

Oral History Center
The Bancroft Library

University of California
Berkeley, California

Global Mining and Materials Research Oral History Project

Leonard Harris:
Seventy Years in Mining Communities around the World

Interviews conducted by
Paul Burnett
in 2015

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Leonard and Rosa Harris

Leonard “Len” Harris has been involved in the mining for the past seventy years. He was born in Queensland Australia in 1927 and graduated as a metallurgist from Mount Morgan Technical College in 1949. From there he distinguished himself in various roles in mining operations in Australia, Ghana, and Peru, South Africa and elsewhere, eventually becoming the Director of Newmont Exploration Ltd. Mr. Harris is also known for his work in Peru in health and education programs through ADAMINYA, an organization he founded with his wife Rosa. In addition to his many other awards, he is the recipient of the Gold Medal from the Mining and Metallurgical Society of America. As of 2015, Mr. Harris is still consulting for the industry and remains an active participant in mining associations.

Table of Contents—Leonard “Len” Harris

Interview 1: February 14, 2015

Audio file 1, Part 1

1

Family background in Australia—nationalities of miners—education at Mount Morgan Technical College, metallurgical engineering—first job at Mount Morgan mine, 1945-51—transition to Mount Isa mine (ASARCO) as a chemist/ assayer, and brief work at Radium Hill—the importance of leaving home country for career advancement in the industry—Italians in Australia—brief travel to Italy—work as assistant superintendent at Tarkwa Aboso gold mine in Ghana, 1953-55—contraction of malaria and dysentery—partial recovery in London—importance of getting into mine operations—move to Cerro de Pasco as Director of Metallurgy—cultural, linguistic, and altitudinal adjustment—marriage to Rosa—gradual “peruvianization” of mine staff— coping with terrorism when returning to Peru in early 1990s, opening a mine with all-Peruvian staff

Audio file 1, Part 2

18

Managing the problem of bismuth in copper ore at Cerro de Pasco—nationalization of mines in South America in the 1970s—Peruvian hyperinflation in the 1980s—impossibility of continuing to work in Peru in early 1970s, left with Rosa for western Australia to develop a salt mine, Texada Mines—working with unions in Australia—power of positive approach and delegation in management—reducing engineering mistakes—basic mine design and management principles—move to Newmont Mines, assessing efficiency of existing and new projects worldwide—developing a mine in Zarafshan, Uzbekistan, the town that never existed— bringing managers together to counter “negativism” in operations—the political and social context of mining, Apartheid—incorporating environmental thinking into mine management, and partnering with the communities surrounding mines

Audio file 1, Part 3

37

Yanocoha: opening a mine in Peru from scratch—ideal gold deposit for heap leaching—bringing heap leaching to Peru—poor community relations, Harris’ commitment to preventing violence—private mine security as circumnavigation of police and army— Rosa Harris’ role in community development, health and education—personal change in attitude of mining, taking over some of the functions of the state—providing surplus treated water to community—health of mining industry in United States—regulatory overreach of EPA—participation in professional associations—future of mining is in communicating with affected communities

Global Mining and Materials Research Project

For over twenty years, the Regional Oral History Office (ROHO) produced in-depth oral histories of members of the mining community, under a project called "Western Mining in the Twentieth Century," which was overseen by Eleanor and Langan Swent, Douglas Fuerstenau and others. <http://bancroft.berkeley.edu/ROHO/projects/mining/index.html> The 104 interviews in the project covered the history of mining in the American Southwest, Mexico, South America, and Australia from the 1940s until the 1990s.

ROHO has recently changed its name to the Oral History Center of the Bancroft Library, and with that change we proudly announce a new project entitled "Global Mining and Materials Research," which will focus on key transitions in technology, policy, and geopolitics that have brought mining to its current state worldwide.

Much has changed in mining industries in the years since the Western Mining project was in full production, including the increased globalization of mining operations, the decreasing concentration of mineable minerals in ore, increasingly complicated regulatory environments, new systems of environmental remediation, new technology for exploration, extraction, and processing, and new stories of political conflict and resolution. In addition to collecting interviews about mining engineering, metallurgy, and administration, we also hope to explore the history of information technology and data analysis with respect to mining, as well as the legal, regulatory, and policy history of the industries.

This interview was funded with support from the American Institute of Mining Engineers, Metallurgists, and Petroleum Engineers (AIME), the Society for Mining, Metallurgy, and Exploration (SME), the Association for Iron & Steel Technology (AIST), the Minerals, Metals, & Materials Society (TMS), and the Society of Petroleum Engineers (SPE). We are also collaborating with the IEEE to host these oral histories on the Engineering and Technology History Website, located here: http://ethw.org/Oral-History:List_of_all_Oral_Histories. Thanks also to former Western Mining Project Lead Eleanor Swent, Dr. Douglas Fuerstenau, and Noel Kirschenbaum for their advice and support while the Global Mining Project was being established. Finally, we are most grateful to Leonard Harris for taking time out of a busy schedule to speak to us about the evolution of the mining industry over the past forty years.

Paul Burnett, Berkeley, CA, 2015

Interview #1 February 14, 2015

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01-00:00:09

Burnett: This is Paul Burnett interviewing Mr. Len Harris for the Global Mining and Materials Research Project of the business series. It's February 14, 2015. We're here at the Hyatt Regency Hotel in Denver, Colorado. Mr. Harris, welcome.

01-00:00:32

Harris: Thank you.

01-00:00:33

Burnett: I'm glad you could come and speak with us today. You have had a long and wide-ranging career that is ongoing. I want to start back where you were born, and if you could tell us a little bit about growing up in Australia.

01-00:00:56

Harris: Yes, certainly. I come from a mining background. Both of my grandparents were miners. Immigrants to Australia. One was from Ireland, on my father's side, and on my mother's side from Cornwall in England. Do you know where Cornwall is?

01-00:01:21

Burnett: Yeah.

01-00:01:22

Harris: They immigrated to Australia about the same time, in the late 1880s. My grandfather had come from a place called Allihies in West Cork in Ireland. In the early 1880s, it was the biggest producer of copper in the world. Those mines shut down in the 1880s, and most of the miners went to Butte, Montana. Others went other places, but Butte has a great tie-back to this place. I've been there. In fact, we just had, last September, an Irish gathering where people came from all over the world to that little town. My grandfather went to Australia to work in the mines in a place called Charters Towers in the North Queensland. He went with his whole family. They had a big bunch of children. My father was actually born in that town, Charters Towers. On my mother's side, the Cornishmen, they had been in Australia before. My great-grandfather went to a gold rush in Australia, with two sons from Cornwall. They made some money from the gold rush. They made enough money to go back to Cornwall and bring out the rest of the family from North Cornwall. While he was there, he got killed on the farm. They had a farm there. So my grandfather went back to Australia with one of his brothers. He didn't really do a lot of mining. It was more his father and his brothers that were in the mining. He worked a lot in the west of Australia as a sheep shearer, riding horses, breaking horses for the Indian army, and as a jockey.

Anyhow, I was born in a small seaside resort, which is now a large city, on the coast, called Yeppoon, which in the Aborigines language means "lake." I

don't know where they got the name from. There's no lake. The sea is there. My grandfather had an entertainment hall there and a barbershop. Before the war, he was drawn back to the mining. The mines of Mount Morgan Limited which had started in the early 1800s. The mine worked for over 100 years. Very rich gold copper mine. The mine had been shut down, because the mine had caught on fire. There was a strike. The company blamed their workers, the strikers, for setting the fire, and the union blamed the company. Anyhow, it was an underground mine. Around fire, you couldn't work it. But then they started up again. I guess in 1934, when I was like seven years, we went there, and my grandfather opened a billiard room and a barbershop. That's where I did most of my primary education. Secondary education at Mount Morgan High School, and then I went on into a technical college, took a diploma in metallurgy. At the same time, I hired on at the company at Mount Morgan Limited, an indentureship for six years. It was a work-study project for six years to get my diploma.

01-00:05:32

Burnett:

Can I ask you about Mount Morgan Technical College? It's the mining company's college, is that right?

01-00:05:41

Harris:

No, it was by the government. It came under the government. Had nothing to do with the mining company. It was under the Queensland Department of Education. The diploma actually reads "Queensland Department of Education." They taught other things there, too. In high school, I was very good at chemistry and math, and a friend of mine had already started on working at the company under the same conditions, and he introduced me and I got the job there. So I stayed there longer than that. I completed the work after I got my diploma in the mine. They had two concentrators there and a smelter, copper smelter.

01-00:06:46

Burnett:

And the concentrators are doing beneficiation? Are they crushing—

01-00:06:51

Harris:

Beneficiation. Producing copper gold concentrates.

01-00:06:54

Burnett:

So they're using acids and things like that?

01-00:06:57

Harris:

No, the smoke just went up the stack in those days. Now, then came the war. I turned eighteen in July of '45. I wasn't drafted into the army, because it was considered to be a protected industry, making copper, for the shells for the ammunition. As you know, the war finished anyhow in September '45. So I continued working there until 1951, and that's when I went to Mount Isa, which hadn't been opened not too long ago, and belonged entirely to ASARCO at that time. You heard of ASARCO?

01-00:07:45

Burnett: Yeah.

01-00:07:46

Harris: American Smelting and Refining Company. I went to work there as an assayer and a chemist, but I really wanted to get out in the operations, so I got transferred to the mill as a mill shift boss.

01-00:08:01

Burnett: You wanted to be in the operations?

01-00:08:03

Harris: I wanted to be in operations. I didn't want to be a chemist. We used to do the assaying for gold in a very hard place. In those days, there was no air conditioning. People talk about the good old days. I didn't find the good old days. Everywhere I went was hot, very hot weather, high temperature.

01-00:08:29

Burnett: You described, off camera, the temperature in one place being 138 degrees Fahrenheit.

01-00:08:36

Harris: Mount Isa, that reached 120. A hundred and twenty for months after months.

01-00:08:39

Burnett: How do you survive on a daily basis in that—

01-00:08:39

Harris: No air conditioning. I stayed in the staff employees' house. Company housing, you know? Had their own canteen, their little food. Nice breakfast, lunch, and dinner. When I worked the night shift, come off a night shift, it would be 100 degrees in the morning. I had a fan, and I used to wet the bed down, jump into the shower, get all wet, and jump into bed with the fan on me. That would give me enough time to get to sleep. I was there for two years at Mount Isa. I got a letter from the Australian Atomic Energy Commission offering me a job as metallurgical engineer in this place called Radium Hill. It was owned jointly by the Australian Energy Commission and the US Energy Commission. Which, in those days, everything was kept quiet about producing uranium. I worked in another very hot place, in the middle of the desert in South Australia. The guy who was the general manager there was leaving, so I left with him, and we drove to Melbourne, and I took a boat to Italy. It was in 1953, which was the year of the coronation of the queen. It was very difficult to get any kind of transportation out of Australia. I first booked on an American ship Matson Line, which bumped into the wharf in Sydney and sank. That was the time when there was a lot of emigration from Italy. Sixty thousand Italians a month were immigrating to Australia. A lot of them had been there previously, prison of war. The north of Australia is very hot country. A lot of sugar cane growing there, and papaya, and pineapples. Originally, in the colonial days before 1901, there was work by the natives from the Melanesian islands. In 1901, Australia got their semi-independence

from Britain, and they wrote a horrible thing in the constitution. It was called the White Australia Policy. Only whites were allowed in the country. So they deported all these Melanesians and they began to bring in Italians. Italy was in a bad way at that time, just after the war. A lot of them had been in their prisoner of war camps, near where I come from, in fact, because the whole population was very big Irish and Italian, and they began to work the cane fields. They became quite rich at this, too. Later on, when I went back to Australia after I'd been away eighteen years, I thought I'd like to go into this business, sugar cane. So I went with my wife, but it was just impossible to buy the land now, because people were making so much money out of it.

01-00:12:25

Burnett: When were you considering getting into sugar cane?

01-00:12:27

Harris: In Queensland.

01-00:12:28

Burnett: When, though? What year?

01-00:12:32

Harris: When was I there?

01-00:12:34

Burnett: Fifty-three?

01-00:12:40

Harris: No, in 1954. I was a metallurgical engineer at the Radium Hill project. From there, I went on to Ghana. We're not touching Ghana yet, no?

01-00:12:50

Burnett: We haven't, no, not yet. You'd mentioned you were married at that time?

01-00:12:58

Harris: I went to Peru in 1955. I got married in 1957. That's fifty-eight years ago. The same woman. That's a long time, huh?

01-00:13:11

Burnett: That's a story in and of itself, I think.

01-00:13:13

Harris: She couldn't speak any English. Nothing. I could speak some Spanish. I'd been there a couple of years. Was there on contract. Fifty-seven, I got married.

01-00:13:27

Burnett: Let's come back to that. You mentioned that you were briefly at the Radium Hill project in Australia. You were a metallurgical engineer, just during 1953, and you said that this was kind of hush-hush. Was the knowledge of the project kept secret?

01-00:13:47

Harris: Yes, it was, very much.

01-00:13:49

Burnett: You were asked to—

01-00:13:50

Harris: We were kept in a camp surrounded by barbed wire. They had Geiger instruments, which would read the amount of uranium coming in the plant, going out in the concentrate, and that was all locked up, even from the shift bosses. It was a very rare mineral called davidite, which was uranium, titanium, iron oxide. Titanium iron oxide is a mineral called ilmenite. This deposit, it was a mixture of ilmenite and davidite. It would react the same in the plant, in the heavy media plant, and in the flotation plant, with or without uranium. So you think you're making a very nice concentrate, and the boss comes in the next day and reads the Geiger counter, and you'd know you're your uranium count.

01-00:14:54

Burnett: So it was tricky for separation purposes?

01-00:14:56

Harris: Very tricky. Very, very tricky, because you couldn't see—if we could see that Geiger counter, we would know that it was all uranium.

01-00:15:04

Burnett: So you were flying blind—

01-00:15:06

Harris: Flying blind.

01-00:15:07

Burnett: —in your metallurgical work because of this secrecy?

01-00:15:09

Harris: Yeah. Only the superintendent had access to that Geiger counter, which assayed for uranium.

01-00:15:16

Burnett: That must have made it a lot less efficient to—

01-00:15:21

Harris: Oh, yeah, very much. That's the government, of course. That's working for the government. We worked only five days a week. They shut the plant down weekends. It wasn't all that far away from one of the big mining cities in Australia called Broken Hill. I used to go over there every third weekend. I had four days off. I came off shift Friday morning, so Friday, Saturday, Sunday, and went back to work on Monday afternoon shift, every three weeks. Good break from there. There were 200 of us working there at that plant in the mine. All men. There was just one woman, the nurse. I had this chance to go

to Ghana. An industry that I knew better than uranium, gold. Later on, I was exposed to uranium here in the United States.

01-00:16:33

Burnett:

How did you learn about the opportunity in Ghana?

01-00:16:37

Harris:

Through a friend of mine, who started working there at Tarkwa Aboso [mine]. I said, "Here are shift boss." This meeting I talk about with the general manager at Mount Isa, we were shift bosses, and most of us were now middle-twenties. There was one guy there, fifty years old. He came from a very good school, a mining school in Australia, in Ballarat. Had good experience in Fiji. He's still working as a shift boss. I said, my God, is that what I've got to look forward to the next thirty years? Anyhow, the superintendent I knew very well, because he came from Mount Morgan, and he had two assistants. One of them was my age, mid-twenties, and he was assistant superintendent, I said to him, "How come you're below fifty years old?" It was a big problem in Australia, frankly, to get people to go and work shift work all their life. A lot of people were leaving the industry. But anyhow, he said, "You've got to get out of Australia." He said, "I went for one year to Canada and the US. I didn't learn any more there than I could in Australia, but I came straight back as assistant superintendent. You've got to get out of the country." That was the way it was in those days. Colonial thinking, you know?

01-00:18:14

Burnett:

As a Canadian, I completely understand what you're talking about. "Come to the States to make it."

01-00:18:23

Harris:

A couple of my friends, they went to Canada. I got into a situation with a young lady. She was Finnish. A big Finnish population there. My mother liked her very much, but I wasn't ready to get married, so I left there and went to Radium Hill until I could get a way out of Australia, and that's why I left. I left on a ship. It was called the Castel Felice. It was backloading from the immigrants. There were so many Italians entering Australia that the *Sydney Morning Herald* had a competition for the typical Australian. Somebody wrote in and said, "Well, he has to be Italian, because there's more Italians than anybody else in this country." Indeed, hundreds of thousands went from Italy. Italy was in bad shape economically. They didn't care about the heat of North Queensland. Worked hard cutting cane. They became very prosperous, because they started off as just workers. They were brought to Australia on a two-year contract. Paid five pounds to go. But they had to go where the government ordered them to go, where they needed labor in Australia. Quite a few of them came also to work in Mount Morgan, in the smelters, and Welshmen, too, in the mining end of it. Anyhow, where are we now?

01-00:20:06

Burnett:

Other people that I've spoken with have talked about these mining families. The Cornish and the Welsh and the Irish are very prominently represented in these generations of miners, worldwide, and Cornish especially.

01-00:20:27

Harris:

Yeah, true.

01-00:20:29

Burnett:

So it's interesting to hear you talk about this.

01-00:20:32

Harris:

My background is Irish-Cornish, but there were a lot of Welsh also, because they were miners and whalers. I'll tell you a little side story about it. It's kind of interesting. They were very short people, and they spoke their own language, Gaelic. I didn't understand a word what they were saying. They'd turn around and speak to you in English. Might have well just carried on in Gaelic, because they had such a broad accent. They were good miners. They mostly went into it. The other ones that were good miners in Australia, too, which came in great quantities, were the Finns.

01-00:21:12

Burnett:

The Finnish? Okay.

01-00:21:13

Harris:

Finnish, yeah. I think Canada, too. They were mining in Canada. Anyhow, that's—

01-00:21:22

Burnett:

So you ended up in Italy, briefly, but you had found out about this opportunity in Ghana. Did you go directly from Italy to West Africa after that?

01-00:21:32

Harris:

No, I was on my way to West Africa. The ship just boarded for Italy. It was an Italian ship. That was as far as I could get, getting out of the country. As I told you, the ship sank, and everybody was taking all the other transportation, by air and ship, for this coronation of the queen.

01-00:21:54

Burnett:

Right, '53.

01-00:21:56

Harris:

So I had to wait quite a while to get a means to get out. When I got the means, that's when I went on the ship. It was a terrible ship. There were terrible conditions. They jammed them in like sardines in those immigration ships like the people came here. It was an old ship. It belonged to Sitmar Line, it was called Castel Felice. Across the Great Bight of Australia, the south of Australia, very rough seas and very high winds. In Australia, the ship was going backwards. It took us several weeks just to get across the Great Bight of Australia, and then up to the Suez Canal. They were in some kind of a war at

that time with Israel and France, and there were Jews onboard the ship, so the Egyptians wouldn't allow the ship to go through the canal. So I got off and went to Egypt. I got to see the Pyramids and whatnot. After the people left the ship, I came back and the ship continued on to Genoa. I was just on my way to England. I had a letter of introduction. A good company called American Cyanamid Company. They're now called Cytec. I had a letter from the president in Australia to the president in England, a letter of introduction.

Anyhow, I sat down in a bar in Genoa and ordered a beer, and the guy sat and talked to me in Italian. I said, "I'm sorry, I don't speak Italian." In those days, I had the strong Australian accent, of course. He said, "Are you from Australia?" I said, "Yeah." He said, "I spent two years in Australia." I said, "Yeah?" He said, "Yeah, I was a prisoner of war at a place called Wowan ten miles from Mount Morgan."

01-00:24:06

Burnett:

How about that?

01-00:24:09

Harris:

They didn't consider the Italians as being bad people, because they've been there for a long time. They worked on the farms there, and they were allowed to come into town on weekends and go to the bars. They had all the freedom, except that they couldn't leave the place. They were very good immigrants. They still are good immigrants, Italians. Anyhow, finally I got on to London. The guy said to me—I presented my letter. "Oh," he said, "we've been waiting for you. Where have you been?" I said, "Well, I stopped off in Italy a little bit." He said, "We've got a job for you in the Congo." Congo? All I've heard about the Congo is that they eat people there. Three-year contract. I didn't like that idea too much. In a uranium mine.

01-00:25:06

Burnett:

That's a commitment.

01-00:25:07

Harris:

Yeah, that is a commitment, three years. I said, "I find that a bit much." He said, "What about the Gold Coast?" It was the Gold Coast in those days, before it was Ghana. I said, "Well, tell me." He said, "They have short contracts. If you work underground, it's a one-year contract, followed by three months vacation." He said, "What do you want to do?" I said, "I thought I'd take a little time to look around Europe." He said, "You go to the mill. That's where I want you, as the assistant superintendent. They have a fifteen-month contract, followed by three months vacation. So you want to go there, then you can come back, take your three months vacation in Europe at their expense." So that's what I did. I went to Ghana. It was quite an experience. It's one of the things I cover in the paper, knowing the culture. I didn't know anything about the culture, and I must say most of us were pretty ignorant about culture. Even within our own country, there's big, big differences from the north to southeast. Ghana was worse, that they spoke thirteen languages,

official languages, including English, and including giving the new by drums. It was a hot, stinking place. They had a long, wet part.

01-00:26:41

Burnett: Wet season?

01-00:26:43

Harris: It rained continuous, day and night. Then they went into so-called dry season, where it only rained at night. Heavy, heavy rain. It was full of wild animals. Leopards, particularly.

01-00:26:57

Burnett: Leopards? Hm.

01-00:26:58

Harris: Yeah. So you get all these insects banging on your window, and no air conditioning in. Then the rats would come after the insects, and the snakes would come after the rats, and then the final end of the chain is the leopard. They had a cult, which they called the leopard men. Very dangerous people. They'd dress up in leopard skins and go around killing people. It was a British colony at that time, and they arrested some of these people and hung them in the public square. But that didn't convince anybody at that time. They were people, but at other times they could turn into leopards. Some very intelligent, well-educated people in Ghana still believe that.

01-00:27:57

Burnett: It's a powerful narrative.

01-00:28:03

Harris: I liked the job. It was a good job. It was a gold mine.

01-00:28:05

Burnett: This is in Aboso. Is that in the Ashanti Goldfields?

01-00:28:09

Harris: Yeah, further south from Ashanti. The company was called Tarkwa and Aboso. That mine shut down. That's what I remember. That's another question. They opened up another mine near there called Tarkwa by Goldfields. A very rich mine. They're still operating it after I left. When I was there, there were three mines. Because I worked in the mill. I was on top of one of the mine shafts. The other two were further out, and they brought the ore in by ropeway to this mill. At that time, it was only thirty-five-dollar gold. Underground mine. Even though the labor is cheap, it was still very difficult to keep on the profit side. It finally shut down. It just couldn't make it at that price.

01-00:29:07

Burnett: In 1953 to '55, this is just prior to the independence of—so Gold Coast becomes Ghana in 1957.

01-00:29:17

Harris: Yes, while I was there.

01-00:29:20

Burnett: Yeah, or just prior.

01-00:29:21

Harris: Kwame Nkrumah. Kwame Nkrumah took over. They had—what do you call it?—freedom, if that’s the right word.

01-00:29:32

Burnett: Independence?

01-00:29:33

Harris: Independence, partial independence, in Ghana. Outside of Ghana, the Brits still controlled over there. We had a mixture of people there again. There were Welsh, Irish, and Cornish miners. But there was a lot of South Africans, because the ground, the mining ground, is very similar to the mines in South Africa. When that happened, about the independence, they expelled all the South Africans, because they got into this business of apartheid around that time. That made it a little difficult to work the mines. Later on, when I was working in New York, the bankers came to see me. They said, “Get these mines going again in Ghana.” I said, “Well, you have to bring the South Africans back, because they know how to mine that type of mine.” Which they did. They’re back there now. They’re doing very well there now. Newmont has two mines there, and lots of other people are there. But it was difficult country, and I got bad malaria. I had dysentery.

01-00:30:55

Burnett: How was your malaria treated, do you remember?

01-00:30:57

Harris: How was what?

01-00:30:58

Burnett: How was it treated?

01-00:30:59

Harris: With quinine. Paludrine was the tablet that we took. Paludrine. But it didn’t do any good.

01-00:31:07

Burnett: Oh, it’s terrible.

01-00:31:08

Harris: The mine I was on was on the lower edge of profit, just had gone broke. They used to have people come around and cut the grass around your house, because the mosquitoes like to breed in the grass with all this rain. They had a central station where they boiled the water and delivered to your houses. I stayed in a house with the general foreman. They decided to stop cutting the grass. It was the worst mine in Ghana for malaria. They decided that you get

your servant to boil the water. Didn't work, because the servant didn't do it, "stupid white men." you know? So we all got bad dysentery I had it for years and years. It wasn't until I got married that I got rid of it. Amoebic dysentery. Very bad.

01-00:32:10

Burnett: Yeah, those things stick with you, especially malaria.

01-00:31:13

Harris: I left there. I got a bad malaria attack in London and I spent a week or so in the Hospital of Tropical Diseases in London. Then I went on to New York and into Peru. The day I arrived in Lima, I got another attack of malaria. I went into the hospital in Lima. We had a system where you had vacation every six months to get down out of the altitude. That first six months vacation, I got attack of malaria, and I've never had it since. It's gone. My wife cured it. She cured the dysentery by washing everything, boiled raw in Clorox, to kill the bacteria. I'd have the dysentery, I'd go to the hospital. They give you some medicine, stop the dysentery. A week later, I went back again. Every week. I think, right now, I don't know how dysentery is, but I know that you still die from malaria.

01-00:33:27

Burnett: Oh, yeah. I think it's worse because of the dam, the Akosombo Dam.

01-00:33:31

Harris: Now there's some very bad strains of malaria. I knew a guy, ambassador to Uganda, and his daughter came to visit him. In a week, she was dead. Got a bad strain of malaria and it killed her.

01-00:33:50

Burnett: They're resistant now to the various forms of treatment.

01-00:33:54

Harris: That's right.

01-00:33:55

Burnett: That makes it a lot more difficult.

01-00:33:57

Harris: Well, I tell you, quite frankly, Paul, I blame it on this banning of DDT. Because DDT, you sprayed around the houses everywhere to kill the malaria. It was just bad science, I tell you, greatly. There was a big article about it in the *Globe and Mail* that I had one time, what's wrong with it. Banning DDT has been responsible for the death of millions of people in West Africa, all over. They're back now to spraying the inside of the houses, and the mosquito nets, with DDT. It wasn't a very pleasant time, I tell you. A lot of killing between tribes is a typical case of not knowing the culture.

01-00:34:52

Burnett: Of the mining company not knowing the culture? Or in terms of—

01-00:34:57

Harris:

The people. The people. The tribal system. They were very, very divided. I don't know if they still are. One thing in those days, I was just thinking recently, we had both Muslims and Christians working in the plant. No problem. No problem. We had to allow the Muslims time off to wash and pray. No killing happened. That never happened, because they lived peacefully and worked together there. Muslims came from the north, and the Christians from the south. There was no problem between them. What caused all this problem now, Paul? It's a serious, serious problem.

01-00:35:46

Burnett:

Things outside of Africa, I think. There's a lot of stimulation of animosity from outside coming into West Africa.

01-00:35:54

Harris:

Yeah, Nigeria. Well into Nigeria. I don't know about Ghana. I haven't heard any problems with Ghana still.

01-00:36:05

Burnett:

They seem to be going through a phase of prosperity now.

01-00:36:08

Harris:

They are? The gold? Of course, they grow a lot of cocoa, too.

01-00:36:14

Burnett:

Yeah, and oil. Now they've found oil offshore. So it wasn't a great experience, but you got out of Australia, which was important for your career.

01-00:36:27

Harris:

I left because the mine was losing money.

01-00:36:32

Burnett:

Out of Ghana. You left because it was not—

01-00:36:35

Harris:

Were you talking about Ghana?

01-00:36:36

Burnett:

I was just talking about the strategy of leaving Australia worked for you, because it—

01-00:36:40

Harris:

Yeah, it did work. Because, like this guy says, you have to leave Australia. Well, he came back as assistant superintendent I came back as general manager. If I hadn't left Australia, I'd probably still be a shift boss. Probably not that way now, but that's the way it was.

01-00:37:04

Burnett:

You also mentioned that he said you weren't necessarily doing different things in Canada or the United States, but because you had left, they regarded that you'd moved up somehow. In Ghana, you were a technical officer—

01-00:37:20

Harris: Yeah, which is like assistant superintendent. I was in charge of all the technical things and the metallurgy.

01-00:37:26

Burnett: But this is a management position?

01-00:37:28

Harris: It's a management position. Management position.

01-00:37:31

Burnett: So that helped you in the next step to the next phase of your career?

01-00:37:35

Harris: Yes.

01-00:37:38

Burnett: How did you find out about the opportunity in Peru?

01-00:37:44

Harris: A friend of mine. The mine was going dead. This guy, he also was an Australian. He said, "You know, you might think about going to South America." He said, "I was in Bolivia for a couple of years. Got a contract there." But in Bolivia, in those days—this is in the fifties we're talking about—was a big mess, too, with the Bolivian strikers in the mines and terrible problems. I said okay. I read in the magazine they were looking for research metallurgists in Peru, Cerro de Pasco Corporation, which is an American company based in New York City, but operating in Peru and Chile. I applied for the job and I got it. I had an interview with the director of the research department in London. He was also taking up his position at the same time. New director. He was English nationality, but born in Germany. His name was Jacobi. He was Jewish. He had to get out of the country. He was a metallurgist like I was. Very soon, I got promoted to senior metallurgist I spent several years there, and again, I wanted to get into operations.

Oh, I should go back to Mount Isa, how I got out of Mount Isa. In Mount Isa, the head of the lab—I was working in a lab—the assayer said, "If you can find your replacement, we'll let you go into the plant." Of all people, the guy who lived next to me in Mount Morgan was interested. They were paying a bonus. They call it a lead bonus, just based on production of lead. It was a very good bonus. It was something like 50 percent of your salary. That's why a lot of people went there. I talked him into taking the job, and it allowed me to go out in the plant.

01-00:40:21

Burnett: Can you talk for a little bit about what's attractive to you about being in operations as opposed to being on the lab side or the assayer side?

01-00:40:33

Harris:

For one thing, Paul, money talks. They always paid higher in operations than in the satellite places, like laboratories or that kind of thing. And I liked it. I preferred to be in operations. You're producing something, something tangible. It was usually the concentrator or metal. That's why I really went into the operations in both places.

01-00:41:05

Burnett:

I imagine in operations, you have to learn more about the total operations of the mine. In order to understand your piece of it, you have to understand the flow of the processes—

01-00:41:17

Harris:

This Cerro de Pasco was a huge, huge operation. Shut down right now. It's about to be sold off. There are eleven bidders now bidding on it. I became a metallurgist in the lead smelter and the copper smelter. I finished up there as the director of metallurgy, which was over all the metallurgy from the plants, the smelters, the refineries, in charge of everything. I had thirty metallurgists working for me. Another thing I found out from American Management Association, you can't have thirty people reporting to you. You just can't have that. You should only have about five or six people reporting to you. So I promoted six of them to senior metallurgists, and only had six people reporting to me. American Management Association gave very good courses. You could take them at the mine. You didn't have to come to New York to do it. I don't know how they are these days, whether they still give these courses or not.

01-00:42:33

Burnett:

Perhaps you could describe coming to Peru. Coming to Peru, and your first arrival at Cerro de Pasco, because it's a giant operation.

01-00:42:50

Harris:

Going back to this culture thing, in Ghana, before we left for Ghana, you had an interview with the psychologist. "What do you think about working with colored people?" I don't have any problem. But some of the English did. They arrived on site, and they were on the next train out. They just couldn't manage that culture shock, which I found quite strange, because we never had that in Australia. The same thing happened in Cerro de Pasco. Some people came there, they couldn't speak the language, they didn't like the conditions, the high altitude, and they take off right away. That's the gist of that paper, the importance of knowing culture. I gave that lecture, as a matter of fact, just in Peru in December. I was godfather, they call it in Peru, of twenty-two graduates in mining engineering from the University of San Marcos, which incidentally is the oldest university in the Americas, started by the Spaniards 500 years ago. I gave that lecture to them about the importance of knowing the culture before you go. Looking back on it, I said to my wife, "If I had known all the things about Ghana beforehand, I probably wouldn't have went there." Probably would never have went, because it was not a decent place to

work in, climate-wise, illnesses, war between the tribes—every Saturday night was bedlam, riding over to the next village to kill everybody. I probably never would have went there if I had known that culture beforehand.

In Peru, too, very different from one part of the country to the other, Paul. People from the north, the south, the east to the west, very different cultures. It's not only a thing of knowing the culture for foreigners. I put a lot in for some of the language, which is needed, too. You need to learn the language. But the language is not enough. All these people from different parts of Peru, they all speak Spanish, but they have very different cultures. Very different. I had thirteen superintendents, different parts of the country, and they had to be treated differently because of their culture. Actually, I liked it in Peru, because I stayed there sixteen years. That's a long time.

01-00:45:52

Burnett:

That is a very long time.

01-00:45:53

Harris:

I really liked it. It was a good company, American company with all the good conditions of America. I had a contract. My first contract was two years and nine months, followed by a three-month vacation. Then afterwards, you could do two-year contracts if you wanted—two months contract. You had fifteen days vacation every six months to come down out of the altitude.

01-00:46:28

Burnett:

To adjust.

01-00:46:28

Harris:

Where I worked was not one of the highest places in Peru, but it was 13,000 feet. That's fairly high.

01-00:46:36

Burnett:

It is.

01-00:46:38

Harris:

Some people couldn't stand it because of the altitude. But later, when I went to Yanacocha, that was over 4,000 meters.

01-00:46:48

Burnett:

What are the effects of high altitude that people experience?

01-00:46:52

Harris:

Your heart speeds up. Your heart is circulating the blood through your body. The air contains one-third less oxygen. So if you get the required oxygen to your lungs, you need to breathe harder, and the heart beats harder. Lots of people have heart attacks from it. They call it mountain sickness. They get it here in Colorado. People get it. Absolutely the best treatment for it is to drink coca tea, which they make cocaine from. You just take the leaf and put it in hot water. Of course the Indians have known this for centuries. It calms your body down so the heart is not beating so hard. I've seen many, many

occasions where people go to visit, they just go to the mine, they go down, and there's an attack. Until get them off. You have to just leave them with the nurses, with oxygen. It can kill you. Luckily, it never affected me, or Rosa either, but our little girl, who was born there, every time we left the Sierra and went back, we had to put her in the hospital in an oxygen tent for a couple of days. She was badly affected by it, by the altitude.

01-00:48:26

Burnett: It's a large place. It seems vertically integrated. You've got facilities for actually producing wire at Cerro de Pasco.

01-00:48:36

Harris: Yes. Wire bars.

01-00:48:39

Burnett: You're taking ore out of the ground and you're crushing it and you're processing it and making—

01-00:48:44

Harris: Yeah, in different mines.

01-00:48:46

Burnett: And you're making finished products out of it.

01-00:48:48

Harris: Yes, exactly. It's all put into various smelters or refineries in La Oroya, where I was based. But when I was director of metallurgy, I was also in charge of the metallurgy at the concentrators, I used to visit once a month every concentrator with the superintendent, of the concentrator. I liked the country. I liked the people. I very much liked the job. I learned to speak Spanish quickly. In two years, I could speak pretty good Spanish. That's when I met Rosa.

01-00:49:27

Burnett: Was that common for ex-pats?

01-00:49:29

Harris: They gave classes. The company gave classes. I took the first class, stage one. That was it, because I was working with Peruvians, picking it up on the job. There's not a lot of people that speak English in Peru. Not a lot.

01-00:49:54

Burnett: Were there others in your level who did not really pick up Spanish?

01-00:49:59

Harris: Some people had a lot of trouble. Some people had a lot of trouble speaking the language. I have a friend, an American friend in Peru. Still today, he speaks broken Spanish. He's been there since, oh, I don't know, fifteen years or so.

01-00:50:17

Burnett: There's a wide range of aptitude.

01-00:50:19
Harris: Some people can't adapt to it. You really have to if you're going to work there.

01-00:50:26
Burnett: Speaking of your ideas about culture and knowing the culture, that's kind of an essential piece of it, is to learn a language to be able to communicate with people.

01-00:50:37
Harris: Absolutely. They put emphasis on learning the language. They did. Another thing that Cerro de Pasco did, Paul, was a very good thing. Every year, we took seven or eight students, Peruvian students, and sent them here. Colorado School of Mines, South Dakota School of Mines, Montana Tech, University of Arizona.

01-00:51:03
Burnett: The company did it itself?

01-00:51:04
Harris: The company did it. The company did it. They don't do it anymore. A lot of those people became very big men in the government and in the industry. In fact, the chairman of Newmont was a scholarship guy. My son was a Newmont scholar also. Foreigners, they went into a three-month crash course in English before they went into university to take their master's degree. They've stopped that now. I've been trying to revive it. People are very keen on it, but I can't get the companies interested in it. There are a lot of students in Peru that would like to come here to take their masters, but how are they going to be financed?

01-00:52:00
Burnett: Was it a question of the time? It was the Cold War, and there was a concern about the United States being a good neighbor to South American countries.

01-00:52:14
Harris: It switched from the time when I went to Cerro de Pasco. The staff. I think it was something like 400 people—working for the company. All the staff were foreigners except one. When I left, there were about ten foreigners left. The idea was to Peruvianize, which makes a lot of sense. Makes a lot of sense. Because to bring foreigners to begin with is very expensive. They come on contract. They get conditions that are better than the Peruvians, which creates ill feelings, too. That's why I started in a culture with all Peruvians and I was the only foreigner, the general manager at Yanacocha.

01-00:53:11
Burnett: That's an amazing transition right there.

01-00:53:14
Harris: When we were talking about going to Peru, Newmont said, "How are we going to handle this? How are we going to handle the staffing, and how are we going to handle safety, security?" Because terrorism was in force in 1992. We

started working on the project in 1980. I left Peru in 1971, and I started going back again from New York, because I came to work for Cerro de Pasco in New York, to Peru every three months. The president of the company was a guy called Peter Philip. He was South African. I said to him, "I can do this job, and I don't need any foreigners." He said, "Okay, go ahead. Try it." He came down to meet with the minister of mines a year later. I knew the minister of mines. We'd worked together in Cerro de Pasco. He couldn't speak English, so I had to be an interpreter. The idea of the meeting was, what are you going to do about terrorism? The minister of mines actually had a good answer. He said, "We're going to cut the head off of the snake." That's exactly what they did. They captured the top man in the Shining Path, and it died. The snake kept moving for a while, but it died. Coming out of his office, he said to me, "You know, Len, when you said you could do this job with all Peruvians, there was a lot of resistance." He repeated it. "There was a lot of resistance." You know what he said? "Congratulations." I'm very proud of that, Paul, to tell you the truth, that I was able to put that mine into production during the time of terrorism with all Peruvians. I'm very proud of that.

01-00:55:27

Burnett:

Let's take a break and we'll talk about that in great detail, because that's an important story. [break in audio]

[Audio file 1, Part 2]

Burnett:

When you arrived at Cerro de Pasco, you were impressed by the size and complexity of this facility.

01-00:55:48

Harris:

Yeah, and I previously knew something about it. I had been made aware of it by going into their office in New York before I went there. The day I arrived, I got a malaria attack. I went to the hospital. Came out of the hospital. This is March, now, of 1955. I went into the research department, research metallurgy, and we worked on a lot of different projects, different orebodies. Like you say, all the way through this integrated from the mines, through the mills, down into the smelters and the refineries, finished product. We produced high-grade metals, very high-grade. The problem we had was with copper. Copper was high in bismuth, and bismuth is poison for copper. It makes it brittle. When you draw it into wire, particularly very thin wire, it breaks all the time. I got called up to New York when I was there. The metallurgist in New York said "We make very good quality metals. All the metals are there that we produced, except for copper. Need to do something about it." The only thing was that we can say about it, we were selling the copper to China, and maybe it blew up in their face in the Korean War. But we never could solve that problem. Bismuth is just deadly for copper. It was a very successful company. It was the biggest tax payer in Peru at that time. Then it was nationalized. One of the minister of mines made a talk one time. Cerro de Pasco went from the biggest payer of taxes in Peru to the biggest drain on the government by nationalizing.

01-00:58:27

Burnett:

A number of significant South American economies were too dependent on the metals industry. Chile, I think 70 percent of government revenue came from copper—sorry, from Anaconda and the other operators there. How does that affect the politics in those countries?

01-00:58:54

Harris:

Turned very much to the left. Peru is famous, or infamous, for all of the military dictators they've had over the years. They were all rightist dictators until '68 and this General Velasco Alvarado took over, a leftist. He denied being a Communist, but they were following the Yugoslav line, that you could own some of your properties, and if you had less people employed than others, then you could keep it. So it was a partial Communist.

01-00:59:40

Burnett:

Mixed market, yeah.

01-00:59:42

Harris:

They nationalized a lot of industry. It was very turbulent times. Lots of strikes. Strikes, strikes, strikes. They were under the influence of—or trying to get under the influence—of Cuba. Cuba was creating problems there. Che Guevara went through Peru. Clearly, they made it just pretty well impossible for foreigners to live there. They made people bring all their bank accounts back to Peru.

01-01:00:19

Burnett:

So you couldn't hold foreign currencies?

01-01:00:21

Harris:

Couldn't hold foreign currencies. They made no doubts about it. They would open your letters quite brazenly. If you had a bank account outside, you had to bring all your money back. It became increasingly more and more difficult, beginning, as I say, with the foreigners, but then later spreading to the Peruvians, too. They had this junta. They figured they knew everything. They went to school. They'd go to what's called "*escuela de military*," something like that. They learned a bit of law, a bit of engineering, a bit of medicine, and a bit of accounting. They figured they didn't need anybody; they could run it all.

01-01:01:12

Burnett:

It's like the *Ecole Normale Superieure* in France.

01-01:01:14

Harris:

It was running into the ground. Seventeen thousand percent inflation.

01-01:01:22

Burnett:

By the end of the period, by the early seventies?

01-01:01:25

Harris:

They changed the money into what they called the inti [from 1985 to 1991]. Inti in English is the sun. In Quechua. It was one inti, one dollar. A year later, it was one million intis to one dollar. Unbelievable. People didn't have anything. How could you live like that to pay in a hotel, to pay your bill twice a day? Anyhow, I got a letter in the mail from some people that had worked there before and then went to work in Marcona, which is now Chinese-owned. This fellow, he sent me a letter. He said, "We're looking for somebody with your capabilities to run an operation in Australia." I said to Rosa, "It's starting to look pretty difficult here." They wouldn't allow professionals to leave the country. Peruvian professionals couldn't leave the country, or couldn't take out—very little money out of the country. I said to Rosa, "This is only going to get worse." Meanwhile, I got appointed as an advisor to the minister of mines. Took away my passport. And Rosa being a nurse, which is professional. The next thing, they're going to stop her from leaving the country. I arranged for her to go out of the country to stay with a friend in Miami, because I said, "I'm a foreigner. They can't stop me from leaving the country. Sooner or later, I have to go." I saw her off at the airport, and at the airport, they had to bring my passport. It was very difficult times, and all this nationalization left and right. I say the Yugoslav type of Communism, which is—I don't know too much about Yugoslavia, Paul, but there's a guy called Djilas, who wrote several books. He was the right-hand man of—

01-01:03:43

Burnett:

Tito?

01-01:03:43

Harris:

Tito. He was very much against the system. He wrote several books. One was called *The New Class*. The new class was the military. They got everything. That's exactly what Peru was. You go into a restaurant and it's full of military people. You go to sports events, they're all military people. A lot of emphasis on keeping the military. That's not going to work. Sooner or later, this thing is going to collapse. You better get out of here. So I read this and I went back to Australia.

01-01:04:22

Burnett:

Can I ask you, I guess, a personal question? You mentioned that the law required people to hold their money in the local currency. Did you lose a lot in leaving the—were you able to keep your money?

01-01:04:41

Harris:

Paul, there's a black market. On the black market, you got much more for your dollars than other legal markets, because they started on the banks and left with one bank. Government bank. It was the only bank left. When I was traveling now from New York to Peru, you had to declare what money you're bringing into the country, and you had to declare what you're taking out, and where did you change it, to prevent this black market going on. I had it invested in an apartment. I had an apartment in Lima, which was a valuable

piece of property. But I could see that the writing was on a wall. It's not going to be for us. That's why I went back to Australia right after getting the letter from this guy to be a mine manager of the salt operation.

01-01:05:47

Burnett:

We all know how things turned out looking back. But at the time, what did things look like in terms of how things were going in Peru and in the world? How did it feel to you?

01-01:06:02

Harris:

It looked very bad in Peru. But in the home office, in New York, we were exposed to this day-by-day thing. They didn't see why it was a great deal of problem, but they went home to it every day. The world at that time—was the Korean War, no? Sixty-eight was the Korean War?

01-01:06:29

Burnett:

Vietnam.

01-01:06:30

Harris:

Vietnam. So that was going on, was upsetting the world as you know. I've been to Vietnam. I went to Vietnam afterwards. Everything looked pretty grim, particularly in the mining industry. It looked like we were going to go anywhere. The whole place was way down in those days. I was looking at some papers the other day of a project I was working on in Peru. Eighty cents silver. Silver was eighty cents. Copper was seventy cents a pound. Pretty hard to make money at those prices.

01-01:07:15

Burnett:

Silver was eighty cents a pound? Or eighty cents an ounce?

01-01:07:21

Harris:

Silver. Silver was eighty cents an ounce. Copper was sixty, seventy cents a pound. It didn't look very good at all. The mining industry was in a big slump at the end of the sixties, seventies. Then there's nationalization going on, first in Chile, and then into Peru. It made the whole situation worse.

01-01:07:51

Burnett:

There is, I guess, decreased global demand for things like copper? There was a recession.

01-01:07:57

Harris:

They lost. We left talking about that. There's copper in the fish cages. This is only relatively recently that the Chileans grabbed onto this. The fish cages were—meaning particularly salmon—

01-01:08:18

Burnett:

Yeah, the fish farms.

- 01-01:08:18
Harris: Made out of nylon netting, which ultimately rots in the seawater and builds up barnacles on it. That doesn't happen with this alloy that we made with the nickel. They ran with it, and they closed all of their fish farms and expanded copper nickel alloy, the Chileans did. That's very innovative. Of course, today, they're the biggest exporter of salmon in the world.
- 01-01:08:52
Burnett: So there was this creativity that followed on the—
- 01-01:08:56
Harris: With the Chicago boys.
- 01-01:08:57
Burnett: Yeah. We were talking about that a bit off camera, that the tumult of the early seventies gave way to—
- 01-01:09:06
Harris: Was that Friedman was the professor?
- 01-01:09:08
Burnett: Milton Friedman and Arnold Harberger and a number of them. Arnold Harberger was, I think, in charge of the Chile Project.
- 01-01:09:19
Harris: They looked around at what else can Chile produce? Not so dependent on copper. The copper [production] was down. Although I think those mines have always made money, because the high grade of deposits. Easily treatable.
- 01-01:09:37
Burnett: I think the Chilean copper mines produce an enormous proportion of the world's copper, don't they, to this day?
- 01-01:09:46
Harris: It's a third of the world's copper. It's one third.
- 01-01:09:50
Burnett: It's hard to fathom. So there's this tumult, and then it gives way to opportunities for innovation. But for you personally, just before we leave the early seventies, one important, splashy thing that came out in 1972 was the Club of Rome Report. It sounded an alarm, not about the ebb and flow of markets, but about the total supply of essential commodities versus the population of the earth, the human population of the earth, and the projected growth in the human population.
- 01-01:10:43
Harris: We're going to run out of these.

01-01:10:44

Burnett:

Right. It's just curve after curve of just downward, dwindling resources, and copper is among them. Was that something that the industry talked about at all in terms of the total reserves? Is that something that—

01-01:11:03

Harris:

Cerro de Pasco was still doing pretty good. I left there in '71. Before they were nationalized, because that's a long time ago, they were making \$30 million a year, which was a lot of money in those days. They weren't too bad, because they were diversified. That's what the chairman of the company wanted to do, to diversify it. Cerro finally went too far. Diversified into things outside of mining, like trucking, film, and this kind of thing that nobody knew anything about, because they were all brought up in the mining industry. They had to bring in another guy to handle these different things. His name was Murphy. Advertised in the *Wall Street Journal*. He became president of the company, and he started to take it very much in this direction, diversifying not only in country and not only in commodity, but also get out of the mining business altogether. Because, like you said, people were thinking very badly, this mining business isn't going anywhere. He thought they were preparing for the business by going out of mining completely. Well, not completely, but not completely dependent on mining.

01-01:12:42

Burnett:

Right, hedging it with other more profitable areas.

01-01:12:45

Harris:

Trucking company that he took over and this kind of thing. They were all a failure. Cerro de Pasco Corporation was formed back in 1901. They had a great school in mining and metallurgy. They didn't know anything about these other things. Finally, they got into a problem with the president being brought in to handle these things. Ousted the chairman in New York. The board ousted. He was on vacation somewhere and the board kicked him out.

01-01:13:30

Burnett:

This is Murphy who did the ousting?

01-01:13:32

Harris:

Yeah, threw out—Robert Koenig was the chairman for a long time, from Alsace-Lorraine in France there. He was the one that got the idea, too much into mining, too much into South America. We did have a refinery down in Missouri, a copper refinery there. They had fabricating plants over in Long Island and in Pennsylvania making wire tubing. This is still a big use for copper, tubing. They were very uncertain years. I thought, well, it's not going to get any better. Prior to having my diploma credited with the College of Engineers, which I'm now a member of, they wouldn't have credited it. They had no intention of accrediting foreigners' diplomas, degrees. Anyhow, it went on. Cerro de Pasco, as you know, got nationalized. They were not compensated first, but later on they did get some compensation, which was way below the value of the company in that case. In Chile it was fair

compensation. I was in New York at the time, and Cerro de Pasco got nationalized. So I stayed on there. They said they wanted to keep somebody on the payroll that actually was in metallurgy and could speak Spanish. They were still interested in Latin America. It finally went into collapse. The Pritzker people took over the company.

01-01:15:46

Burnett: Pritzker?

01-01:15:47

Harris: Pritzkers. You know? You've heard of that family?

01-01:15:50

Burnett: No.

01-01:15:52

Harris: A Jewish family out of Chicago. Very rich people. They were experts in taking over companies that were in bad shape, putting a lot of money in the kitty. That's exactly what they did here. They took over the company with money that was lying in the banks of Cerro de Pasco. The whole thing collapsed.

01-01:16:18

Burnett: The Pritzkers, right.

01-01:16:20

Harris: The Pritzkers took it over, yeah.

01-01:16:25

Burnett: And so the writing was on the wall to get out of Peru, and you got out of Peru and you were in—

01-01:16:33

Harris: In my case, being an Australian, and I had gotten the letter from this guy, they're looking for a general manager in Australia, salt operation. He just tipped it completely my way, because they wanted an Australian, if possible, to be in charge. That's when I went to the salt mines. As you know, we did very well there. We produced four million tons of salt a year. It cost \$2 a ton to produce, \$2 a ton to ship to Japan, and sold it for \$6. It was a good little operation.

01-01:17:16

Burnett: That is pretty good. You mentioned off camera, you ended up producing four million tons. But what did you start with when—

01-01:17:24

Harris: Three hundred thousand.

01-01:17:25

Burnett: Three hundred thousand. So you increased dramatically, ten-fold. More than ten-fold.

01-01:17:32

Harris:

Yes. It was a great experience, Paul. When I went back to Australia, that was after eighteen years that I'd left. I found the country very much changed. Very negative. The unions took over the country in 1972, and all the government was union organizers or union representatives. The prime minister himself had been nothing else but a union rabble-rouser, if you'd like. What was my point I was going to talk about?

01-01:18:17

Burnett:

You had come back and it had changed. It had—

01-01:18:19

Harris:

Oh yeah, changed negative. Every time I opened my mouth, "We tried that. Didn't work. No, that won't work. People will never accept that." This kind of thing. So I called all the superintendents in my office one day and I said, "Look, what happened to the saying in Australia, 'Let's give it a bash'?" That's what they used to say. We had an incident that happened. We had thirteen trucks on the road there, and they were all driving with Toyo, Yokohama tires. Came about that we couldn't get these tires. Something had happened in the factory, I don't remember. We had a contractor on site, a company called Brambles, big people in the trucking business in Australia. They had a foreman there. We had a small contract in earth moving. He said, "I understand you're having trouble getting tires." I said, "Yeah." He said, "Have you ever thought about Michelin tires?" I said, "I'll tell you the truth. I didn't want tires from another." He said, "We have 40,000 trucks on the road in Australia, and they all use Michelin tires. Why? Because we're the Michelin tire representatives." All right. So I said to my assistant, I said, "I just talked to this guy." Ryan was his name. He said, "If you put those tires on our trucks, you've got a strike on your hands tomorrow." What are you talking about? He said, "Our drivers won't drive on a Michelin tire." Anyhow, I went back to the foreman and I said, "This is the answer I got about the tire." He said, "Well, we work two twelve-hour shifts." He said, "If you bring in the later shifts and let the other ones off an hour earlier, we can bring up the experts from Perth," which they did. This guy, incidentally, went on vacation. He had to go later on. Anyhow, they got up and I called all the drivers to come into the meeting, explained what they do, Michelin and those guys. After it's all over, I got up and I said to the drivers, "Well, what do you think?" The union rep said, "Let's give it a bash." That was the Australia I knew. We put Michelin tires on those trucks, and they're still driving with Michelin tires today.

01-01:21:16

Burnett:

So it just required some conversations with people.

01-01:21:19

Harris:

Yeah. That was the main thing I did, Paul. I turned around their thinking to be positive, not negative. Every time I opened my mouth, "That won't work. You'll get strikes on your hands," all this stuff. By taking the positive attitude,

that's why we went up. Theory of mine, planning and organization and control, delegation, worked well.

01-01:21:52

Burnett:

You said the original saying from the American Management Association was planning, organization, and something, and—

01-02:22:00

Harris:

It was called planning, organization, and control. I added delegation to it. You have to have a plan, and you have to have an organization to try out that plan. There's no sense in telling a truck driver, "We're producing four million tons of salt a year." What does that mean to him? It doesn't mean anything. So many trips and the time to the port you have to make, and that will fall right into the plan. That's all he needs to know. If you do that, then we get up in the production. And it worked, Paul, it worked. I turned it around completely. When I left, one of the people said to me, "You know, you've done a good job here. You turned this company around. There was one thing you didn't know how to do. That was control the weather." I said, "Yes, I can." He said, "How would you do that?" In Australia, they give people long vacations, like a month a year. When it was raining, I shut it down, sent everybody on vacation. I had another problem there. In Australia, they have bars at the mines, which I don't think is a good idea.

01-01:23:26

Burnett:

Probably not.

01-01:23:27

Harris:

But anyhow, we worked six days a week, and all of the superintendents would turn up on Sunday at the mine, and the women complained to me about their husbands having to go to work seven days a week. Said, "What's going on here?" We had a bar on the mine, and the bars didn't open to the town. Simple as that. They go in to drink beer at the mine, because they couldn't get a drink in Carnarvon. So I checked it out. They said, "No, one superintendent every Sunday. That's all we need." Then, let me tell you, this rain, it would rain four inches a year, but it rained only two days. Very flat country, so the whole countryside was flooded. It took a long time for that water to go down. We had to stop the mine itself until the storm was over. Within a few days, you could put it back into production. I stayed on site. I found out I was the only guy staying there, because everybody took off to town, worried about the hurricane and their families. That's not going to work. That's not going to work. Some of you guys have to stay with me at the mine. The others will go into town, look after the families, make sure they don't have a problem with the hurricane, and we can get started up at the mine before it can get to the mine, because the roads were flooded. There were two big problems which I overcame.

- 01-01:25:10
Burnett: Off camera, you showed me these beautiful photographs of the operation that you had there.
- 01-01:25:19
Harris: This one, yeah. It was decent country.
- 01-01:25:25
Burnett: You engineered this incredible throughput of the salt evaporation ponds, and then using a kind of modified snow plow to harvest. Essentially, you literally have a harvester.
- 01-01:25:42
Harris: That's correct.
- 01-01:25:43
Burnett: Like you were harvesting grain.
- 01-01:25:44
Harris: We called them harvesters. Salt harvesters.
- 01-01:25:45
Burnett: You're harvesting salt. Then you're essentially plowing it down a hill into these conveyors that take it to port. You can see why it increased the production ten-fold with this kind of setup. So, this is kind of a return for you, because if I'm not mistaken, you had managerial responsibility in Ghana, and you were in charge of metallurgy overall at Cerro de Pasco, but Cerro de Pasco is huge.
- 01-01:26:22
Harris: Came later.
- 01-01:26:25
Burnett: When you came to Texada Mines in Lake McLeod and Cape Cuvier in Western Australia, you're the director of all, the whole thing.
- 01-01:26:35
Harris: Yeah, I was the top man in the company at mine site. From my point of view, it was very good, because I could then put into practice what I saw was the way to do it, and it worked. It worked.
- 01-01:26:52
Burnett: Did you apply lessons learned from that experience to other things that you did subsequently?
- 01-01:26:59
Harris: There's one of those papers there, Paul, which is probably concerning that. Plant design. What not to do. That was based on my sixty-odd years of practice, in operations particularly. People keep committing the same mistakes over and over, particularly with engineering firms. You have to break that. Get away with it. This was a symposium. It was held in Phoenix. They asked

me to write a paper and I thought, well, this is the time to put a lot of this down on paper. What not to do. It was very well-received. Very well-received.

01-01:27:55

Burnett:

What are a couple of examples of things not to do? I don't want to get too technical, but general principles that are shortcomings or failures.

01-01:28:04

Harris:

One of the main things was repeating mistakes by the engineering firms. They would build into the drawings certain equipment that didn't work. The next time you come around, they've got the same mistake in there again. We tried to overcome this at Newmont. We set up a three-man committee, all people about my age, with lots of experience. Whenever we were working on a new project or expanded project, it came to us first to look for these pitfalls, you called them, and eliminate for the next time around. Let me see. Let me refresh my memory there a little bit. Let me look at that paper. "It has been the author's experience, since he began his career as an indentured cadet metallurgist at Mount Morgan Limited in Australia in 1943, that many mistakes have been made in the past when designing mineral processing plants. Unfortunately, many of these same mistakes continue today by engineering firms, and in some cases, by the operators themselves. A list of items that should not be done prior to the design stage, presented and discussed in some detail, consideration for those concerned with this side of the business." Oh, don't skip on the test work.

01-01:30:11

Burnett:

Don't skip on the test work. Okay, that's a good principle.

01-01:30:14

Harris:

That's the first one.

01-01:30:17

Burnett:

A kind of adjusted version of measure twice, cut once.

01-01:30:22

Harris:

Don't forget your economics 101 class. The idea is to make money. It's economics. Don't leave certain important people off the design team. There's tendency to leave mechanical people off of the design team. We decided at Newmont we'd put always a mechanical person on. Somebody's got to do the maintenance of these plants. They should be in right at the beginning. When purchasing used equipment, don't send a boy to do a man's job.

01-01:31:04

Burnett:

What does that mean?

01-01:31:06

Harris:

We had these cases that somebody would go out and have a look at the equipment who really wasn't qualified to look at the equipment, and we'd approve it. We had a case like that in Mexico. Bought some used plant equipment, much cheaper than you could put in new, but we ended up having

to put another million dollars into it to bring it up to shape. If you send a good mechanical engineer to have a look at it in the first place, he'd probably never bought it. Don't jam the equipment into the smallest possible space. Don't install faulty electrical switch gear or located in tight corners or potential wet areas.

01-01:31:57

Burnett:

This sounds really basic, and yet this is something that's happened over and over and over.

01-01:32:01

Harris:

It's basic. You're absolutely right. It's basic. Don't place the equipment on faulty foundations or on weak ground. There's been many cases of that, Paul. A big crusher, I know they installed in Peru, the whole thing collapsed before they even put the plant in operation. Don't install unworkable chutes below all the stockpiles and fine ore bins. You can never get it out of the bins. Don't be stingy on installing duplicate vital equipment. Don't install defective equipment. Don't hesitate to use the natural contours of the land. In the early days, all the mills were built on the slope of a hill, so you could gravitate the pulp down. Now you have to pump it. In Ghana, I saw they put pumps down in the well. The wells get flooded and knocks out all the motors. Don't fail to install adequate safety guards on machinery and motors, and prepare safety manuals along with the plant design. Don't wait until the last minute to prepare operator training manuals. Don't hesitate to design the plant to be a pleasant place to work in.

01-01:33:40

Burnett:

That's not a small matter in terms of—yeah.

01-01:33:43

Harris:

Like you say, these are all basic things.

01-01:33:47

Burnett:

But the very fact that you felt compelled to write this list speaks to the fact that these lessons haven't been learned in a lot of cases.

01-01:33:59

Harris:

Don't over-automate the operations of the plant. A lot of people completely automate the plants. The operator can't get in. The opposite to that is the plant we had in Canada, in British Columbia, where we had a continuous online analyzer. They hooked these up to controls. As it goes out—nobody knows how to get in there or change it. We just had this thing to show what the assay results were, and gave the operator an instrument to help him with the job.

01-01:34:37

Burnett:

But not as a complete replacement. Right.

01-01:34:40

Harris:

Don't neglect the environment. Big pasties on that.

- 01-01:34:44
Burnett: That's a big one. That's a big one, yeah. There are all these rules that you've gleaned from your experience.
- 01-01:34:55
Harris: One of the basic things, don't build the mill before you have a mine. I've seen that done. That's obvious, isn't it?
- 01-01:35:06
Burnett: It is.
- 01-01:35:06
Harris: But people do it.
- 01-01:35:08
Burnett: How would that work? How would you build a mill before you had a mine? How could you?
- 01-01:35:13
Harris: We built one in Kentucky. Paducah, Kentucky. It's not the only one, but it's one I was associated with. They put all the emphasis on the plant. Put a lot of money into the plant, on the plant. They couldn't get the ore out of the mine, because it was raining underground all the time. It was saturated with water. The plant is lying out in the cornfields down there in Paducah.
- 01-01:35:41
Burnett: It's still there?
- 01-01:35:42
Harris: Still there. Bits and pieces of it. That's the basic. You think it's the basic, don't you? Why should you have to remind people about this? Don't design and build the mill until you have a mine. This is number one in the don'ts. Sounds very obvious, doesn't it? Sounds very obvious, doesn't it? "But the author is aware of several cases where it occurred, and several other cases that were near-misses." They like this. But you said it yourself, these things are obvious. But they happen.
- 01-01:36:38
Burnett: Or should be. And that's the lesson, I guess, is don't discount that these things might be—
- 01-01:36:48
Harris: Another one is that buying equipment, they don't always inspect it beforehand. We had to install the electric generator in Mexico. It blew up in two weeks. How could that happen? How could that happen? We had rotary kilns, which have a ring on the outside, where the ring came off. They had to pull the whole thing down and re-weld it. We had two of them, so we dropped the production by 50 percent.
- 01-01:37:25
Burnett: A mistake like that can cost how much?

01-01:37:28

Harris: A lot of money.

01-01:37:29

Burnett: Millions of dollars?

01-01:37:30

Harris: Yeah, it could. It probably took more than a month to get that rotary finished, back in operation. We were producing something like, say, 10,000 ounces of gold a month in this particular rotary. You go to half production. It's 5,000 ounces of gold. But \$1,000 an ounce, a lot of money.

01-01:37:56

Burnett: That's right. So you have learned lessons from managing and you have passed those on in these kinds of educational articles, and you've lectured. We'll talk about that a little bit more. I want to pass now to asking you about the transition to Newmont, which is another long period in your career. Can you talk about how you ended up moving to Newmont after Texada Mines?

01-01:38:32

Harris: I was working in New York for Cerro de Pasco Corporation when this nationalization took place. So I went to Newmont. It was in the same building in New York, in Park Avenue, and I knew some of the people there again who had come from Cerro de Pasco and said, "What about a job?" Said okay, so I interviewed with the chairman, who was Plato Malozemoff, and the president, who was Jack Thompson. They said, "Okay, yeah, come work for us." So I got transferred to Danbury, where Newmont had their research and development. Their geophysicists were also located there, where they have very fragile instruments. They wanted to take it outside of New York City because of the interference, and set up in Danbury. Then I was in Danbury for a few years. The first place I went to was South Africa, in Namibia, in particular. I did a lot of work there with them. I later became director of those companies. The vice president of research and development was retiring, so they made me first assistant vice president to him. Then when he retired, I took over his job, Vice President of Research and development. We moved then from New York to Denver. There's some people that didn't want to move from New York, and we felt they were important people, that they should come.

So I gave up my position as vice president of research and development and became Vice President of Metallurgical Operations. I worked all over the world, all over the world, looking for projects in Eastern Europe and Spain and back in South America. After I left Yanacocha, I became President and General Manager of Newmont Peru, and Vice President and General Manager of Newmont Latin America. The way that Newmont worked, it was a holding company. They had bits and pieces of different companies. Some of them later on, they took over 100 percent, like Magma Copper Company. These companies in South Africa who keep copper companies in there. They never

changed that Palabora was a percentage—it was 20 or 30 percent. They had, in New York City, so-called experts in the various fields, like lawyers, accountants, engineers, metallurgical people like myself, and also metallurgical operations, mine operations. The task was to go around to these places and look for ways for doing things better and cheaper.

01-01:42:24

Burnett:

So you were involved in assessing the efficiency of overall operations of these subsidiaries.

01-01:42:21

Harris:

And new projects.

01-01:42:32

Burnett:

And new projects.

01-01:42:33

Harris:

And new projects, yes. Existing projects, how we could increase the recoveries, and new projects that were being built. That was my responsibilities. As a result, at that time, we opened up the mine in Uzbekistan, a joint venture with the Uzbek government.

01-01:42:59

Burnett:

This was after the collapse—

01-01:43:00

Harris:

at Zarafshan.

01-01:43:01

Burnett:

After the collapse of the former Soviet Union?

01-01:43:03

Harris:

Pardon?

01-01:43:04

Burnett:

Was this after the collapse of the USSR?

01-01:43:08

Harris:

It started off before. It started off before. There was a geologist friend of mine, very interesting guy. His name is Joe Kowalik. He was born in a German slave labor camp. His father was a coal miner, and the Germans took him first to Germany, and then to Belgium, to work in the coal mines. He speaks all of these Slav languages, Yugoslav, Polish. His father is Pole, Russian. He went to a meeting in Moscow. Let me think, it must be in '91. While he was there, some of the people from Zarafshan invited him to come visit. He was the first foreigner in there in seventy years.

01-01:44:04

Burnett:

In which city?

01-01:44:05

Harris:

Zarafshan, Uzbekistan. In seventy years, he was the first foreigner. He saw there that they had huge mills over a mile long. Two thousand people worked only in the mill. Of course, it was Communist. The whole plant was staffed by a Gulag. I went with him then on the next trip, and they had stockpiled a lot of relatively low-grade material. Milling through, they milled three grams per ton, and they were taking stuff out at one and a half grams per ton, which today is ore, and we saw it as ore. The idea of heap leaching had not reached the USSR yet. So we made a deal with them. One-third to Newmont, one-third to the Uzbek government, and one-third to the geological society. They had an enormous amount of geologists. The Russians and the States, very good geologists. Very good. Of course, they don't know anything about making money. That's something else. Like I say, don't forget your economics 101. We set up this deal there, which started off very well, and the Uzbek government was selling their gold to central, to Moscow, \$40 an ounce. With an open market at that time, that's about \$400 an ounce. So they asked Newmont—they wanted to break away from Russia. They didn't like the Russians at all—if Newmont would take over the marketing of their gold as well for their existing plant. They're producing over a million ounces of gold a year. This place did not appear on the map. It didn't exist.

01-01:46:21

Burnett:

Officially, it didn't exist.

01-01:46:23

Harris:

Officially. It was in the middle of where they produce all the uranium, the uranium area.

01-01:46:28

Burnett:

So there are towns, whole towns, that don't officially exist.

01-01:46:31

Harris:

Yeah, it was very close. I was driving through there and the guy said, "You want to take some pictures?" "No, I'm not taking any pictures here." This was just before they even broke away. The next thing, 1992, I was in Russia, same year, when the whole thing fell apart in Russia, with Yeltsin and everything. I was there that same weekend. In Moscow, a guy said, "Do you see that building over there?" I said yeah. He said, "That's the tallest building in Moscow." I said, "What do you mean? It looks like four or five stories." He said, "Yeah, but underground, there's twenty or thirty stories." We took off that Sunday from Moscow. There was a huge statue of the guy who started the KGB. I don't remember his name, anyhow. One of those long Russian names.

We got lost. We got lost in Uzbekistan. We didn't know where we were. My wife was frantic. Couldn't make contact. We're lost in this place called Zarafshan. Nobody knew where it was, didn't exist. Couldn't get us out of there. The nearest place to get out was Afghanistan. The road coming into Zarafshan would suddenly wide way up out, and they closed gates, both ends,

about five miles long and a mile wide. Bombing Afghanistan from near the mine. That's in US control, now, that airstrip. The nearest place was Afghanistan. Finally, we did get out. When I came back to the States, the CIA contacted me. "What did you see there?" They didn't know what was going on. They thought it had something to do with uranium. Just this enormous gold plant. Huge, open pit. Didn't exist. Anyway. But that fell apart, too, you probably, know, Paul. They nationalized that later on. They raised the taxes. Their contract was written to 30 percent tax. They wanted to raise that.

01-01:49:02
Burnett:

The Uzbek government did this—

01-01:49:03
Harris:

The Uzbek government. It was nationalized, though. Newmont lost that, too [in 2006]. We had some very interesting times. Like all of us in New York, we had very interesting jobs going around to Newmont's different operations and potential operations. Looking at them was a very, very, very interesting job.

01-01:49:36
Burnett:

You've been VP of metallurgical operations, VP of R&D, director of Newmont Exploration Limited, which was worldwide, and you had advised or directed the subsidiaries in Canada, Australia, South Africa.

01-01:49:57
Harris:

Newmont mines in Canada. Newmont Australia for a short period before they sold that operation.

01-01:50:07
Burnett:

Talk to me a little bit about the interface between the technical and the political and the social.

01-01:50:16
Harris:

Technically, it was very interesting from a technical point of view particularly. They had things they were doing at one plant they were not doing at another plant. Why? That won't work here. That won't work here. The same old attitude, negative attitude. I started by bringing together all of the plant superintendents all over the world. We had the first meeting in Tuscon, Arizona. Instead of talking to me about this equipment that they have in southern Peru, for example, the southern Peru superintendent can talk directly to the other superintendent. There were several things. One was called particle- size monitor, which is an instrument which records always the size of the ore going to the grinding mills.

01-01:51:15
Burnett:

Right, when you're crushing?

01-01:51:16
Harris:

Yeah, and controls the feed to the plant. That's what they do in southern Peru. I tried to talk to them in Palabora into doing that. "No, that won't work." So anyhow, I brought this guy who was selling this equipment there and let him

talk to the superintendent I said to him, “Why don’t you give them one to put on trial?” He said, “Yeah, that’s a good idea,” and he did. Principally, it was this case of negativism from one plant to the other. The size of the equipment, the type of equipment. When it should be—Denver, for example—should be Outokumpu’s, or it should be somebody else’s equipment? We love it in this place; that doesn’t work here. Then we had another one I called the Mill Managers Conference in Elko, Nevada. It was a very, very good system. Politically, while we were in Peru, in Southern Peru Copper Corporation, we owned several operations in South Africa, in the time of apartheid, and Namibia and Australia. Politically, Newmont was always on the front edge of this. The Afrikaners—that’s to say the people in Africa, South Africa—there are two types. In Africa, they call *verkramp* or *verlichte*. *Verkramp* means against everything, against any change. *Verlichte* means the enlightened ones. All the plants we were involved in in South Africa and Namibia, they were these enlightened people. They brought about a lot of changes in apartheid. Broke the law in some cases. The manager of one of the mines, they were going to build houses where, previously, the blacks had lived. It’s against the law. They didn’t care, they went ahead, built a house, and the manager went and lived in that house. Broke the law.

01-01:53:53

Burnett:

To make the point.

01-01:53:55

Harris:

Another point was crane drivers. They had to be white. He put in natives, what they called Cape coloreds, half-breeds, to drive it. Of course, it caused a nationwide strike, putting these coloreds in that was reserved for whites.

01-01:54:19

Burnett:

When was that? What year was that?

01-01:54:20

Harris:

This was in the seventies, eighties, because we got out of there about ’89, something like that. Palabora was a very interesting case. The company had their own hospital, and they put in this chief of the hospital, a black man. Caused a big uproar. They said, “That’s it. If you don’t want to go to our hospital, you can go get your treatment somewhere else.” Broke the laws in every case. They were very much advanced, because they could see that apartheid, sooner or later, it’s going to collapse, which it did.

01-01:55:09

Burnett:

I’m hearing that you’re always looking for the guys, the folks who will say, “Give it a bash,” and the people who are willing to take a chance on something new.

01-01:55:23

Harris:

We always did. We were always looking for enlightened ones that were positive-thinking. My daughter went to Notre Dame University. When I took her there, the dean of studies said, “It’s always been considered in life there

are two inevitables: death and taxes.” I think that comes from one of the founders of the UN. It was a nun. She said, “There is another inevitable. Not necessarily for the good. Nevertheless inevitable. That is called change.” I went to Namibia and they had middle-tier staff people, like superintendents, and there was an Englishman giving them a talk about change. The general manager put me on the spot. He said, “Now have Mr. Harris here, director of the company from New York. Would you like to say something?” So I told them that story about Notre Dame. One guy got up and he said, “Yeah, changes everything for the black man; nothing for us, the whites.” It’s inevitable. He used, that year, what I told them, what I’d learned at Notre Dame, as his Christmas message to his staff. It’s inevitable. Which it turned out to be.

01-01:57:04
Burnett:

Another piece of the story that you’re telling is that part of the resistance is not just negativity, but it’s this perception in each locality that the locality is unique. That they’ve got unique problems and unique networks and unique resources, so you can’t have a cookie-cutter solution from on top. You can’t say, “We’re doing this at Newmont Worldwide. We’re going to impose this.” So there’s this resistance to change from outside. There’s some truth to that. Every mine is different, and there are unique challenges. But you were looking for ways to cross-pollinate, maybe. To take something that really works over here, maybe that could work in this other place.

01-01:57:57
Harris:

Yeah, and it did.

01-01:57:58
Burnett:

And it did, when you implemented it.

01-01:58:07
Harris:

On the political side, it was tough going for these managers in South Africa and Namibia, they were going against the stream. They were breaking the law, even. The thing, of course, Paul, you don’t want change just for change’s sake. Some people have fallen into that, including Coca-Cola, you might remember. They changed it from classic and it didn’t sell worth a damn, but they felt that they had to change something. Yes, it’s good in some cases, in some cases not so good. In this case, the changes that were coming in Africa weren’t all that good for the white men, but that was the way it was. They were in the minority. Sooner or later, it had to come. Newmont was in the forefront that way. They were also in the forefront of pushing new projects to the community, so the people around the mines, which was not enforced in Peru when I went there. Newmont was pushing me, “We have to take the project to the people,” because that’s what they were doing here and elsewhere in the world. The Minister of Mines said, “You will not do that. *We* will take it to the community!” The minister of mines would take it to the community. That had to change. In Peru, particularly, now there’s a big problem with the communities. You have to take your project and get approval.

01-01:59:43

Burnett:

There's Aboriginal resistance in the Amazon to Peruvian mining—

01-01:59:47

Harris:

There is, right today. They've got a big strike going on in the jungle, right now as we speak, against the oil companies. We can't deny—like that article I wrote there about the importance of mining—we can't deny that we did bad things in the past. We can't deny that. But we shouldn't repeat them. We shouldn't repeat them. I pushed that on all these young engineers, you have to look out for the environment. It's part of doing the job. If it's going to cost so much—and I've never seen it yet—if it will break the company, then you don't have a project. You have to do it. The old thinking, and I guess I was in that category, too, Paul, younger, we come in, we give work, open up the mine, and pay taxes, and that's it. It's not good enough anymore. You have to do something with your surrounding communities, and I've seen some very ugly killings because of that, and they won't cooperate with the community and the community won't cooperate with the mine. We have to change. We still have to change yet. I honestly believe that the part that's best—not everybody agrees with me by no means—is to give the communities part of the operation, make them partners.

01-02:01:24

Burnett:

Give them a percentage of the—

01-02:01:25

Harris:

Give them percentage ownership. This plant I'm talking about, this place in Peru, when they gave them 5 percent—the problems they had with that community were unbearable. When they did that, it disappeared. Disappeared completely, the problems with the community. Five percent. I pushed that now to companies I'm a director of. They're starting to get it, too. But the old times, why should we give them anything after we supply work and pay the taxes? I was interviewed in Bolivia. I gave a talk on Yanacocha. The newspaper then came and said, "Mr. Harris, we here in Bolivia used to—not only foreigners, but Bolivians, too—come here and open mines and work and sure they give work, pay their taxes, and they leave us with tailings." That can't work. That can't work anymore. Can't work anymore. Simple as that.

[Audio file 1, Part 3]

01-02:02:29

Burnett:

Let's talk, then, a little bit about Yanacocha, because that's an important story for you personally, and for your wife Rosa, who was involved in that. This is while you're at Newmont. There's a whole context that needs to be set up here. This is 1992 that you start, but it begins before that. Can you set up the context for Yanacocha?

01-02:02:58

Harris:

Yes. We started off with the French owned the property. The French Bureau of Mines, they owned it. They had no money. They had to develop it. They

had an exploration camp on site. The Japanese had been there, Cerro de Pasco had been there, the British had been there, looking for silver. There was a guy called Aubrey Pavitt. He was a geologist, born in South Africa, but Australian nationality. The company decided that they wanted to have a greater presence in South America. He couldn't speak any Spanish, so he went with me. First of all, we went to Chile. Chile was just getting over the Allende campaign, and hundreds of people were flocking into Chile in the mining business, so it came too late. We went to Peru. I took him up and looked at this Yanacocha, and his eyes literally shone like diamonds. He said, "This is a gold property, disseminated gold property." Oh yeah? All right, so he started, and sure enough, that's what it was. The company, then, Yanacocha, was formed in July of '92. It was Newmont with 20 percent, the French with 40 percent, and Buenaventura with 20 percent, and later on came the IFC with 5 percent. They're still there. Run the company on those lines.

They started to drill it, and I was looking at the metallurgy of it, and we were doing work in the lab in columns, leaching it. Leaching it half an inch, one inch, two inches, three inches, four inches. The same extraction. The same extraction. Didn't need to grind it, didn't need to crush it. That was the beauty of it all. The French couldn't believe it. I said, "All right, you take some of it to France." They found out the same thing, that you could run a mine leach, take it straight out of the mine, load it onto trucks, and dump it, and begin leaching. It worked. It worked the same at half-inch as it did at one foot, or one meter even. Exceptional deposit. Exceptional deposit. It had been worked before by the Spanish. They took all the coarse gold out of it. This was fine gold. It was 1.3 grams. Alberto Benavides said to me—he was on the Buenaventura side, of course. You know him? You ever heard of him?

01-02:06:25

Burnett: No.

01-02:06:26

Harris: He was chairman of Buenaventura, which became the other partner. How does it go today? Newmont is 50 percent, Buenaventura is 45, and the IFC has 5.

01-02:06:46

Burnett: And the French are out completely?

01-02:06:48

Harris: The French were out. That's another story, of course. But anyhow, he said, "One point three grams. We're throwing away higher grade than that from our mills." Because this heap leaching had not reached Peru. It was developed out here in Nevada by the US Bureau of Mines, and it was very useful in Nevada, because the ore contained a lot of clay. It was impossible to get it through the crushers, particularly in the fall time. This allows you to add a little cement, put in a drop, and heap leach it. That started the whole business.

- 01-02:07:35
Burnett: Just for our readers and listeners, heap leaching is you take ore and you bring it out onto some kind of bed, and you—
- 01-02:07:44
Harris: Normally, it's crushed. Not Yanococha.
- 01-02:07:49
Burnett: Because of the clay—
- 01-02:07:50
Harris: Because of the mineral. You could take a piece of it and pour water on it. It would go straight through, just like a sponge.
- 01-02:07:58
Burnett: Oh, it's kind of porous?
- 01-02:07:59
Harris: Very porous. Very, very porous.
- 01-02:08:01
Burnett: Great. So it's ideal.
- 01-02:08:03
Harris: Very low cyanide consumption. Thirty grams per ton. Very low lime consumption. Two hundred grams per ton. Some people are still skeptical about the treatment-processing method, so it's sort of a pilot plant first. Ten thousand tons. Boom, the curve went up. In four days, the extraction was 80 percent. Unheard of. I don't think there's any other deposit in the world—just perfect for heap leaching.
- 01-02:08:44
Burnett: This region had already been mined?
- 01-02:08:48
Harris: By the Spanish.
- 01-02:08:49
Burnett: Ages ago?
- 01-02:08:50
Harris: Ages ago. They took all the coarse gold out.
- 01-02:08:55
Burnett: So you were left with these fine particles that were embedded—
- 01-02:08:57
Harris: Very fine particles. So-called "invisible gold," which is the same as the mines in Nevada. When we first went there, I saw some ugly things happen in the communities. The communities wouldn't let us on their property. They had a lot of respect for nurses. We had this nurse, a local girl. I hired her. She could go into the villages and talk to the people. I told her, "Don't stay overnight.

Just go in and talk and come out.” With bodyguards. Which she did, and we opened up a working position with the communities. By the time we finished, we had a good thing going, which has gone to hell since.

01-02:09:51

Burnett:

When you said there were killings, who was killed and who was doing the killing?

01-02:09:56

Harris:

When I was there in Cerro de Pasco days, they had a strike in the Cerro de Pasco mine, an underground mine. They put women, pregnant women, on the portal, so nobody could come in. They had a group, mixture of police and army, real scumbags called the Republicans. They bayoneted these women, pregnant women, on the gates to the mine. I never want to see that again. I never want to see that again as long as I live. That’s what I told these people, my people down at Yanococha. We’re not going to do that. I’m not going to call in the army. I’m not going to call in the police. We have to build up our own security, which we did. I didn’t trust the police, I didn’t trust the army. So we built our own army. One of the things that was discussed in Denver, all right, how are we going to protect our people and the equipment and whatnot? People had all kinds of ideas. The president got up and he said, “There’s only two guys in this room that know anything about terrorism. It’s Len Harris and myself. In Tsumeb terrorism reached its pinnacle. They wait for you to go to work and come into your house and kill your wife and children. That’s real terror. That is real terror.” He said, “You better find out how we’re going to do this.” So I got on to some people, ex-CIA people in Florida, and they put me on to a guy, a colonel—Dick Medows—that I took on as my consultant. We built up our own security system. I personally had six bodyguards. Six bodyguards. We had 150 of these bodyguards at the mine site. Originally, we didn’t allow anybody on site. All the superintendents were armed. Of course, as you know, they overcame the Shining Path. I didn’t like the idea very much of having them on the property, the police and the army. The army was made up of conscripts, and many of them were terrorists. The police were corrupt. So I formed my own army. That’s how we got it going.

01-02:12:44

Burnett:

It’s interesting, because I think some of the news reports coming out of Africa and the new kinds of security operations in Sub-Saharan Africa, the criticism is that mining companies, but also companies in general, have ceased to think in colonial terms of dominating a particular region or having some kind of collusion with a government, and have retreated to the grounds, saying that we’re going to lock down this gold area, or this mine in the Congo or whatever, and that we’re going to hire our own private army. There’s a critical view of that, that there’s this privatization of security for these corporations. Your story is a bit different, it seems. Your reaction to the state fighting Shining Path was that it was just another kind of gang. Not to be necessarily—I don’t know the details.

01-02:14:01

Harris:

Let them do that. Let the government do that. That's enough for them on the table.

01-02:14:08

Burnett:

But if it results in these kinds of massacres that you saw when you were there, it's no good for the mine, it's no good for the people there. So you sought out a solution. In hiring private security, you were looking for something that was a more peaceful, more cooperative solution. Certainly, it was security, you had six bodyguards that were armed. But there's another piece of it as well in your story.

01-02:14:38

Harris:

There's no way you could really work today, unless you have the approval of the community. They'll shut you down. That's the worst thing that can happen to you. Shut you down, you lose money. So you have to be able to work out something that you can be at peace and work in joint venture with them. During these times at the beginning when it was pretty bad, the terrorism, the women didn't come to the mine. The superintendents were confined to the mine, and they would go back to Lima to their families, two weeks after, four weeks, something like that. The women started to complain that they'd like to visit and see where their husbands were working. So I took a long weekend and I brought them all to the mine site. While they were there, Rosa [Len Harris' wife] was always interested in helping the communities. She'd been involved in this before. She was head of a group of women in the center of Peru, 600 women, to work with the poor. We had decided in the company, we had money to help the communities, but we had a lot of resistance. But once we started to wear down the resistance a bit, then she said to me, "There's a school nearby the mine, and we're planning to do something with the school." She worked with these women and saw these little kids literally starving. Eighty percent malnutrition. They didn't believe me when I said that. So I hired two doctors to go and check it out. Seventy, eighty percent malnutrition. This day and age? She said, "You're wasting your time, what you want to do with this school." I said, "Why is that?" "You have to feed them." Well, I don't like to get into anything, Paul, you never get out of. So we set it up. I brought a woman down from the States, anthropologist. "Debbie," I said, "find me the food." And she found the food through USAID. Then we put this system together, together with Rosa's group, that the companies would supply the stoves, and the food would come from USAID, and the women would cook the food and give the kids one good meal a day. It worked out very well. Then they started planting garden plots at school. USAID said, "If they were to supply some of their own food to put in the plots, it would be easier for us to give it." So they started growing potatoes and vegetables and everything that they could put in a pot. Worked well. I was very cautious about giving things. We later called it, Paul, a hand up, not a handout.

They had an old folks home there, run by a Spanish nun. I went to see the bishop, and they had deliberately wanted to talk to me in this old folks home.

So I did with the Spanish nun, a little short nun. Very, very, very, very innovative. She ran a brick plant in Cajamarca and a large vegetable garden. The bishop said to me, “They’re running a very high electrical bill here to have a big pot, because they make a big stew every day for the old folks staying there.” It cost them \$1,000 a month for electricity. He said, “Maybe you can help them.” I said, “Let me see. Let me think about it, monsignor.” I sent the electricians in to see why are they using so much electricity. There was a big stainless steel pot heated by electricity. We threw it out, put in a gas-fired kettle. The electricity bill went through the floor. I paid for the pot and the installation of gas. I was into it and now I’m out of it. I always worked on that type of thing. I don’t want to get involved, if I could never, ever get out of it. One-time deal like that, it worked very well. Solved the problem. They were very happy; we were very happy.

In fact, there’s been quite a transformation in my own life, because I belonged to the old school before. You build the mine, you pay your taxes. Everything else is up to the government. They don’t have the money. I gave a talk on this up here at Vail. One guy got up and he said, “Why are you doing this? Isn’t that the government’s responsibility?” I said, “Yeah, normally it is. In Canada, the US, Australia, they supply the schooling and the food and whatever. But these countries, they’re so poor, they don’t have that money.”

01-02:20:28

Burnett:

The old attitude that you were talking about, I’m guessing that some of the resistance, in the mining community may have been this fear that if you give an inch, they’ll take a mile. That kind of is implicit in your saying, “I like to get in, but I don’t want to not be able to get out,” in the sense that, in the negotiations that governments had with mines, they would begin a contract and they would invest and they’d have spec’ed out the responsibilities and mutual obligations, and then once the mine was there, then the government would say, “Now we’re going to increase taxes,” or, “Now we’re going to add this special duty,” and the terms would change and the miners would feel like, oh, this is never going to end.

01-02:21:15

Harris:

That’s one thing they never did in Peru. It’s still the original contract, which I signed, 30 percent tax, still is today. They asked for a voluntary donation from the mining companies to help those communities. Of course, they got this deal—what’s it called?—where 50 percent of the company’s taxes is returned to the region. That’s a lot of money. A lot of money.

01-02:21:52

Burnett:

That’s a good deal for the mining company.

01-02:21:54

Harris:

Absolutely. It doesn’t cost the mining company anything, because it comes down to their tax budget. We have to think differently. We really have to look for ways to do this. The thing that’s getting out of control now in Peru, they

stopped some multi-billion-dollar, or over a billion, project. There's one in Yanacocha or the Congo, \$4 billion. Will hire 10,000 people direct. Isn't that a good thing? Isn't that a good thing? The people voted against it. The guy who started them up is the regional president, who's in jail. He's in jail.

01-02:22:45

Burnett: In those cases, sometimes they're worried about if it's aboriginal people in the Amazon—

01-02:22:51

Harris: You can see that they would be worried, too.

01-02:22:53

Burnett: —they're worried about their water supply.

01-02:22:56

Harris: Particularly water. Are you going to poison their water? Are you going to steal their animals? What they did at Yanacocha, because we had a surplus of water there, a big surplus—rains a lot. We had a lot of water treatment plants there. I don't remember what it is today, but thousands of cubic feet for treating water, which they give free to the farmers. When it rained, I had all overflows directed into the water treatment plant, and then to one discharge point for the property. Just one discharge point which you can control. You have to always be thinking of new ways to do it, to get the community together with you. Where the water was discharged, I put animals there. There's no sense in telling the community people we have water with less than so many parts cyanide. They don't know what that is. But I put animals there. They eat and feed and drink the water. They could go and see it there, the water coming out of the plant.

01-02:24:13

Burnett: There's another story. I interviewed Roshan Bappu last March, and he told a story of people who didn't believe that the water was purified, that it was clean, from their operation. So he got them to stock the reservoir with fish. He said, "Go test the fish."

01-02:24:35

Harris: We have trouble even in this country with the water. Here in the West, in some parts of the West, the Indians have what they call water babies. The water has little babies in there. You take the water and you kill them and you destroy the babies. You prove the mountains are sacred. You destroyed the mountain. You're taking all the mountain down. It's sacred.

01-02:25:03

Burnett: That's going back to your adage, "you have to know the culture." That's the really important—and especially if it's dramatically different from your own values, from your own ideas. You have to understand why people act the way they do and talk to them.

01-02:25:23

Harris: It changed my life when I took my daughter to Notre Dame. I had never thought about that before. I was just thinking about death and taxes. But it's true. Change is another inevitable, and not necessarily for the good.

01-02:25:44

Burnett: The only constant is change.

01-02:25:47

Harris: Yeah, that's right, true.

01-02:25:52

Burnett: Rosa, your wife, was a huge player in the development of this association, ADAMINYA [*Asociacion de damas minera Yanacocha*], which is the ladies' association of Minera Yanacocha, which was a group that facilitated education programs and health and nutritional programs, and the supply of food and the construction of food production facilities.

01-02:26:18

Harris: From donations. Including donations from the company, from other companies, too, and the contractors. As a company, we couldn't make a deal asking the contractors for money, but she could, because she was independent of the company.

01-02:26:39

Burnett: It reached over fifty-five hundred young people.

01-02:26:43

Harris: Children.

01-02:26:44

Burnett: Fifty-five hundred children. That had a huge impact on you. It seems like this was an important event.

01-02:26:52

Harris: She got a very good brochure on this. I'll have to get you that brochure. How it was built up.

01-02:27:01

Burnett: I think I've read some material on that. This was a long period. This was the longest chunk of your career devoted to a single set of companies of Newmont. This is until 1995. In 1995, you pass into a kind of semi-retirement. Should we call you retired? Is that fair?

01-02:27:30

Harris: I retired from Newmont, but they brought me back again as a consultant for another year. Are you aware of this company called Behre Dolbear?

01-02:27:44

Burnett: Yeah, it's a consulting group.

01-02:27:45

Harris:

I started working with them, because I knew them very well in New York before they moved out here. Then people started to pressure me about being a director of this company, a director of that. Some of the companies you see there that I have been a director in the past, and for some reason had to step down because the companies would—take one company, for example, in Colombia, where I was a director, and a Peruvian company bought 40 percent of the company. Of course, they would have put their people on the board. So they asked me to step down, but they retained me as a consultant.

01-02:28:30

Burnett:

So it's a period of extended consulting that you've been doing.

01-02:28:34

Harris:

It doesn't end.

01-02:28:35

Burnett:

It doesn't end.

01-02:28:37

Harris:

I always say I'm not retired; I'm retiring.

01-02:28:42

Burnett:

You're not retiring in another sense, so that's good. You're chairman of Resource Development Incorporated. Is that your own company?

01-02:28:54

Harris:

No. That's not my own company, no. That's owned by Deepak Malhotra. He owns it. I'm the chairman. He's the president. I don't own it, no. They do give me a bonus every year.

01-02:29:08

Burnett:

So you're able to give your sage advice to them.

01-02:29:12

Harris:

I do quite a bit of work with them, and I bring them projects from different places. In fact, working on one now from a Canadian company in Mexico.

01-02:29:23

Burnett:

We were talking a little bit about how the industry has changed in the last thirty years. One of the big stories is the rise of Australian and Canadian and Chinese mining companies and the decline of the presence of US-based companies. If you look back, say, thirty, forty years, you would have seen a number of American companies in the top ten worldwide. What accounts for that in your opinion, and what can be done to sustain the health of mining in the United States?

01-02:30:03

Harris:

What they're doing quite a lot of is consolidation. Companies taking over each other. There are still places in the US that are friendly with mining. The state of Nevada, for example. People are still flocking into that state. I'm

director of another company that we're about to open a gold mine there called Solitary Resources. They have their headquarters here in Denver. But what particularly is hitting the mining industry, and particularly these days, is EPA. They're going overboard. They're exceeding. They're bent on shutting down the coal mines. They've really got a real war on the coal mines. If they get these further things in about regulations, they'd kill the industry. It's an industry that hires a lot of people. It's an industry that supplies 50 percent of the power in the US. Even so, that's a big amount of power. You know, incidentally, how much coal supplies in California?

01-02:31:27

Burnett:

What percentage of the energy supply of California is supplied by coal? Fifty percent?

01-02:31:34

Harris:

Less than 1.

01-02:31:35

Burnett:

Oh, less than 1 percent.

01-02:31:36

Harris:

Less than 1, because they bring in the electricity from the next state, or even from Canada. They're bringing in a lot from Canada from the Trail Smelter. There was a guy who gave a good talk on that recently. He gave all the percentages, state by state. I think overall, it's 48 percent. Of course, the coal companies, they just turn around and export it. That's getting more difficult, too. Another company I'm a director of had a big coal deposit in northern British Columbia. They got up against all kinds of odds. They made their peace with the bands, incidentally. They're at peace with the communities there. But it costs about \$400 million. You have to have a partner. You have to have a Chinese partner there.

01-02:32:36

Burnett:

So there's extensions and permitting. It's taking longer to get permits to mine, or it's no permitting at all.

01-02:32:42

Harris:

They get more and more strict. More and more strict to the point that they'll shut them down.

01-02:32:48

Burnett:

It's weird. I'll talk about this more with some other interviewees this week, but in the seventies, it was this terrible learning process for the mining companies, because the EPA would come in and would not know, necessarily, how mining operates, and so they would have to teach each other sort of back and forth until they could reach a kind of equilibrium over regulation. Then in the eighties, the EPA, arguably, was weakened. The regulations were more lax. When did this start to get more strict for the EPA?

01-02:33:35

Harris: With Obama coming in. Although it was already coming in, particularly in some states.

01-02:33:46

Burnett: At the state level.

01-02:33:47

Harris: Pretty well banned mining in their states. Montana is one. Minnesota was, but they seem to be coming around now more in favor of mining. It used to be, of course, Paul, in my youth, mines were very welcome. They opened up mines where there was nothing there before, and some very large cities came out of mines, like Toronto is one. San Francisco is one. Melbourne, Australia is one. There's one that they developed in South Africa called Black Mountain. It belongs now, I think, to an Indian group. It was developed by Phelps Dodge recently. [break in audio]

01-02:34:48

Burnett: In the United States, it's become more difficult to mine in many ways because of increasing regulation.

01-02:34:52

Harris: Yes, very much so. I had a call from a senator here, Senator Bennet, Democrat, on the phone. Obama was going to give a talk next week. He said to me, "What would you like to hear Mr. Obama say?" I said, "I'd like him to immediately approve the Keystone Pipeline and tell EPA to get off the coal miners' backs." He never answered.

01-02:35:26

Burnett: Well, he asked your opinion.

01-02:35:27

Harris: He asked my opinion.

01-02:35:36

Burnett: In your career, you've had this tremendous impact working for these many companies, and with many other companies. You've also been recognized by the industry as well. You are Mining and Metallurgical Society of America gold medal recipient. You've also been involved in service, professional service. Can you talk a little bit about the things that you've done and why you've been involved in—

01-02:36:14

Harris: I believe that we have to support those organizations and institutes that support mining. So how do you do that? You have to get on committees then, try to do something. I belong to a lot of them. Like I was telling you, this SME has been, since 1951—what is that—

01-02:36:42

Burnett: You've been a member of SME since 1951.

01-02:36:47

Harris:

I'm a member of the Australian Legion, which is Australia and New Zealand, since 1943. That's even longer. MMSA, I joined in New York in 1973. Then I was the one that opened this section here in Denver. I started the section in Denver. There, our mission is to protect the mining industry. They started the Bureau of Mines, in fact. And, of course, the Australian one. They're all trying to do something to put mining more in—like the paper I wrote there, the positive side of mining. People have forgotten that. All they can look at is the negative side, the pollution and stealing people's land and all that stuff. But there's a lot of positives. There are negatives, too. Those institutions—I belong to them in Peru as well. The College of Engineers, the Institute of Mining Engineers. In fact, I was a director of the Institute of Mining Engineers. I think I was the only foreigner who ever was on that as director. Another group in Peru, they gave me Engineer of the Year award, which they had never given to a foreigner before. I find them useful. I think the industry doesn't use them enough. The industry seems to be flying in different directions, flying under different flags. They don't join together. It's been like that forever, and I think that's a big mistake. The fact is they have these issues and organizations that could do more.

I think SME is doing a very good job in that respect. It's bringing to people's attention the positive side. But it's an uphill battle, I tell you. Because they have a bad past. You see those photos? That's bad. That is very bad. We threw everything in the river or into lakes. Can't do that. It's only in recent years that it's hit the miners that they need to protect the environment. There's still resistance to it. It's enforced not all that heavily, because by the World Bank, they just put out guidelines. It has no legal strength behind it. I got in an argument about this in Peru. "Yeah, but we don't need them." Yes, you do, because what's happening now is every lending institute, you have to have a clause in there, you abide by their guidelines, or you won't get any money, and money talks. It's been forced on them, but it has to be. Maybe there's saturation of these things. Perhaps be more consolidated. In general, they're all trying to do their best, but running in different directions.

01-02:40:38

Burnett:

Maybe there's a lag, because the big umbrella organizations seem to be US-based, and the mining industry—

01-02:40:46

Harris:

The World Bank.

01-02:40:50

Burnett:

The lending institutions, but also the mining associations, the SME and the MMSA, they tend to have a US focus, even though they welcome members worldwide, but the biggest mining companies are BHP Billiton and, you know. Are those companies involved in MMSA? Are they involved—

01-02:41:12

Harris:

Very much. And some of the manufacturers, too, like Caterpillar, Komatsu, and those people, making the equipment. Contractors and whatnot. Is it Billiton? We had a partnership with them in Ecuador. They have very strict rules on how their people should behave, like, for instance, taking these, on an exploration site, taking these portable potties. Some of the exploration jobs you think is crazy, but it's not. It's the right thing to do. It really is. It's all pollution of the land. Can't have that anymore. You just can't have that anymore. Otherwise, you'd have everybody against you. What I was going to say before, from community's point of view, they're scared. They hear it from these radicals—there's one in there, I've got a paper there—about how they're going to poison your water, steal your cattle, steal your land. And that has been going on in the past. It has. Can't do that. Can't do that. The mining industry is partly at fault itself. When I was Yanococha, I won't mention the partners, but one of the partners said we were overdoing it on the environmental side. We were not.

01-02:42:54

Burnett:

He said you were overdoing it?

01-02:42:55

Harris:

Overdoing it. We were not overdoing it. With Newmont, their policy is they won't do anything less in any other country than what they expect to do in the US. I think that's a good policy, because we're ahead of the game here now, in spite of the fact that we have a lot of opposition from EPA. Companies are not throwing stuff in the rivers or the lakes now, for example. They're not doing that. The same thing with moving people off of their properties. That's another one put down by the World Bank as being guidelines again. How to handle the movement of people if you want to move the township. We had some good experiences with that, some bad experiences. They had a big one in Peru recently. The Chinese moved the whole town, built a new town. A mine called Chinalco, which is a big copper producer, will be bigger. And how you should act with the people. You have to go into discussion with them. You mentioned before that people would just go to the government, like their ministry of mines. He would approve that that's all you needed. It's not enough now. Not enough. There's ways of doing it, but it has to be done, and there's resistance.

01-02:44:43

Burnett:

Mr. Harris, I want to thank you for your time.

01-02:44:45

Harris:

You're very welcome, Paul. Thank you. I enjoyed it.

01-02:44:48

Burnett:

I hope we can have some more time, because there's more to talk about. So hopefully we'll get more time and another interview at some point in the future.

01-02:44:56

Harris: We will. We will, yeah. Thank you, Paul, for coming and taking your time.

01-02:45:01

Burnett: Thanks. Take care.

[End of Interview]

BIO: LEONARD (LEN) HARRIS

Born July 12, 1927 in Yeppoon, Queensland Australia
 Raised and educated in the mining town of Mount Morgan, Queensland, Australia.

Graduate Metallurgist Mount Morgan Technical College December 1949.

Has taken several courses and seminars in management given by the American Management Association (AMA).

Fluent in Peruvian Spanish and Australian English.

1943-1951 – Cadet Metallurgist, Assayer, Research Metallurgist, Mount Morgan Ltd., Mount Morgan, Queensland, Australia (copper/gold concentrators and smelter).
 Volunteer firefighter in both company and town fire brigades.

1951- 1953 – Assayer, Mill Shift Boss, Mount Isa Ltd., Mount Isa., Queensland, Australia
 (lead, silver, zinc concentrator and lead smelter)

1953 – Metallurgical Engineer, Radium Hill Project, Radium Hill, South Australia (uranium ore processing).

1953 – 1955 – Technical Officer, Taquah & Abosso Mines Ltd., Aboso, Ghana (gold bullion from amalgamation/cyanidation).

1955 – 1971 – Research Metallurgist, Senior Hydrometallurgist, Lead Smelter Metallurgist, Copper Smelter Metallurgist, Deputy Lead and Copper Smelter Superintendents, Director of Metallurgy Cerro de Pasco Corporation, La Oroya, Peru (complex base, precious and minor metals involving concentrators, smelters and refineries and fabricating plants including copper, lead, zinc, silver, gold, bismuth, antimony, arsenic trioxide, indium, selenium, tellurium, thallium, sulfuric acid, low melting point alloys, copper wire, cable and tubing).

1971 – 1973 – Mine Manager, Texada Mines Ltd, Harbour Master Port of Cape Cuvier, Manager Quobba Sheep Station, Carnarvon, West Australia (4 million tpa salt production by solar evaporation and potash pilot plant), Member Civil Defense Corps Carnarvon Area.

1974 – 1995 – Research Metallurgist, VP Research & Development, VP Metallurgical Operations, Director Newmont Exploration Ltd.(worldwide), Newmont Mines Ltd., (Canada), Newmont Australia Ltd., Palabora Mining Company (South Africa), O'okiep Copper Company (South Africa), Tsumeb Corporation Ltd (Namibia), First General Manager Minera Yanacocha (Peru), President & General Manager Newmont Peru and VP & General Manager Newmont Latin America. Based in Danbury, CT, U.S.A., New York, NY, U.S.A., Denver, CO, U.S.A. and Lima and Cajamarca, Peru . (Newmont

operated mines, concentrators, smelters and refineries and exploration programs in Peru, Chile, Bolivia, U.S.A., South Africa, Namibia, Australia, Canada, Russia and Uzbekistan producing copper, lead, zinc, gold, silver, molybdenum, uranium, lithium, ferro alloys, coal, oil and gas).

1996 – Consultant to Newmont Mining Corporation on worldwide operations and to the Newmont and the Penoles Group on the La Herradura gold heap leaching operation in Mexico (based in Denver).

After retirement from Newmont Mining, I joined the New York based mining consulting group Behre Dolbear and worked on projects in Nevada and in Peru.

1996- 2000 – Consultant Theiss Contractors (Australia based contract miner operating in Australia, Indonesia and Peru(worked out of Lima office), Consultant Brambles Securities (U.K. based transporter of gold, silver ,coins ,etc. Reported to Miami Office Manager). Consultant Securus Logistics Ltd. (Swiss based transporter of gold, silver, coins, etc. Reported to Santiago,Chile Office Manager)

Whilst with Cerro Corporation and Newmont Mining Corporation I visited several potential mining/metallurgical prospects including Zarafstan to begin gold operations there and a 9 month stint at the National Institute of Metallurgy on the JV Newmont/O'Okiep in Randberg in South Africa and a gold operation in Siberia and another gold prospect in Salave in Northern Spain. I was also Chairman Technical Committee of INCRA (International Copper Research Association), Chairman and President of SCRA (Smelter Control Research Association), Chairman and President SERA (Smelter Emissions Research Association), Director ILZRO (International Lead and Zinc Research Organization), Director CDA (Copper Development Association). President New York Mining Club, Program Chairman New York Section SME (Society for Mining, Metallurgy and Exploration Inc). and Chairman and Founder Denver Section MMSA (Mining and Metallurgy Society of America),former Chairman of the MPD SME (Mineral Processing Division Colorado Section of SME), twice Chairman International Gold Symposium, Lima, Peru and Chairman International Congress on Environmental, Safety and Social Responsibilities in Mining and Metallurgy, Lima, Peru. Honorary Member Peruvian College of Engineers. Life Member of the Canadian Institute of Mining and Metallurgy (CIM), a Fellow of the Institution of Mining and Metallurgy (IMM) , Golden Fellow of the Australasian Institute of Mining and Metallurgy (AusIMM) and a Life Member of the Society for Metals (ASM) and The Metallurgical Society (TMS).

At present I am Chairman Resource Development Inc. ,Past Chairman Emeritus Mining, Energy and Petroleum Task Force, Chamber of the Americas, President B&H Mine Services, Director Aztec Metals Corp., Canarc Resource Corp., Cardero Resources Corp., Emeritus Director Endeavour Silver Corp.,Solitarion Exploration and Royalty and Wealth Minerals Ltd.

I am a former Director of Sulliden Gold Corp. Ltd., Coronet Metals Corp. (now Consultant), Glamis Gold, Alamos Gold, Corriente Resources, Morgain Minerals,

Alamos Minerals, Castle Gold Corp. Pediment Gold Corp, Golden Alliance Resource Corp. Golden Arrow Resource Corp(now Consultant) ,Indico Resource Corp.(now Consultant), Sulliden Gold Corp Ltd. , Batero Gold (now Consultant) ,Argus Metals Corp. and the Peruvian Institute of Mining Engineers and a Former Consultant to the Regulatory Framework Group for Deep Sea Mineral Exploration and Exploitation (RLRF) and Advisor to the Peruvian Minister of Mines Fernandez Maldonado.

I am a Consultant to H&H Metals Corp., Minera Titan del Peru , Chairman of the Advisory Committee of Vena Resources, Consultant J.D. Bowey & Associates; Minera Resources, and JVS Ingenieros. I am a former Advisor to Complete Metallurgical Plants and Pilot Facilities of Tucson, Arizona on modern day copper and lead smelter facilities in China which included a two-week visit to such installations in various parts of China with a group of Mexican engineers. I am a former Member of Frank Veneroso's Mining Investment Team and a former Senior Associate of Behre Dolbear Company. I am also a former Member of the Advisory Board of the University of Nevada-Reno.

I am a Member of the Mining and Metallurgy Society of America (MMSA) and recipient of the Gold Medal of this Society, Member of the Society for Mining, Metallurgy and Exploration Inc (SME), Trustee SME Foundation, Past Chairman SME International Committee and a recipient of the William Lawrence Saunders Gold Medal Award, Distinguished Member Award, Krumb Lecturer Award, Arthur Damian Life Achievement Award, Legion of Honor Award and Community Assistance Award-together with my wife . I am also the recipient of the Mining Man of the Millennium Year Award from the Randol Gold and Silver Forum in 2000.

I am also a Member of the South West Mining Hall of Fame and a recipient of their Medal of Merit Award and a recipient of the Peruvian Society of Engineers Engineer of the Year Award. I also received the Newmont Chairman's Award for opening Minera Yanacocha , the General Manager Cerro de Pasco Award for improvements made in the La Oroya lead smelter. the Peruvian College of Journalism Award for a paper presented to this College entitled "Mining in Peru- Past, Present and Future" and received a Diploma of Honor from the National University of Central Peru in Huancayo as a keynote speaker at a conference on Mining Technology Today. In addition I am the "God Father" of the Cristo Rey High School Graduating Class Cajamarca, Peru; of the Teresa Gonzalez de Fanning High School Graduating Class Lima, Peru of the Graduating Class of Masters in Science (Environmental) from the National Engineering University (UNI) in Lima, Peru of the graduating class of Metallurgical Engineers from the National Engineering University (UNI) in Lima ,Peru and the graduating class of Mining Engineers from the San Marcos University in Lima, Peru.

I am a Life Member of the Canadian Institute of Mining and Metallurgy (CIM), Golden Fellow of the Australasian Institute of Mining and Metallurgy (Aus IMM), Life Member of the American Society for Metals (ASM), Fellow of the Institution of Mining and Metallurgy (IMM). Life Member of The Metallurgical Society (TMS), Member of the International Committee Colorado Mining Association (CMA), Honorary Member of the Peruvian College of Engineers (CIP), Member and former Director of the Peruvian Institute of Mining Engineers (IIMP), Honorary Member of the Mexican Association of

Mining, Metallurgical and Geological Engineers (IMMGIM), Member of the South West Mining Hall of Fame and a Former Director of the National Mining Hall of Fame and Museum of the Peruvian Society for Mining, Energy and Petroleum, Chairman of the Foreign Investment Group in Peruvian Mining and a Member of the Gold Committee. I am also a member of the American Association for the Advancement of Science (AAAS).

I am the author and coauthor of several dozen technical papers which have been presented in the US, Australia, Singapore, Peru, and Mexico, and I hold several patents pertinent to metallurgical processes.