AN INTERVIEW WITH
LAWRENCE N. "TOMMY" THOMPSON

by

Harold K. Steen

Forest History Society
Durham, N.C.

1997

Table of Contents

Introduction

Lawrence N. "Tommy" Thompson was born in Mt. Vernon, Georgia, on October 31, 1925. He earned a bachelor of science degree in forestry from the University of Georgia in 1948 and a master of forestry degree from Duke University in 1950. Until 1973 he was employed by several firms--principally Georgia-Pacific Corporation--whereby he became a hardwood specialist. In 1973 Tommy and John Shackelford formed T & S Hardwoods in Milledgeville, Georgia. Their initial investment of $200,000 has grown into a solid company with annual sales in excess of $20,000,000 and a book value of $15,000,000.

One of his earlier assignments for Georgia-Pacific was at its operation on the lower Amazon. While there, he would hear about Daniel Ludwig's huge forestry operation only a hundred and fifty miles away by air. Working directly under his supervision was Johan Zweede; eventually Zweede would be in charge of Ludwig's forest operations, and he frequently sought Tommy's advice. By then, of course, Tommy was back in the States and running his own company. But he made time to consult not only at Jari but also for Mead, Union Camp, and KMI Continental Group.

Tommy was a frequent visitor to Jari during its American phase and grew to admire and respect Clayton Posey, Bob Gilvary, and John Welker. He also greatly admired Daniel Ludwig, who too used Tommy as a consultant. As well, he admired the overall venture and became troubled that this great story was so poorly and inaccurately told. Thus, he spearheaded the effort to fund not only his interview but those of the three others as well. This interview took place at Tommy's home in Milledgeville.

Harold K. Steen
Durham, N.C.
July 1997

AN INTERVIEW WITH LAWRENCE N. "TOMMY" THOMPSON

Learning the Hardwood Business

Harold K. "Pete" Steen (HKS): Let's start with your background so we will know what skills you had that made you attractive to the people at Jari. So you started at Georgia Pacific (G.P.). What kinds of work did you do there?

Lawrence N. "Tommy" Thompson (LNT): Basically, I went to work with G.P. about two months after I completed my M.F. program at Duke working on wood supply for the Savannah Plywood Plant. At that time we were still peeling a good many native hardwoods such as sap gum, tupelo, yellow poplar, so on, making pretty much conventional hardwood plywood. I did not live in Savannah. I lived in Claxton, Georgia, because that was more the center of my activity. Our two younger children were both born when Betty and I lived in Claxton which is about fifty miles west of Savannah.

HKS: I see from your resume you really are a Georgia boy. You didn't leave the state very many times.

LNT: No. My work was primarily involved in cruising hardwood timber. Also purchasing logs from producers that might control their own stumpage. At that time a lot of the logs going into the Savannah plant were shipped by rail. Most of them in gondola cars.

HKS: I've cruised softwoods for the Pacific Northwest, never hardwoods. Is there a big difference?

LNT: Oh, not really. I don't think a big difference.

HKS: You have to know more about grades or?

LNT: Yes, you probably had to be somewhat more concerned about grades and defects. Particularly in the rotary veneer business. Any time you've got knots or hollow in a tree it makes it impractical to peel. I used to carry a small hatchet with me most of the time, a single-bladed hatchet. Bang on 'em and really got where I was pretty good at detecting if it was hollow there. It was a good, broad experience in forestry procurement. Not for really forest management although occasionally a tract would come along where I would participate in the way in which it was cut and left and so on.

HKS: But for hardwood management, it's sprouts. You don't plant. You don't get seedlings and plant them.

LNT: No, it's pretty much economically impractical planting hardwood and fortunately, it's seldom needed, Pete.

HKS: Do people grow hardwood on purpose?

LNT: Yes, and that's coming on more and more. Southern hardwood forestry has not had the attention from the forestry schools I think that it could have had over the past thirty years. Most of your big industrial forestry land owners, Union Camp, Georgia Pacific, International Paper, many of those big companies have been primarily concerned with softwood, specifically southern yellow pine. Mississippi State has come on pretty strongly in really the last fifteen or twenty years to my knowledge with greater emphasis on hardwoods. It's a more complex silviculture in that you're rarely going in for a complete clearcut.

HKS: If you go south from here a hundred miles, the hardwood is not a furniture grade is it? There's a change as you get into the lower elevation. I'm not sure what it is.

LNT: It's a question of drainage, soil types, and so on. There's some down there in some species that's still of furniture quality. Yellow poplar will turn out just as well.

HKS: Is this something you can see from the outside, or you just know it through experience that when you get a certain place it's no longer high quality? What I'm leading up to is, when you go down to the tropics and you start looking at the trees, what do you see.

LNT: There are most always indicators that give you a clue on the overall quality it might be. For the past twenty years red oak in particular and white oak to a lesser extent have been major, major species for the furniture industry and a good many other users such as the cabinet industry. Species enter into that very significantly. Your very best red oak occurring mostly in the Appalachians and even in Indiana, Ohio, and all is the northern red oak species.

HKS: Is it the rate of growth that affects the quality or something else? The higher elevation would tend to grow more slowly.

LNT: Well, it does, but secondly, northern red oak is a species that has very limited small defects like bark pockets, pin knots, those sort of things. The best southern red oak is cherry bark and it's classed as a variety, but I think the taxonomist should go back and put it in as a separate species. As far as we are concerned it's a separate species. There are numerous indicators as to the overall health of a given tree. I would say one of the easiest ways to get into difficulty in buying hardwood for commercial lumber production is getting into species that are overmature and the indicators normally being the crowns. When you see a good full crown, no dead limbs, no streaks of dead bark on the bowl or anything, you're looking at the best.

HKS: Do those indicators work in the tropics? The same basic principles or is it a whole new ball game for you?

LNT: I was continually asked by people who saw my slides showing some of the indications of very heavy forest, why there wasn't more done at Jari to salvage more of the timber rather than burning it up. One of the big problems, and I think Clayton Posey may have even touched on it, was that much of that three hundred thousand acres that was cleared was overmature and had a good bit of defect in it.

HKS: We'll come back to that. I'm Ludwig and I want to hire an expert at a variety of things. I hire an engineer out of Cornell [Robert Gilvary] who's done some highway work and send him to Jari.

LNT: Yes.

HKS: Ludwig picks these people, so your background here is significant.

LNT: Initially, Johan Zweede and Clayton asked me to come to Jari. I got acquainted later with Mr. Ludwig and actually did some different work for him, directly for him.

HKS: How did you know Clayton and Johan?

LNT: Johan worked under my overall direction for four years at G.P.'s operation in Portel, Brazil, which is about one hundred and fifty miles by air from Jari.

HKS: That's from G.P.?

LNT: From G.P. That's correct.

HKS: So that's your background, at G.P. who had you in Brazil.

LNT: Yes. I had not met Clayton until I made my first trip to Jari, but I knew Johan very well.

HKS: So it's no surprise that you were invited, because you were already working in Brazil and you had hardwood experience.

LNT: Yes. Do you want to get a little more into my background?

HKS: I do. One of the things we need to talk about is hardwood lumber. I think that's probably significant because of the decisions that were made in Jari about not using native species.

LNT: Right. I spent twenty-one years with Georgia Pacific, and throughout that time I was involved in forestry procurement, particularly buying a lot of timberland. In the span from 1959 to 1969 we took our land ownership in the Southeast, and that would have included now West Virginia as well, from less than ten thousand acres to almost nine hundred thousand acres in ten years. I spent a lot of time working in that area. During roughly the same time span I had charge of all the hardwood lumber production G.P. had which was at that time all here in the Southeast. The last four years I was with G.P.--I was ready to leave in 1970--I was getting a little restless and we had some operations in the panhandle of Florida; well, west of Gainesville that were not doing well. The CEO, Bob Pamplin, asked me if I would take on a project to turn those operations around which meant a move to Gainesville, Florida, a delightful place to be. Fortunately, we were able to turn the operations around. When I went down they were losing roughly a million eight hundred thousand a year, and we turned it around to about three to three and a half million dollars a year profit.

HKS: What was the deficiency that you had to correct? What wasn't being done?

LNT: Primarily management. Morale wasn't the best. Some technical things, but I'd say primarily my major contribution down there was to really give the employees and our local communities around us down there credibility for Georgia Pacific. There had been a number of things allowed to creep in down there that shouldn't have.

HKS: As a stereotype, a major corporation has various divisions that has people that look at the quarterly reports coming in from the divisions, and they quickly spot something that's not working. Apparently they didn't know how to fix that for quite awhile.

LNT: The work and decision making process in Florida was split up, and this manager handled the plywood plant and that manager handled the forestry. I was in charge of forestry all along. I was given responsibility for the whole thing except sales and was able to pull the people together or in many cases get other people in.

With Georgia Pacific in Brazil

HKS: Management obviously was an issue with Jari. Lack of continuity at the very least.

LNT: It was amazing. I knew about Jari almost from its inception. In fact, this is rather interesting, Pete. The block of property at Jari was offered to G.P. and I was not supposed to have to get involved with Portel or in the Amazon, but later I had to, and wisely Pamplin and Hiram Mersereau, Mersereau being my boss and Pamplin his boss, concluded that really for what they wanted to do in the Amazon, Jari didn't fit. They were primarily interested in the species called virola. It was used virtually one hundred percent for core stock for high grade plywood with birch, walnut, all of that.

HKS: So it was peeled or sliced there and shipped to the States for manufacture?

LNT: It was all peeled, rotary cut, shipped directly from the plant site. We had deep water there, into Port Wentworth, Georgia. By then the same plywood plant which I had started out for in 1950 was no longer peeling any domestic veneer.

HKS: What makes good core stock? Dimensional stability?

LNT: Dimensional stability and peels smooth. Doesn't tend to want to make the panels warp, and virola is an excellent species for that. G.P. wisely did not buy the property down there at Jari. We bought some other properties with the veneer plant, at Portel.

HKS: So to operate in Brazil you basically have to buy property. You don't buy the timber from someone as you would in the States.

LNT: Yes. I was told early we were going to be looking in Brazil. G.P. said, we'd like to have you go, but I was really busy up here with several major timberland acquisitions plus operating responsibility. They said we're not going to ask you to go

and then about six months later Mersereau walks in and says, "I know Pamplin and I told you we wouldn't need you down there, but we do. Get your passport." Anyway, my first trip down there things had been going about six months and they'd already purchased a pretty big block of land. Let's say six hundred thousand acres.

HKS: A small operation and pretty cheap land?

LNT: Cheap land. A dollar or two dollars an acre. But I started really digging into that. There was some serious misinformation that had been provided in the original study down there. I'm not going to name names. One of them was a Ph.D. in forestry. I don't know what happened, but they projected stands of virola that would run 80 percent virola. I had spent two months in the back country of what is now Zaire for Owen Cheatham, the founder of Georgia Pacific in the '50s, in 1955 and in the real tropical jungles there and I had never seen anything like that kind of concentration of species. So.

HKS: So this is a native stand of 80 percent?

LNT: Supposedly.

HKS: Supposedly. Okay.

LNT: That was one of my very first things I struck out to confirm or not to confirm and it just was not there. I didn't think it was likely to be there.

HKS: Can you manage virola by cutting and encourage it to come back and be dominant in a stand?

LNT: I guess you could in extreme circumstances. What we were doing there was primarily buying logs. Virola occurs more or less like tupelo or cypress here in the Southeast in low swampy areas. It was all hand felled with axes, hand bucked with axes, hand rolled to the water and made up in rafts.

HKS: So it would float obviously.

LNT: Most of it would float. Once in awhile you'd get a sinker. As long as they had water where they could float it they, the so-called *cablocas*, half-Indians, half-Europeans, that came in during the hey-day of the rubber trade.

HKS: G.P. owns this land, maybe owns it in quotes, but it owns the land and then that's it in a sense of damage. There's no management plan, the reforestation.

LNT: There was no real management plan. Fortunately, it will regenerate pretty well.

HKS: So there's no Brazilian forest practice act, to use U.S. terminology.

LNT: At that time there was not. Now this was in the last half of the '60s. They have now put in requirements in their forestry operations that the industry has to utilize a broader range of species.

HKS: Oh, I see what you're saying. In other words, no more high-grading the stand.

LNT: Right.

HKS: Okay. What would a typical acre be? Ten, fifteen dominant species? Or a lot more?

LNT: A typical ten acres, strangely enough, will often be what you just said, maybe even as little as six or eight dominant species, and then a half a mile away the ten acres may contain another six or eight different species. Very diverse forest, particularly when you begin to look at it on a fairly broad basis.

HKS: What's the diameter? These people are hand logging, rolling the stuff down to the river.

LNT: Most of the virola was not that large. A typical log that we got into the plant down there probably came out of a tree at eighteen inches to twenty four inches DBH. It's hard to realize just how much water there is--creeks and so on--in that lower Amazon basin. When the river rises and it'll be rising right now, they are into the rainy season, that river spreads out over big areas. Now unlike way up river like Manaus; typically at Manaus the water in the river rises, goes up to forty feet to fifty feet from the dry season to the wet season. But down in the area where we were operating near the Atlantic it rises typically five or six feet. A lot of times it would enable these fellows to get out there and darn near fell trees in the water and buck them up if you see what I'm saying.

HKS: Sure. So they were skillful at using water. They'd wait until the right time of year.

LNT: Yes. Basically your travel is by water.

HKS: Was virola available at Jari? Is this a common species in the lower Amazon?

LNT: It's a common species in the floodplain and there's also an upland virola.

HKS: This floodplain. That's where Ludwig grew his rice and stuff too.

LNT: Yes.

HKS: The same kind of country then.

LNT: Yes. There's literally several million acres of that forest type from the ocean going up river. It occurs frequently for three or four hundred miles. Now I've not really had any firsthand experience further up the river than that, but most of the land at Jari was not swampland. It was rolling. It finally went up into the a escarpment where it was like let's say six or seven hundred feet high and then dropped off again beyond that. I had timber supply responsibility for Portel for four years.

HKS: How did Johan get selected, because he's the one who would bring you back in. How was he picked out of the crowd as it were?

LNT: Johan is a graduate forester from Syracuse. He was born in Indonesia of Dutch parents. His father had a major plantation on the island of Java, and they were overrun by the Japanese. Johan and his mother were put in one camp and his father in another work camp, and his father died in the work camp. Johan said when he was six years old he weighed less than he had when he was three. They almost starved to death and were finally liberated by Indian Gurkas. The plantation was gone. They came back to Holland and in fact I think even the queen put them up in one of her homes for awhile. I think later all of the family immigrated to the U.S. He had a good solid background in silviculture. He was completely fluent in Portuguese, and he was very good at operating with Brazilian contractors, labor contractors, clearing contractors, and so on. Clayton recruited him. To tell you the truth, they made a very good team. Clayton was the managing director in effect for about three years, and Johan was in charge of the forestry department. Of course, Clayton also had a strong background in genetics.

Involvement at Jari

HKS: You're clearing up how you got involved with Jari.

LNT: Right.

HKS: It's very logical that you wound up there.

LNT: They primarily wanted me to look over their shoulder as a practical guide in logging, and they were already doing some lumber manufacturing there for use on the project. As you know, they built a tremendous number of homes and all of that. So I became involved with them and made my first trip to Jari in 1973. I had known about the project all the time.

HKS: You had a lot of hardwood experience in the States. Portel was a hundred miles away from Jari.

LNT: Roughly a hundred and fifty miles by air. It was south of the main Amazon and Jari was north of the river.

HKS: What were your expectations? You knew about Jari, but you hadn't been there but you're certainly familiar with the basic lower Amazon ecosystem. But when you got there were you impressed?

LNT: Yes. It was interesting, Pete. I'd hear about what was going on over at Jari. They were having a continual turnover of managers. They first started out mechanically clearing the forest. Somebody asked me what I thought. I said, it won't work. You'll destroy the soil fertility in those tropical soils, and it turned out precisely that way. I think Clayton made some comments about it, and they had gone along a pretty good way. That project was started about 1965 or '66. I mean, the acquisition of the land and so on. Strangely enough, my son Larry went to Jari very early, when he was

sixteen. Hiram Mersereau had a son the same age as Larry. So by then we had our own shipping, and we sent the two boys off on a trip down there with a ship with the explicit understanding that they'd go down by ship and come back. Hi came in one day. Hi says, "Tommy, I know we decided that the boys would go both ways by ship, but said, they'd really like to fly back." [laughter] I said Hi, I told Larry he'd have to come back the same way. So they both told me they were awfully bored coming back, but they came back the same way.

HKS: How long a boat ride was that? A week? In that neighborhood?

LNT: Maybe slightly longer. Larry said everything in the ocean passed them including sail boats. But they carried a big cargo of Caterpillar equipment down there to Jari and off-loaded it. So that was when he was there. I think it was eighteen D-8s being shipped. I don't know what all. A lot of other equipment. And so Larry had some early exposure over there that I didn't have. What did surprise me some--and it shouldn't have--was just how rapidly they were moving along with many things. Particularly including a land clearing, which Johan set in motion and that was the abandonment of mechanical clearing. Just a tremendous expansion of what's been done there for a couple of hundred years or probably longer; slash and burn.

HKS: Did they use chainsaws at Jari?

LNT: Yes.

HKS: At Portel did they chop, use axes?

LNT: Yes, but they still used a fair amount of hand tools on the small stuff, but the bigger trees they did go with chainsaws and so on.

HKS: But there was no windrowing. After the hand stage, they burned stuff in place more or less?

LNT: Right. But what they would do, Pete, was go through first and put the small stuff on the ground. You know, brush, small trees and all, and then come in and fell the big timber on top of that and burn it during the dry season, which is roughly six months starting September or October.

HKS: I don't understand. We had a lot of hurricane damage from Fran last fall.

LNT: Yes.

HKS: We lost about fifty trees on our property alone, and there isn't any way in the world I can get that to burn in three to four months drying. It doesn't look like it to me. It's ready to burn after a couple of years, and then it really gets dry. But typically, you cut it down and three months later you're burning it. Is that correct?

LNT: Yes. Yes.

HKS: One thing, the jungle grows back. You got to get it burning, but it's still wet by our standards. You couldn't cut to burn in your fireplace could you?

LNT: I don't mean it's completely dry, no.

HKS: But it's dry enough to get rid of.

LNT: But you got enough mass there with particularly the small material at the base that you can kick the heat up enough that the big logs begin to burn and burn very hard. Bear in mind, maybe 50 or 60 percent of the material on the ground that's been felled is out of these very dense species like angelim. There's at least eight or ten species with a specific gravity of over 1.

HKS: So they won't float?

LNT: No, they wouldn't float. We used to bring massaranduba timbers into Portel. For storage we had clear water at Portel, and we just dropped them over in the bay where it wasn't too deep and left them in there until we needed them. They'd sink just like a rock, but that also makes that kind of wood pretty easy to burn. Once you kick it off it'll go right on.

HKS: And if you don't burn it, it's there for twenty or thirty years probably. It doesn't rot.

LNT: Much longer than that. We have a little fence right here of another species that Johan got for us. Posts and rails for fencing, and its specific gravity of about 1.1 or 1.15. I asked him if it was durable and he said, you remember when you sent me way back to check on some land corners. I said yep, and then he said well, I found a corner post back there in 1972 that had a scribe. He said it had a scribe date of 1902 on it. It was just as solid as it could be right now.

HKS: I was in Clayton's mill out in Oklahoma. He showed me some of the decking he was making and it was very heavy. I mean, he gave me some samples of it. It certainly wouldn't float.

LNT: If Clayton and Johan had concentrated their time on a product like this decking that doesn't require any treatment, they could have seized the market away from this other treated southern pine decking that's a red hot item.

HKS: Sure. They were in the process of clearing the land to establish plantations.

TNT: Right.

HKS: The pulp mill's way in the future.

LNT: Way in the future.

HKS: And they're still planting gmelina?

LNT: They're still planting gmelina.

HKS: Then Clayton does his magic act with Ludwig and shows him the pines.

LNT: He sort of had to do it on the sly.

HKS: Yes. Yes.

LNT: But, when I went down the first time they were very busy clearing land, and they already had the nursery in place and they were promptly replanting all the areas that they had cleared with this burning. I mean, within months all of them were replanted and revegetated. They were very careful not to leave the soils exposed very long. Gmelina would just take off and provide cover very quickly.

HKS: From John Welker I got the impression that the strategic plan changed through time. They were going to use gmelina for lumber and plywood.

LNT: Yes.

HKS: It wouldn't grow straight. I was trying to figure out how they knew how many acres to clear, how much plantation they needed, and how much and how fast it grew, the volume production per year to run a pulp mill or a sawmill. I mean, it's kind of complicated to figure that out.

LNT: Yes it is. Ludwig had discovered, so to speak, gmelina that had been planted, originally it's indigenous to southeast Asia. I don't remember what country. Someone had brought it to Africa. He saw that and brought some from there to Panama where he had some holdings. Nothing like as big as Jari. He planted it there and they had some track on the kind of volume growth they could get out of it. But the same problem was very much present that John Welker describes, and I early on began to caution Clayton and Johan that with relatively poor form--a lot more crooks and branches--they were going to find that harvesting cost was going to be a good bit higher, and it was.

HKS: Did they begin right there at the town and start clearing land, or did they go out and select a site and follow some sort of a topographic line or something, because they wanted good sites to grow gmelina.

LNT: Right.

HKS: Whatever a good site is. I'm not sure if a good site for gmelina is a good site for pine.

LNT: Much of that land was a good bit more sandy and they were planting gmelina, early on, on those sandier soils and not getting outstanding results. That's when Clayton got to working on the pine business, and he did in my judgment a fabulous job of keeping up with the seed source on everything they took down there and determining that the mountain variety of *caribaea* from Honduras was the best. He tried loblolly. He tried slash pine. Both of which have done extremely well in southern Brazil, temperate zone, but didn't do well but that *caribaea* did well. Once Ludwig accepted the fact that pine could fit into that picture, they began to more and more plant pine on the poorer sites. They also had a crew. I'm trying to remember the Brazilian forester's

name that headed that up--Everaldo. He pretty much headed that up and they'd be out fifteen, twenty miles at times, I think from any real road or anything else doing soil surveys and so on. So it was pretty well scheduled and planned, particularly after the first two or three years. It was a tremendous rush to try to get the thing off the ground in a hurry.

HKS: Sure.

LNT: But they began to do it lot more carefully after the first few years of experience there.

HKS: I've seen some aerial photographs of the plantations. I don't know how typical they are, but it looks like they are following some kind of a contour line up a valley or something. Like they made a decision where to stop, and somebody was putting some kind of markers at places. I don't know if you were involved in judging the logic of their location where they logged or not.

LNT: I really wasn't. I'm not a real good soil scientist. I wish I knew better.

HKS: So it wasn't obvious by what was growing on it when you saw certain native species that this would be a good site.

LNT: There are good soil indicators down there. I can tell you one tree that is indicative of good soil down there is the one on which the Brazil nut grows. The Portuguese name is *castania*. I've forgotten the Latin name for it. They were always good indicators of better soils and there were several other plant indicators. But as I recall they did some pretty darn thorough soil testing in setting up what they planted after that because obviously they had roughly three million acres there to work with, and they knew they weren't going to try to clear three million acres.

HKS: They took something like 10 percent in total.

LNT: Right. Right close. Secondly, of course, they had to look at transporting and all of that, Pete. They really did not want to strip enormous areas, which is one reason you see from the photographs a good many strips of native forest left there.

HKS: I want to dwell on this a little bit because of the environmentalist criticism.

LNT: Right.

HKS: Was this a practical thing or a political decision not to cut it all?

LNT: No, it wasn't, I'll say very quickly, no it wasn't. They were always sensitive to the fact that they were the biggest project in the Amazon since Ford tried to establish Fordlandia, and it didn't work for the rubber. But I would just give them credit for being pretty sensitive to what really made good environmental sense.

HKS: Ludwig, who might not have been attuned to these policies, was not critical of these kinds of on-the-ground decisions? He might say, as long as you're there, why don't you just take it all?

LNT: As far as I know, he gave them a lot of latitude there. He sure did. Now he at times could be a dictatorial guy and he was always in a hurry, understandably. Clayton, Johan, and John Welker, you know, that group deserved a lot of credit for not going out and making some major environmental mistakes. I think any really objective person who went to the project today and looked it over would concur with what I've said.

HKS: It's easy to look back and see mistakes. It seems strange that in the very early years before you went down they didn't have enough seedlings in the nursery to plant the land they cleared. It doesn't seem like it should have been a surprise that they were clearing so many thousand acres and it takes so many seedlings per acre.

LNT: Yes.

HKS: And yet the nursery seemed to be out of sync with the land clearing, or is it harder than it seems to make that kind of coordination?

LNT: I think it probably came about when they didn't really have their organization meshed and maybe a guy may have been in charge of the nursery and maybe one group not knowing what the other one did.

HKS: It felt like that G.P. operation in Florida when you went down.

LNT: Yes. Yes. I suspect that may have been the background. They had to learn how to grow those gmelina seedlings where they would survive when out-planted. Clayton came up with that system of chopping them off and planting stumps so to speak--which worked. So I think there was some learning curve there as well.

HKS: I have in the outline that one of the things you consulted on was the plan and design facilities in synchronization with the market forecast. Is that a correct assessment? It doesn't sound like you really were doing that from what you just said.

LNT: Certainly not in the early days. No, I wasn't. We got into a number of discussions and I even made a trip to Everett, Washington, the Weyerhaeuser plant where Mr. Ludwig had shipped some gmelina from Panama for manufacturing the lumber. It was pretty interesting. So small gmelina logs about that big [gestures] on one of the old big Weyerhaeuser sawmills, you know.

HKS: I went to school in Seattle and I took a tour of that mill. They put some pretty big logs through there.

LNT: It was pretty funny.

HKS: Weren't there better mills to test it out? Hardwood mills here in Georgia, for example?

LNT: Yes. I don't know how it worked out. He and George Weyerhaeuser even considered pretty seriously a merger or Weyerhaeuser taking an interest in Jari. At any rate, we were looking some, and I participated fairly early in the value that I thought they might receive out of lumber and possibly plywood.

HKS: So you were consulting directly with Clayton and Johan then, not with the people in Stamford, Connecticut.

LNT: Yes.

HKS: They just wanted your advice, your reaction to what they were doing.

LNT: Yes.

HKS: How long would you stay at Jari?

LNT: Typically I'd go down and stay anywhere from a week to maybe a max of two weeks. Primarily because I had a small business going here and I couldn't spare much more time.

HKS: Where did you stay at first? What was the housing like? Pretty primitive or was it well along by the time you got there.

LNT: It was well along by the time I got there. Actually, most of the time I stayed with Ann and Johan. I was that close to them. They had a decent home there and, you know, the food was fine. They had a water purification plant, unlike Portel where I brushed my teeth with bottled water. Later a very nice guest house was built at Monte Dourado, and I stayed there.

HKS: Welker described the house you stayed in: two bedroom, one bath, kitchen, living room, and sort of t-shaped. Did everyone stay in that same basic house or was there a hierarchy that Johan had a bigger house.

LNT: I don't remember. Probably there was a little bit of hierarchy there, but they ran a pretty egalitarian set up among the professionals down there.

HKS: I guess Bob Gilvary designed those houses.

LNT: I think he did. He's a very resourceful guy. He, everything considered top to bottom, might have made the greatest single contribution to the Jari project. He's a real sound engineer. He can get things done building roads, building bridges, building whatever, and he worked marvelously well with the Brazilians. I'll put it this way, if they hadn't had Bob Gilvary or a guy with comparable skills, it would have been a lot more difficult for sure.

HKS: I can imagine.

LNT: I'm personally very fond of Bob, but that's an objective judgment on my part that he was just a marvelous help to that whole project there.

HKS: My limited forestry experience is all in the Northwest, but similar in its development of an old growth situation. You have to put a road system in, bridges. I mean you're a lot closer to civilization there but still it's the same. You have to put the roads in the right place. They can't wash out.

LNT: Yes. Bob Gilvary was a key figure, I'll put it that way, in getting the job done there.

HKS: We talked a bit about this, but logging the native forest; that was essentially clearing, but there was a little for the hardwood sawmill for local use.

LNT: Yes.

HKS: I guess there must have been a serious plan for lumber because they built that big mill. Clayton says that one of his failures was that big mill right out of Everett, Washington, that got built down there.

LNT: That was a long story, and I know that story; let's come back to that.

HKS: But were you involved?

LNT: Following up more in the time sequence, Pete, they would set up areas that had significant potential for lumber as far as the species and the size of timber.

HKS: Some of the species were known well enough that you know they would make a certain kind of lumber but others that you didn't know anything about.

LNT: Right. They would go in ahead of any clearing and put in a reasonable road and you could log most of that timber with conventional equipment. Mainly they used tractors, front end type loaders. They used a good bit of this wood, *castania* (Brazil nut) grows as a medium texture where it wasn't so dense. It made decent lumber for housing. There could have been possibly some better utilization of a portion of that native forest.

HKS: The stuff doesn't float, a lot of it.

LNT: That's right.

HKS: You're a long ways from a manufacturer. You would have to have a mill there or ship. Where would you ship them if you shipped them down river. Does Belém have a sawmill capacity?

The Big Sawmill

LNT: Not a great deal. They have some and they ship some of the floaters.

HKS: From Jari obviously you could have shipped it out to the world market. Clayton said that one of his biggest failures was the building of that big mill, right out of Everett, Washington.

LNT: Yes. I pushed somewhat for looking more closely at selected native species that could be processed, you know, into the lumber that could go into the world markets. It

was finally done much later with that great big sawmill, and I'll tell you the story on it. They had a lot of things they needed to be doing. In context of the whole big picture, doing what I was talking about doing didn't have a real high priority and would have caused some distraction. They had some small mills there, mighty mites and so on. They could get their construction lumber and stuff cut. So as a consequence, for a long time there was nothing done about it. There was some discussion about the big sawmill. It was coming along pretty much simultaneously with the pulp mill. This was like in 1978 and at that time H. A. Simons Company in Vancouver had been engaged to do the onshore facilities for the pulp mill. The pulp mill itself and the power house were built in Japan. I'm sure that you're aware of that.

HKS: Right.

LNT: Towed around Africa up to Jari. I wish I'd been there when it came in. I was there before and I was there after it was set in place. Interestingly enough, a little bit ahead of this Ludwig was interested in developing a bauxite deposit that he had acquired mining rights on further up the Amazon. I don't remember how far, but like several hundred miles, and he jumped me about coming up with something where he could use waste wood or wood that was up there to fire a steam plant to make electric power and stuff they had to do. I ran down the expertise here in the U.S. for what you need and what your energy yields would be and so on. We were able to lay out a pretty matched up project for that. Nothing as big as the pulp mill. He never did go ahead with it, but he called me one day and says look, you remember when I had you working on this thing about the wood fired plant for the bauxite. I said yes sir. He said he been burning up a lot of forest down there in our clearing. Why don't we go with a wood fired boiler plant for the pulp mill and save on energy cost? Brazil has very little oil reserves and their only coal, Pete, is down in the south and it's more or less a brown coal. It's not a high energy coal like we get. So there was some considerable savings possible. I said it sounds awfully good to me.

HKS: And you studied it for the bauxite plant. You knew how many tons or cubic feet or something it took to generate a kilowatt.

LNT: Yes sir.

HKS: There was ample wood on the ground to generate kilowatts to run a pulp mill.

LNT: Right, and it was going to waste. So, we were going to build a sawmill and a facility to generate the fuel chips. I argued back and forth. Separate the facilities, I said, otherwise when you put a sawmill in there all you're going to be doing is mostly making chips. Ludwig had talked about Henry Byrd who did the engineering on the mill here and did the engineering on a bunch of G.P.'s hardwood mills for me and had been down there with me one time. Ludwig said I'd really like to get you guys to do this thing, but anyway it turned out they decided to use Simons.

HKS: Back to this energy. Maybe it's not practical to take too long a time frame, but at some point you're no longer clearing land.

LNT: That's right.

HKS: At some point you're no longer putting in plantations. Where does the energy come from when you reach that stage? Or was that an issue you worried about at that time?

LNT: Pete, I can't tell you precisely what the energy balance is down there now. There's areas in the tropics where it's a practical matter to grow cellulose for fuel, particularly in the areas where your traditional sources of energy are quite expensive. Oil, or coal, or what have you.

HKS: So you have plantations that "produce energy". It's a feasible thing?

LNT: It's a feasible thing. You also get a good bit of energy out of the pulpmaking process where you recover the black liquor. I've forgotten what they call it. It's a pretty damn tricky process but they all do it. They recover a good bit of energy, basically, out of the lignin that's discharged in the process. I don't know what their energy balance is there today. You also get energy out of the bark, any kind of waste. But, when they decided to go with Simons that was fine. So I came on home and I'd been planning to go ahead and build a new facility here. We had originally bought a small circular mill, not on the railroad, about two miles from our present location. Probably, it was the most fortunate thing to happen to me, because I came on back and really concentrated on getting the new facility built here and getting it financed on a fixed interest rate for five years before the interest rates ran away between '79 and '82. That seriously made a difference in survival of our little company. I made a couple of trips to Vancouver during design with the Simons people and was able to make some suggestions that helped, but it got to be pretty frustrating. I'd go out there and spend several hours or whatever going over the plans. They said, okay, we'll do it. We'll send you prints and modify it. When I got back those prints had come in, and they often weren't changed. Finally I called Ludwig up. I said, look, Mr. Ludwig, I'm wasting my time and your money. Count me out of this deal. He said, okay, Tommy. I understand where you're coming from. They built it. Looked like a battleship and soon as they started running it, the phone started running off the wall. It was almost scaled in like what you're talking about the big mill at Everett.

HKS: The mill could be built on site out of local materials, but yet you bring in the hardware, the saws, and the carriages, and, but all the beams and all the rest of it is local material.

LNT: That's another good story.

HKS: Okay.

LNT: That's what I recommended because we had done it at Portel. These dense durable woods you have down there, Pete, the people are still used to working with timbers with foot adze and fitting and all of that, and I strongly suggested that they use native timber to build the structure of the new sawmill.

HKS: Well, how were these decisions based? Is this part of Ludwig's influence.

LNT: No, I'm going to lay a little bit of that on Clayton's shoulders now, because Clayton was the guy to whom I suggested doing that. "No, we can't do it." Some insurance cost or something. Ludwig called me one afternoon livid. Said I just saw where we have purchased eleven hundred tons of steel to build that sawmill, and when Ludwig was really upset he could cuss a blue streak and not repeat himself for an hour. That was the angriest I had ever seen him. I didn't tell him what had happened, because I figured he'd fire Clayton and everybody else involved, and I think he would have that day. And so anyway, it was built on concrete and steel.

HKS: What was your capital investment then?

LNT: Eight million bucks. Eight million bucks. Later when I was down there and saw Ludwig face to face, I said, "You remember that day you called me raising hell about all that steel?" He said yes, and I noticed he looked a little sheepish. I said I didn't want to tell you that day because I figured you'd fire half of your folks, but I had suggested precisely what you talked about. And he sort of chuckled. He says those guys admitted to me later that you had suggested doing that. You know, it didn't take any brilliance or anything else to conclude that where you've got that class of structural timber that's got infinite life to it, and you got people used to working with it. The other thing, Clayton said initially was, well, we're worried about fire. But they built that concrete and steel plant and put in an excellent sprinkler system. That was all you needed for the wood. What happened was exactly what I was afraid of, Pete, that getting the chips produced for the boiler plant took priority. The facilities for cutting lumber weren't anything like what they should have been. You know, it was impractical and so on. So it ended up really not being a heck of a lot more than an expensive chip mill. It didn't have to happen that way.

HKS: When you look at a tropical forest and you see some of those big butt logs, I can see why you would want a big head rig, but are those the trees that were milled? The big ones with the fluted trunks?

LNT: No, you can't really do that much, you've got to get out of that fluting.

HKS: Well, how big were the logs?

Need to Sort Logs

LNT: There were three and four foot diameter logs, but mostly those were the species that were being broken down and put into that fuelwood. Particularly something like *Lignum vitae* there with a specific gravity of 1.1 or something. A lot more energy there per cubic volume. Another thing that I tried to convince them on and failed was to separate the species that had real potential for lumber in the woods. Bring them in separately and so on. And that's where, they had also asked me to send my son Larry down there on some technical aspects of saw filing and lumber manufacturing and all of that. And Larry was aware of that. He was in a meeting and Mack Davis just pitched a damn fit and says, oh, hell. There ain't no way we can do that with logging. Well, I knew damn well better and Larry did too, but Larry kept his cool.

HKS: He was the head of harvesting, right.

LNT: Yes.

HKS: That's harvesting's responsibility. Well, that's an interesting commentary.

LNT: After Mack left, they hired a young guy who's only experience was with the Forest Service. John Sessions. [snaps fingers] That quick he had to do it. I say that quick. You know, in the course of a couple of weeks he was doing just what Larry and I were recommending.

HKS: Sorting logs in the woods is not an exotic process. Throughout the States it's routine.

LNT: Particularly today, Pete, in our harvesting we are sorting at least five to six sorts with different species going to different places. Then cordwood going to chip mills and all that.

HKS: Could Mack have been thinking about the workers skilled in seeing the different grades.

LNT: I don't know what his personnel might have been.

HKS: He had the technical support you would need; I was just trying to figure out why he didn't.

LNT: I don't know why he didn't. Mack had never had the diversity of experience and most of his life had been taken up in short wood, cordwood for the pulp mill. It was a standing fare for supply in pulp mills for I don't know how long.

It really was very satisfying to me to hear what Sessions was able to do. The result of what some of the misuse at that sawmill was. You get occasionally very valuable species; it comes to mind first the wood called sucupira that's very valuable in Spain and places like that. I mean a dollar a board foot or more. You wouldn't even had to saw it; just buck the logs out and accumulate them and you'd have got the dollar a board foot for them. They'd wind up going in the chip pile. It was never really meshed together as it was intended, but the equipment was not ideal either. Then later after Ludwig was out of the thing one of the head guys, a friend of Johan's, came here to Georgia and visited with us a couple of days. He was so fascinated with the way this unit here ran. He really wanted to build one down there, but I think money must have gotten a little bit tight by then. He never did, but we thoroughly enjoyed having him. He ran the forestry end of Jari after Johan left. A native Brazilian named Flavio. Really a nice guy.

HKS: I suppose part of it was the focus on pulp for the mill. Everything else you could rationalize as "wasteful" because the pulp mill was the big thing, but it does seem strange. What little I know about Ludwig, he looked for opportunities to maximize returns.

LNT: Yes.

HKS: You grow rice here and you grow cattle here and you grow trees there. It's interesting. Welker was talking about the difficulty of importing U.S. hardware into Brazil, because they wanted to make sure the Brazilian firms had a fair shot at it, whether it was computers, or tractors, or anything else. I asked him was he ever aware of bribery, which is a much more common in the Third World--a much more acceptable business practice. It's right on the balance sheet. He said he never knew of anything like this. So this might be a single example of it.

LNT: I'm sort of like Welker; by and large in my experience at Portel and at Jari bribery really wasn't necessary, although Johan tells me since the dictatorship was replaced that unfortunately now it's a good bit more prevalent.

HKS: So democracy and bribery go hand in hand.

LNT: Unfortunately that's the way it's gone. Let's move on.

It's very interesting flora down there. One of the trees, Pete, and it's a commercial size tree. I've forgotten which one. Johan would remember. When you cut through the bark it releases a very unusual vapor that'll darn near blind you.

HKS: A vapor?

LNT: If you got right up on top. It'll be unpleasant if you're around it, but when they're felling the timber they're pretty careful with it.

HKS: Interesting. I was trying to think of the mechanism that would cause that.

LNT: I don't know what it would be.

HKS: I've been splashed by sap when an ax hits it.

LNT: I don't know. Out beyond any cultivation or much human habitation, this species of tree has strong thin bark, and they'll cut the base and just cut through bark at the base and peel it off. It makes baskets and all of that and it's durable, strong as a rope.

HKS: The species that had too much calcium or something and damaged the saws, were they well enough known so you knew which ones not to bother with?

LNT: The native people knew. They called it silica.

HKS: Silica.

LNT: In fact, early on in the Portel days I began to press G.P. Look let's don't tie our entire production here to this virola thing because everybody in the lower end of the river were also working on virola for molding and on and on and on. That's even with all of that area of swampland. Sooner or later what was accessible was going to be

more expensive. We were able to make equipment changes at Portel and use the woods with silica in them.

Need for a Railroad

LNT: I think a little bit of input from me on the railroad would be worthwhile. This occurred let's say around 1980. I might be off a year or two. We were getting a bit further along towards really operating, rather than just planting. By then I was hearing from Ludwig directly, occasionally requesting me to undertake certain things. He called one day and said I want you to go down to Jari and do something special for me. I said, "Well, what's that." He said I want you to go down and convince Johan and Clayton that we need a railroad. By then I had had enough experience with him that when he came up with what seemed like sometime a way-out idea it was a good idea to look pretty closely at it, because he might be just that far ahead of you. In truth that was the exact situation in regard to the railroad. The pulp mill, the industrial site. As I recall the industrial site was chosen because the river began to get a little shallower. That may not have been the key call there and I did not participate in that decision.

HKS: I think that's what Gilvary said. You could only go on major ships that far up Jari River.

LNT: As a consequence, the way the land lay and everything else all the wood going into that plant was going to have to go down a twelve-mile road. Once they really got into moving, it was going to be almost too much plus the travel of workers going back and forth and all of that to really use that road. At that time Clayton and Johan were figuring on bigger and bigger trucks and this and that and the other. So I load up and go down there. I was always well received by Clayton and Johan, so I was just very up front.

I said now look, Mr. Ludwig asked me to come down here and convince you guys that we need a railroad, and the initial reaction was, "Naw, we don't, Tommy. You're wasting your time." I said, "No. Let's look at it a little closer now." I said Mr. Ludwig once or twice faked me out when I didn't analyze what he was thinking about. We really began to work it through just what was going to be required and reached the conclusion that as a practical matter the railroad was going to be far more serviceable than the road and more economical to operate. Capital cost of building it to start with was pretty steep.

The safety element alone. I'm not a scary cat at all. In fact, trained as a Navy carrier pilot when I was eighteen, nineteen years old. There are no cowards as carrier pilots. But, one of the most anxious days I ever had was coming back from the industrial site. It was raining cats and dogs and 631 Cat scrapers coming down the road loaded, running thirty miles an hour. Autos ducking in and out to give you a clue. I was cautious almost beyond belief. They had a number of fatalities on that twelve miles of road. They finally began to provide some passenger transport on the railroad. Now whether it's still being done now or not I don't know, but they did that. Anyway, when Johan, Clayton, and I really analyzed what was going to have to move over that road we reached the conclusion that the railroad was the best way to do it and it was buildable. Bob Gilvary may have done the survey on the thing. I don't know.

HKS: He described a bit some of the technical issues. I forgot to ask him how he got the locomotive off the barge. It takes a pretty good port facility to lift something like a locomotive. He explained how easy it was to walk a Cat off. But a locomotive, you have to pick it up I understand.

LNT: Knowing Bob he probably built him a short piece of track and tied it together where he could run it off of there. This is a total aside, unrelated to Jari, Pete. In the early '50s we were shipping railroad car loads of lumber out of Savannah to Puerto Rico in cars. It was a car ferry, a rail car ferry. When it got to Puerto Rico they'd take them off. That's before the trucking business and the containers got called in. They had that set up very well. I had sort of forgotten about that.

HKS: I was just thinking of the salt water and the tide. It makes it a little harder to imagine how those tracks link up, but I guess they worked it out.

LNT: There's a little bit of tide at Jari even that far from the ocean. As I remember it, Pete, it's two feet. Something like that. But there's a significant one.

HKS: But the railroad is one of the things that the journalists use as an example of Ludwig's vanity. That he had to have a railroad just like a toy. But the railroad seems to make wonderful sense.

LNT: If I were going to tackle any major movement of freight, particularly in the tropics, the maintenance of roadways when you're getting a hundred inches of rain a year and more in hard downpours is no small undertaking. I would look long and hard before I'd pass up the railroad option.

HKS: This is one of those "ifs", if they had known initially that there was going to be a railroad with the less flexible road alignments, would the overall design of the operation have been different?

LNT: It was getting well along in the game. They would probably have been some changes. Yes, I think. But, still it fit a genuine need and the safety of that thing I'm not kidding you. Now if you'd have put all the trucks on that roadway in addition to what was already there, I will describe it as an impossible situation in terms of safety alone.

HKS: Did the train haul a load a day or make two trips a day?

LNT: I can't tell you on that. I'm just not sure. It made at least one trip a day and as I remember, Pete, like pulling ten cars or fifteen cars of wood. But they probably might have been pulling two a day. I'm just guessing now.

HKS: I really can't visualize how many truck loads fit on a railroad car.

LNT: Roughly three to four truck loads fit on a rail car. So they probably were making two trips a day.

HKS: Gilvary said that basically the railroad cars are all custom made. That's the length primarily.

LNT: Yes.

HKS: It depends upon the radius of the curves it has to navigate. I guess it's common when you buy a railroad car you tell them how long you want it to be. There's no standard length like it is in the States.

LNT: Well, no. There's more and more variation. We have Norfolk Southern service on all three of our plants strangely enough, and some of those cars today are getting up to seventy feet. I'm sure there's probably some track that they may not put them on. They may have tight enough curves they can't handle it.

HKS: Were there two locomotives or four?

LNT: I think it was probably two.

HKS: We've already talked a bit about using waste wood from land clearing for power plant fuel. Is there more to say on that?

Ludwig the Man

LNT: There may be more of a story. It was working well about the time that Ludwig decided to sell out. I know I had a visit with him a couple of hours, just the two of us, and that's the last time I saw him. I kept promising myself to fly up to New York and see him one day, and never did it.

HKS: It's probably a good time to talk about Ludwig the man. He's described in various ways. One article described him as being very tall and yet I've seen a photograph of him standing with Ronald Reagan, and Reagan is half a foot taller. What's your impression of the man?

LNT: Ludwig was no taller than me. He might have been an inch shorter.

HKS: For the record your height is?

LNT: Five-ten.

HKS: Okay.

LNT: Or five-ten and a half.

HKS: So he's average. He's not unusually big.

LNT: No.

HKS: Maybe it was a small journalist who wrote the story. [laughter]

LNT: He was of average build. He probably most of his life weighed a hundred and sixty pounds or something like that. Had a pretty serious injury early in his life in a

shipwreck, saving the lives of two of his seamen. He got a pretty serious back injury that plagued him pretty much the rest of his life. I asked him about it one time and he said, well, says we keep talking about an operation and said the doctors let me have so many aspirins a day and so on. He eventually did have an operation on his back before he died. He was to me one of the most original thinkers that I've ever met.

HKS: You, Clayton, Bob, and John have certainly one thing in common. You all call him mister. It must have been something about his bearing.

LNT: Oh, yes.

HKS: You wouldn't think about calling him Dan or D. K.

LNT: It's not just us. You know who Locke Craig was?

HKS: No.

LNT: Okay. I didn't remember. Locke's father was governor of North Carolina way back, and Locke graduated from N.C. State in the '30s as a forester. He worked with forestry service there in Asheville for awhile then spent some time in the Belém area with Jari. In the very early '50s he was working on a research project when he was down in that area of Brazil. Went out to Indonesia and ran a big rubber plantation for, it was either Goodyear or Firestone, I've forgotten which, for maybe as much as five or six years. Came back and went to work with one of the companies in southern Brazil, an American company, Olin Kraft. He took over just a little pepper box paper mill down there and built it into a damn first class operation. In about fifteen years he built up a land base, logging and all and retired from that company and went on Ludwig's Jari board. Locke died about three years ago down at Southern Pines where he had retired and he was pushing eighty. A really capable guy and a real figure. He and I were talking one day and he said one time that Mr. Ludwig told him, "Locke, why don't you call me D. K.?" He said, "I'm sorry Mr. Ludwig, but you're Mr. Ludwig to me. I'll just have to keep calling you that."

All I'm saying is it wasn't just us younger guys that felt that way about him. I'm sure he had contemporaries that may have called him on a more personal basis. The newspaper reporters who thought he built that railroad as a ego question didn't know the man. The man was in no way interested in the praise and fame from other people. I don't know whether you ever heard the story. He really provided the spark and the money to kick off the Japanese shipbuilding industry after World War II, and for a good many years built his own ships in a yard at Kobe. The Japanese people wished to give him the Order of the Chrysanthemum, which is the highest civilian honor in Japan. He said no, I'd rather you give it to the man that manages the shipyard. He most of the time, I'm sure someone's told you this, flew tourist class.

HKS: Sure.

LNT: I was in New York one time for a meeting with him and some of his people. He walked from wherever his apartment was to his office there on the Avenue of Americas. He was also quite careful to try to avoid being photographed for the simple

reason he traveled by himself a great deal worldwide, and you know a man worth the kind of money he was in his heyday is a mighty tempting kidnapping target. But as I say, he was just the kind of guy that did not try to parade off with a lot of pomp and ceremony. But he was tough as pig iron to work for. I might not have gotten along as well with him as an employee as I did as a consultant. I don't know.

HKS: How did you get started with him? I mean, was it logical he knew you were down there at Clayton's invitation or was there another way that he knew about you?

LNT: No. It would have had to come from them, because he wouldn't have known any other way. It's really interesting, Pete. He had a great deal of respect for a guy that ran his own business like I did.

HKS: Okay. I can understand that.

LNT: He wanted me down there more than I needed to be away from here. Not being a smart aleck I'd say, "Mr. Ludwig, if I leave I'm going to be neglecting something here in my own business." He'd say, well, let me know when you can come. He had a tremendous regard for individual entrepreneurs.

HKS: He didn't think a whole lot of college professor types.

LNT: No.

HKS: Theorists. Academics. Although Clayton has a Ph.D., and they seemed to get along.

LNT: Oh, yes. He took an advanced course at MIT in marine engineering, I think. You know you don't get in advanced courses at MIT being a dummy and this was when he was in his 50s or 60s, Clayton told me. I think he earned a B+ in it [laughter] after being out of academia that long.

HKS: Did you from your observation see--I don't know how to characterize it--his impatience with personnel where he fired people, and all the turnover. You wonder about the selection process if he hired so many people who didn't work out, if that's really a fair thing to say. Apparently it's true if he fired thirty-four managers, or some very large number. He picked the managers it seems like. Why would he have misjudged people that way?

LNT: I will give you my theory on it. I've thought a little bit about that same question. Number one, this was his very first venture into a field of this nature. He'd been in mining. Of course, the transport of bulk commodities was his strength and he was preeminent in that area. No question. But he was in a somewhat different ball game, and he really did not have people in-house, in his own organization in New York, who had any background in what was going on. And he was in a big hurry. Throughout the time that I knew him or knew what went on before I got involved with him, he wanted to see it all done before he left the scene. As I recall he started when he was sixty-nine. My opinion is that he probably got some poor input on these people. Obviously, somebody made some poor decisions there. I knew all this was going on when I was involved at Portel, and I'd meet the occasional manager coming or going.

HKS: I can understand how he would misjudge the complexity of the biology of growing things as opposed to mining things.

LNT: Right. Right.

HKS: But you don't become a billionaire by not being a good judge of character.

LNT: Right.

HKS: Anyway, it's one of those things. It's a puzzle. Clayton suggested that there were staff people in New York that didn't like the Jari project. They saw it as Ludwig's hobby and all they did was pay the bills and just enormous amount of money was going out. There wasn't a lot of happiness among the staff and the old man was wasting the money.

LNT: When I first got involved with Ludwig, somebody told me his daily income was a million dollars. I said well, that sounds mighty, mighty farfetched to me. Not long after that I was with Robin McGlohn, who was the agent that sold him Jari. A great guy himself and owned Portel. G.P. bought Portel from Robin. We were in his apartment there in Belém, and we got to figuring and it was twelve ships, his twelve biggest oil carriers. We knew what they were hauling, the transport rate. We sat there and worked at it awhile and sure enough those twelve were earning a million dollars a day. You know, profits essentially escape taxation. But, it was during one of those oil crunches and those twelve biggest ships were earning a million dollars. All I'll say he had a good bit of other activities going on.

HKS: When you reported back, sometimes you reported things were going well. Sometimes you suggested changes, I'm assuming. How did he react to this? Did he accept it? When you run a shipping fleet you have failures, too. So it wasn't strange to him that things might not be going too well. Was he basically even keeled and took the news well and made good decisions, or was he as volatile as he's characterized in the press? Or is that why he's firing people every six months he just couldn't tolerate.

LNT: During that time of enormous turnover was before I was involved with him. So I don't have that much worthwhile input on it.

HKS: Clayton says he was frustrated and he took it out on whoever was there and he survived because he didn't take it personally, because he didn't think Ludwig was hollering at him. He was hollering at the situation.

LNT: Yes. I think Clayton knew how to work with him very well and frankly, I think what eventually caused Clayton to be moved up to New York, or whatever, a good little bit of that was this backbiting, so to speak, that occurred in the other part of the organization.

I've got to tell you one other story. One other project he put me on. You were asking about sawmills and so on. He calls me up one day, here, and says I want you to figure out how to put a sawmill on a ship. I said, Mr. Ludwig. I'd gotten to know him pretty

good then. I said, I don't know a damn thing about ships. I know they float. I can't do you any good on that. He says I know you don't know a damn thing about ships, but he says, I'm going to send you a blueprint of this thing and you and Henry Byrd get together and figure out how to put a sawmill in this thing, and we'll put all the equipment in it here and have it ready to go. He had a liberty ship carried over from World War II. And we'll move it down there. I want to put a sawmill in there. We'll have all the machinery on the ship to operate the sawmill at Munguba, the industrial site. I said okay. So I got with Byrd and we worked and worked. Finally figured out a way to put the sawmill in the liberty ship and made it run, but the biggest trouble was waste disposal, sawdust and all of that. We never did do it. I was real glad when he finally decided to forget that idea.

HKS: But that's part of his philosophy on the pulp mills. You're going into a Third World situation. You barge them in and you don't have to build an infrastructure there. It's a way of developing.

LNT: That idea of his about putting the pulp mill and power house together in Japan was, in my judgment, brilliant. When you think about trying to build that complex of entity piece by piece in a remote area like that and house the technicians to do all of that installation, Pete, it would have been enormously more expensive. All of the knowledgeable paper people (and I'm not knowledgeable at all about paper) told me that in building that pulp mill the Japs did a superb job with it. pulp mill and power house. I bet you he saved a hundred million dollars minimum on the cost of the plant.

HKS: Clayton said that was an idea he developed with this friend in Crown Zellerbach to be tried in Honduras. This is before the Jari project really materialized and that concept had been in his head for awhile.

LNT: I didn't know that that concept had come up earlier.

HKS: I guess his head was full of notions and it was always water based notions, 'cause that was his background. He could build things and ship them anywhere. If you brought your own power plant with you you could go anywhere there was deep water.

LNT: Well, it was interesting. This engineer that I spoke of that went with me to Vancouver, I think his name was Frank Joyce. He told me this story and then later it was in *Fortune* or *Forbes*. When the bottom began to fall out of the oil tanker business, Ludwig had on order with one of the Japanese shipyards two major, blue ribbon tankers, and one was well along to launching and the other one had not been started. They were something like forty-five or forty-eight million dollars a copy. Frank said they were extremely well designed, highly efficient. Really the state of the art of the best of the best. So Ludwig decided to back away from the tanker business. He sold the one that was about to be launched to Onassis' daughter. Basically, I think he got his money back and then made an agreement with the same Japanese company to build the pulp mill in exchange for canceling the order on the other tanker. Did somebody explain to you how they put those platforms in place?

HKS: Bob Gilvary told me. As a matter of fact, when I was interviewing him several months ago he just had a call from Jari that one of the, I guess the pulp mill was

settling a bit and they found out that the pulp mill now weighs twice as much as it did when it was installed. There's so much waste in it.

LNT: Oh, Lord.

HKS: So it's settled six inches or something over in one corner. I can't remember. But I guess the piling will be there for geological times.

LNT: I thought that was unusual, an innovative idea bringing them into that lagoon, closing the dike, pumping water over in there.

HKS: That water gradually did all the hard work. That's right.

LNT: It was a heck of a thing.

HKS: That's where a practical engineer earns his salary.

LNT: If you were going to try to jack up a facility that big by mechanical means you'd go crazy trying to make it work.

HKS: I don't know if you saw it and it'd make you mad if you read it, there's a biography of Ludwig. It's a four hundred page book. Has a chapter on Jari and it's journalistic, a lot of innuendo, and wondering allowed to the reader is Ludwig crooked, or is he honest, or is he this with no evidence. He's just introducing this idea as to detract from the man. The author starts out the book by basically saying he doesn't like rich people. Rich people don't have the right to be secretive and so that's when he begins the book and throughout he accuses Ludwig of being a rum runner during prohibition and a whole range of things. Some publisher thought it would be a market for it. The name of the 1986 book is *The Invisible Billionaire: Daniel Ludwig* by Jerry Shields.

LNT: Well, unfortunately a hell of a lot of people believe that sort of stuff.

HKS: Did you experience this characterization of him--you worry about getting the job done and let him worry about the money when you were reporting to him on the feasibility of something, where you wouldn't go ahead if it had been your own mill, but he said, overruled because it saves six months.

LNT: I never did get into head to head confrontation with him, but I've been asked by a number of people over the years, Pete, what was Mr. Ludwig's biggest mistake in regard to Jari. And my answer has been, and this is strictly my own opinion, that the thing that caused the project to cost as much as it did was that Mr. Ludwig was in a genuine hurry, and time and again something would come up and he'd want to do it and said as he should, what's it going to cost to do it and how long's it going to take. I don't know what it might be, but they'd come back and say well, it'll take a couple of million dollars and a year and a half or two years. And he'd say, well, what's it going to take to do it sooner. There was a great deal of that done, and in my judgment even guys like Clayton and Johan and others got used to the idea that you really didn't have to worry that much about what this was going to cost or what that was going to cost.

The other concept, and I'm particularly referring to Johan here and ,maybe to some extent to Clayton that once they got the pulp mill on-line they'd make untold money and it didn't matter what it cost to get there. I would look either one of them straight in the eye and tell them that. I saw Johan waste a lot of money on something one time.

HKS: Welker's fundamental criticism was that you can't rush mother nature. He understood that Ludwig had a finite amount of time available in his own mind, but the mistake was not experimenting more with the various genotypes and the species to get a productive pulp plantation which were the life blood of the whole enterprise. You can't rush that. You need another ten years or twenty years to really fine tune them. Apparently it's doing very well now.

LNT: All I hear down there are good reports. Truthfully, I'm going to go down there before long. I'd like to go back to Jari and I've got an invitation to come to Portel anytime. A guy named Bruce Larson bought Portel. He had managed the plant at one time, and Bruce has done very well with it. First class gentleman.

What's really interesting and I think Clayton covered some of this with you in your interview that I had a real concern about, Pete, was the short rotation of stuff. I was afraid it was really going to knock the hell out of this high quality soil and it's gone the other way. But what Clayton said, you know, about leaching of soil nutrients into the soil that it didn't go, I think Clayton said it didn't go to China. It didn't go that far really.

But anyway I'm particularly delighted for the people that have jobs and a decent living back in there. Now up and down the river, you know, they can sort of eke out a subsistence living and in some cases a reasonable living. But the real need for that activity there I think is on the human side.

Potential of Low-Impact Silviculture

HKS: I've seen the video tape Johan put together on the Tropical Forest Foundation. I guess the best way to characterize it is low impact silviculture, as opposed to plantation silviculture. Do you have any sense that's a viable way to provide wood commercially?

LNT: That's real interesting that you asked me that because in my early days with Mr. Zweede, he was convinced that the only forestry that was worth a damn was plantation forestry. I kept telling him I feel that you can manage these natural stands and the Amazon on a long-term basis and do well at it. So much of European forestry is plantation forestry whether it's softwood, hardwood, or anything else. I said that's not right, the government of Brazil and the forestry people should be doing some extensive silviculture research now because I think it will work. So Mr. Zweede, I'm tempted to kid him a little bit and say it took him twenty-five years to figure out what I was trying to tell him, because it did work and there was no question.

HKS: Okay. The question in my mind for low impact silviculture would be the higher cost of road maintenance for its relatively lower volume per year over those roads.

LNT: As long as you're not trying to get in the year-round logging, Pete. See you get most of the rainfall down there in seven months. There is some rain at other times. I don't mean it never rains, but you get the heavy rains. As long as you don't have to go try to volume log during the rainy season you don't have to spend so much money on roads and you don't mess up your roads if you can do that. If I were going to try to operate down there, I'd approach it this way. Probably do the same thing we are about to do here and we already have put in water spray storage for the wet months so that you can keep operating. It's getting economically almost impossible to operate a sawmill on seven or eight months out of the year and shut it down for weather the other time. I mean you count your people cost and everything else just leaves you flat. But I think it's a practical matter and I tried to tell that hardheaded Dutchman twenty-five years ago that it'd work. Plantation forestry has worked at Jari, but the Amazon basin contains literally millions and millions of acres of this very diverse hardwood forest.

HKS: I can't think of the transportation requirements. You couldn't justify a railroad because you wouldn't have the concentration of wood. So you have all these trucks.

LNT: Well, if it's dispersed far enough and so on I think he can make it work. Another thing, this guy Bruce Larson's already into this, Pete, and I've had some experience in the '60s on the Roanoke River in North Carolina with barge logging. You know, you're moving your species that won't float. We didn't try to do any floating on the Roanoke River up there, but we logged at the plant at Plymouth, North Carolina, using about fifteen or eighteen million feet a year for a good many years. About 80 or 90 percent of it moved to the mill by water. All I'm saying is if you tie it in with barge transportation, then you may be moving out max five or six miles you see and coming into that. That opens up a lot of territory. It won't open up everything down there, but Bruce had already gotten into that. That's another thing I'd like to see when I'm down there is just how he's working it. At one time Anderson-Tully was barging logs from the Mississippi-Ohio all the way to Vicksburg. Several hundred miles. But, you know, that kind of water transport if you're set up right for it it's a very reasonable cost.

HKS: I don't know what more there is to say about your experiences there other than it must have been an interesting job in a lot of ways. The pressure is on the people who worked there full time. As the pulp mill was steaming up the river, and they knew they had to produce I don't know how many hundred tons of cord wood a day to feed that. The real world setting in. There's no longer any theories.