-manufacture by removing screws. Manual disassembly. And then we were only shipping the bad CRTs,[cathode ray tubes] mostly the large TVs that almost nobody overseas wanted. Certainly they didn’t want in Asia. And developing the business that way.

I did start to test CRT televisions and found that there were markets in the western hemisphere. Developed buying relationships with Peru, Dominican Republic. And we opened our own plant in Mexico in 2008, where the folks in Mexico could cross train in Vermont to disassemble the bad TVs. But unlike what I was able to do in the USA, 20 percent of the TVs they got, they could still sell locally in Sonora, Mexico. And again, even though it’s only 20 percent, 20 percent is 80 percent of the value. So if you compare the profitability of a place that can capture 20 percent reuse to the profitability of a place that shreds everything for raw material, its, you know, mathematically triple the profitability. It also allows you to hire a different range of people. What I saw was the places that were, there’s an expression, “I’m going after the fast nickel, not the slow dime.” And a lot of people in the scrap business, they put in a shredder and say, “I’m not going to worry about the reuse of the automobile parts or the computers. I’m going to reduce my labor force with a big chopping machine. Run it through there as fast as possible and get the fast nickel rather than the slow dime.”

With that industry, which I call big shred, I know a lot of people in it. And they’re good people. But I saw in them an opportunity. Things like printers. Laser printers and ink jet printers and stuff. The companies are making all of the money off of the ink. They’re practically giving

away the printer. So for us to take a printer, buy an ink cartridge to resell it, doesn't make sense. And they're difficult to take apart manually. So that's an example of something.

I would find a big shred company, deliver. There was a big one in North Carolina. And I would deliver trailer loads of printer scrap to them and take back their displays that they couldn't shred. And what I found was while they were handling more and more volume than I did, getting bigger and bigger, that I was putting together a company with a lot of diversity. Because if you're testing things for reuse, you can hire an older person, that can't throw the stuff into the shredder as fast. You can hire a woman. I found myself gradually building up a company that because we were focused on reuse, that 80 percent of value is mostly people. So we were creating far more jobs per ton than big shred [companies]. And in addition to that, the types of people that I was hiring were more creative, they were better promoted to management, and we wound up having a story. [The] other recycler's story was, "My machine is the ZLX 3400. It turns everything by eddy current into aluminum this, this, at this many tons per minute." And another one, "Our machine's the 4100A. It can process 10 percent more tons into eddy current magnetic separators, shredded plastic, etcetera."

People come here to ask what we're doing, and I'm saying, "Here's my partner from Peru, Jenna. She communicates only by Facebook. All of her posts are at a disco and she looks like Zoolander. (laughs) But she's a woman-owned company that buys certain types of TVs back that hospitals get rid of. And pays eight bucks a piece for them." And I could actually get reporters to fly and visit and interview.

I started to get university people when I would do a presentation. I gave one at Cornell with 100 plus attendees. And afterwards, there were 10 people [who] came down to talk to me. And they were all from emerging markets. You know, somebody said, "Yeah, I'm from Jakarta. My cousin works at the factory that you showed the pictures of." I get really tired of everybody only thinking of us as hillbillies, you know, basically what they're telling me.

So by doing it the hard way, looking for the parts reuse, it is much harder. It is a slow dime rather than a fast nickel. But the people that we develop in doing that make the company more valuable. And we're diversified. So if the price of copper soars, we still benefit from the price that we can negotiate to send things that are just for scrap to big shred. But if the price of copper or steel crashes, we can go from reusing 10 percent, it changes the equation. Well maybe we're going to reuse 20 percent now. Because the break-even point between the decision whether to shred something or find its reuse value has now changed.

The hard part is that the changing technology, you know, it changes so quickly that if you get really comfortable reusing one thing, it can be a disaster. And a lot of companies that were using those semi-knocked down SKD, the monitor refurbishing factories in China, you know, boy, it was a great decade from about 2001 to 2011 selling to those factories. But came 2012, they just stopped buying. Suddenly, the factories, some of them were still there, but they were switching to LCD monitors. Or they were still remanufacturing the CRTs, but they could now

get them from office buildings in Kuala Lumpur or Shanghai. They no longer needed, we were not the Saudi Arabia of reuse anymore.

And I saw a lot of reuse-based companies just crash in a very short period because they didn't have a market for the bad CRT glass, which went from 80 percent of the CRTs to 100 percent, or 98 percent, overnight.

There was some reuse market left in Africa. But that was nowhere near the scale of the refurbishing factories in Asia. So the hard part about the 20 percent reuse that's so important to our culture here is that it's constantly changing. You can see a flip phone for what it can do, rather than for what it cannot do, which is to provide service to somebody in Accra or Lagos. But that flip phone market can change really quickly. The Chinese are now remanufacturing the old smartphones. They buy them back. And similar to the CRT rebuilding into TVs market, they're buying back used smartphones, removing the boards and the key components and building a whole new phone around them. And selling those to Africa for a lot cheaper.

You have to constantly be on your toes. You have to constantly look at what the next new market is. We had to make the transition, while those 17-inch monitors were 80 percent of our revenue ten years ago, it's now zero percent. But we're now making about \$50,000 a month on parts from large flat screen TVs. So I'm researching those now. And it makes this the most interesting type of recycling, to me. I think if I'd stayed in paper recycling, or bottles and cans, that my life would be easier now, because it doesn't change that much. But that's what makes electronics recycling so much fun.

47:31

Nickerson: So what are the most common types of electronics that you're, or materials that you're handling now today?

Ingenthron: The large LCD and LED and plasma televisions, that's become our forte. We're now delivering printers or CRT scrap to other big shred companies and buying back their large flat televisions. I've hired two Ghanaian technicians that I met on a trip to Ghana. They're getting their visas. They're going to fly here this winter and help coach my staff on what they should be looking for. Because almost all of our parts reuse sales are to American TV repair and do it yourself market now. But some of the older ones we think we could really remarket overseas if we have a different type of expert look at them and see something different. We're hoping they're going to see some of the parts that we see as aging on the shelf as potentially good for them.

We learned. The liquid crystal diode, which is this very thin type of glass plasma, it's liquid crystal. It's this sheet on the outside of the back light. When that gets broken, it's very expensive. Nobody can really afford to replace it. But what I saw the Africans doing was the back light itself, the big rectangular lights, they were using them as ceiling lights. And I had the idea with the guys, I said, "Hey, what if we printed out a sign on front of it." And that's now

turned into a whole new business in Ghana. My partners there that I met from selling laptops to, you know, six years ago, they're now getting into the flat screen reuse business.

I actually flew my son, who's a college student, there last summer to apprentice for the tech sector, for the flat screen repair guys, in Ghana. Because I want my kids to see these people the way I see them, which is like my grandparents.

So that's the next thing is we're already very good, for an American company, at finding the good parts. And we're doing more market research in Africa to find out how we can squeeze even more value. I can show you a YouTube video of it later if you want.

00:50:34

Nickerson: So you're handling a lot of flat screens. What else? What are some other of the electronics that come in here that you're handling?

Ingenthron: The big CRT televisions still keep coming in. That's still the largest portion of our weight.

Nickerson: Wow.

Ingenthron: People wind up moving those into a child's bedroom ten years ago. And some of them are still in the bedrooms. Some are in the attics or garages. They're still coming in, but they're changing. Fifteen years ago, everywhere you looked was white CRT monitors from desktops. Those we now sell as an antique on eBay. If I could have just kept all of them and put them under a big tarp in the desert twenty years ago, I don't know how much money I might be making. But it constantly evolves, the current mix is still mostly the large, usually black CRT televisions. The wood ones that were a huge portion of the weight 15 years ago are now almost gone. So it constantly evolves, what comes through. But right now, it's probably 50 percent the old CRTs, 10 percent the projection screen TVs, the big wood things. After that, the most common is printers. The computers are going down in number. The flat screens are increasing.

00:52:21

Nickerson: What about cell phones?

Ingenthron: The cell phones, that was a niche that we've always had some activity in. But we never really made it our pure focus. Something I regretted six years ago and was delighted to have ignored three years ago. (laughs) Because that market cycled very, very quickly. Yeah, it's still a part of the business. It's not a very high percentage.

Another big change is lithium batteries. They're in more and more devices. If you look up lithium battery fire on YouTube, you can see some very interesting videos of what happens

when charged lithium is exposed to oxygen. See what happens when you cut one of those batteries just in half. And they flame, they burst into flame.

We're relatively protected from that because we're manual disassembly. We're not shredding. But even at our place, we've seen a forklift run over a lithium battery and see the sparks fly. So that's a huge change in our industry, and particularly for big shred. For the companies that are going after the fast nickel. They're now having to employ people to screen electronics for batteries, or [their facilities] will burst into flames.

00:53:52

Nickerson: Could you pick one item for me and walk me through--just to give people a sense of what happens here—walk me through what happens from when it comes in the door, or when you guys pick it up, to whatever it happens while it's here. Whether it's de-manufactured, or—

Ingenthron: Sure. Well, the first thing, one of our drivers, Crystal (Johnston – also interviewed for the Occupational Folklife project), Pat, Peter, Ben, shows up at the loading dock with a truck full of these large four by four foot Gaylord boxes that are filled with all kinds of electronics. So Crystal, Pete, Pat, or Ben have to pull that off, get the weight for us to invoice the client or invoice the manufacturer.

From there it goes into the sorting department, where the guys just have to know the 20 percent of information they need to know to separate 80 percent of the stuff where it should go. So the folks in sorting are very quickly sorting very large CRT TVs, doesn't matter if it works, now it's waste. They no longer do as they did ten years ago and separate certain models from others. Those are all going to get scrapped today. The printers, they'll stack in a different box. We will deliver them to a competitor or partner in shredding. Flat screen TVs, we look for vintage antique stuff that there might still be a collectibles market for.

And then what you'll mostly see at this plant now are the big, flat TVs. Those you'll see get triaged further into Grade A LEDs, Grade B LEDs, Grade C LEDs. Grade A and Grade C plasmas. LCDs. They'll wind up at different tables to be parted out by different people.

The disassembly process initially looks the same as if we're disassembling an old computer, like Sean (Fahey, also interviewed for the Occupational Folklife project) does, taking apart the screws and putting the green boards with gold into this box, the white plastic into this box, black plastic into that box, etcetera. Hand disassembly.

But with these flat screen TVs, once they remove the back, you know, the initial black plastic part, we then photograph the back of the TV, optical software that we're developing to be able to identify each and every board from the photograph on the back. We can then post all the parts that that TV has available. So they'll plug it in, even though the liquid crystal is broken and we know that it's unrepairable. By plugging it in, we know if the back lights work. We can tell if

the soundcard works, the video cards work. Then they're going to get parted out, photographed every part, and marketed online.

The other stuff, we either manually disassemble it to bale the plastic, to sell to plastic recyclers, the steel, the aluminum, etcetera, like Sean does with the hard drives. Or send it to another company that has automated that in exchange for something they can't shred. Usually they are display devices. Which then go back through our triage process through sorting to get them graded by part. And then photographed as they're disassembled.

00:57:28

Nickerson: You've been really generous with your time. I've got two more questions. What aspect of building this business and doing this work are you the most proud of?

Ingenthron: When I was in my twenties, I met a paper recycling mill owner, Shelly [Appel?] in Mattapan, Boston. And he said he used to recycle newspapers into pizza boxes and shoeboxes. But he said now he realizes he recycles people. That the jobs he was creating in Mattapan were worth more to him than the boxes that he was making. And I kind of feel the same way. I feel like we are recycling the reputation of the geeks of color of the tech sector overseas who are just profiled horribly, and by very good, environmentalist people. And you'll see that we recycle people here, too. Our Americans with Disabilities Act program won an award. Women truck drivers, retired fifty-something, sixty-something males whose plastic injection molding companies are gone. Repurposing people, I think, is the big picture. And yeah, being able to see the Ozarks as something other than hillbillies is something that we're able to do here in the Green Mountains. (knocking on door)

00:59:11

Nickerson: And then last—someone need to come in?

Ingenthron: That's Sean.

Nickerson: Should I stop?

Ingenthron: He can wait.

Nickerson: So, last question. Are there things that we haven't covered that you would like the public to know about this kind of work?

Ingenthron: I think I've covered everything.

Nickerson: (laughs) Okay. Well, Robin, thank you so much.

Ingenthron: Thank you, Ginger.

Nickerson: I really, really appreciate it.

59:40

[End Interview.]