

The Learning Project

by Lincoln Stoller

Donald Dubois, Machinist, Engineer, Inventor

Interviewed at his home in Shokan, New York, November 4, 2007

Born: 1914, Harrisburg, Pennsylvania

“The student can only learn a difficult action insofar as he can put the teacher inside himself. He must be student and teacher at the same time. He must, more and more, grade his own tasks, get his own feedback, make his own corrections, and develop his own criteria, standards, for doing these things.”

— John Holt, in *“Instead of Education: Ways to Help People Do Things Better,” Sentient Publications, 2004, p. 67*

*“Late, by myself, in the boat of myself, no light and no land anywhere, cloud cover thick.
I try to stay just above the surface, yet I’m already under and living within the ocean.”*

— Jalal ad-Din Rumi, 13th century Persian poet in *“The Illuminated Rumi,” translated by Coleman Barks, Broadway Books, 1997, p. 63*

LS:

When did you start learning?

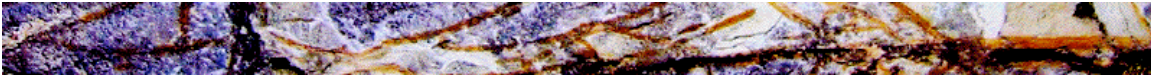
DD:

I suppose you start your learning from the very beginning by observing what is going on around you. After a while it gets to be a formal situation, when you go to school, and while you’re going to school you’re picking up along the way, on your own, just by observing what’s going on. And, of course, as you get older you begin to analyze different things and try to get everything in perspective: what’s most important and what is not. It’s a continuing thing. If you’re not the type that observes, then you’re not going to learn as much.

Along the way you get interested in certain subjects, certain projects. You can get a good deal of learning from what they call “book learning,” you can get a good deal of that, but nothing compares with the experience in my line.

From the beginning I liked building things. When I was younger, around 16 or so, I got interested in the idea of flying. I did get up once in the old Waco’s open cockpit planes, and then another time I got in a Ford Tri-motor. They had an open field down near Kingston, and for one dollar you got a ride in a Tri-motor, which barely cleared some of those electric lines.

Well anyway, then I got interested in building gliders, man-size gliders that I could operate, cause on my grandmother’s farm, where I lived, she had a hill there of



about a 30° grade. So I'd pick up this glider and get running, and jump off the edge and glide down to the bottom. Sometimes successfully, sometimes not. (laughs)

And after that I tried building a motorized plane, but I lacked the finances it took to carry it through. Money was always tight then, that was the middle of the depression. If I saved a dollar I'd go down to the 10-cent store in Kingston and buy nuts and bolts and screws. (laughs) For the wings I used muslin that was the cheapest cloth you could buy, stretched that on, and put on what's call "airplane dope," which would strengthen it. But I never got to take off because the welding was not good in those days, and I'd spin the prop and get it going, and every now and then the welding would come loose and that propeller would land at my feet! I finally decided that wasn't too healthy a procedure. In fact, I have that propeller somewhere here yet.

LS:

How did the interest in airplanes come about?

DD:

This is a very strange thing, asking me how it came about. In our school up here, our primary school in Ashokan, they had an overhead library with a lot of antiquated books of one kind or another. Somehow I happened to be up in there going through it, and I come across this photograph, or painting, or whatever it was, of one of the very first aircraft, conceived in the 1700's or 1800's, and it was named the Ariel.

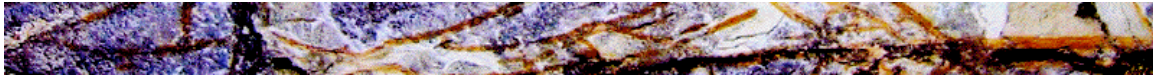
I got interested in that, and then I got a hold of some other books. I learned about how the lift of the wings takes place by creating a vacuum on the top, and the shape of the wing, and the controls: the rudder, and the ailerons, and the back elevators. I finally got the theory pretty doggone good. If course, when it comes to building it, I was restricted to what I could get in the way of money to buy this stuff.

It seemed like such a wonderful idea, that you could build a wing, that you could take off and go down the hill. And of course, being that young, a lot of the practical side just went out the window! (laughs)

I mean, the idea that I could build a plane by myself, put a motorcycle motor in it in the front, with a propeller, and actually take off with it! (laughs) This crazy idea didn't seem so crazy at the time. And I imagine my Grandmother and my parents were looking on there and hoping I forget it! (laughs)

LS:

Did they encourage you? Were you encouraged by your family?



DD:

No, no. I guess they were glad I had an interest in something, it kept me out of mischief. The idea that I might actually try to fly the thing, that must have scared them, which it should have! (laughs)

LS:

You didn't have any friends helping you?

DD:

No, no. My brothers were younger than I, and they didn't care anyway, I guess. Anyway they were too young. But other than that, we were rather isolated. There's people around here right now, but you can't begin to know what it was then. There was nobody around here.

The Dubois family was here, and Fred Golnick was up on the corner up there, and other than that, that whole region up there, there was nobody, nobody. And there was nobody down through here either. The only building was my father's house and my father's garage. It was more or less "Dubois Town." The nearest village was about a mile up the road.

LS:

Were you more alone, or were you a loner?

DD:

I guess I tend to be a loner. Maybe today too, I don't know, somewhat. Not that I'm averse to the human population but that's just the way it was, I guess. When you're interested in building stuff like that, you can be a loner. I've always been a one-man operation, which is no way to get along in this world, especially today.

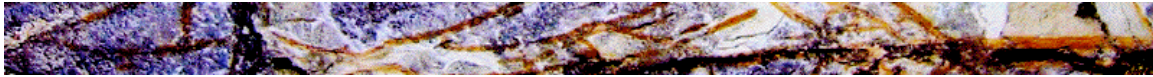
I didn't really have too much choice. Maybe part of it is because I'm too intense on what I'm doing. I don't know. Of course you could always think of it from the angle of getting someone to do it with you, to help you, but I've always put all my concentration without wanting outside distraction. And helpers can sometimes be a distraction, (laughs) strange as it sounds.

LS:

It sounds like your work was more important to you than just making money.

DD:

Yes, yes. Yes it was. My work was also my recreation. (laughs)



LS:

Did you do anything else besides your work?

DD:

Oh yes. In those early days I played a lot of baseball, and I did a lot of wandering up in these mountains, and so on. I used to like to go up the mountain, Tonche Mountain right behind us there. Many times after school I'd walk up to the top of that mountain.

LS:

Did you have an important teacher, someone who inspired you?

DD:

I don't know about the inspiration, one of my greatest teachers was in grade school, and that was Harrison Gridley. He was a great teacher. He had all the grades to teach. Aside from the schoolwork he was quite a man.

In those days there was good-sized kids — you know, bigger than today — they were always getting into some kind of a fight. Well, he had a special way of taking care of that. He brought a pair of boxing gloves, and heavy ones, 16 ounces or so, so if the two guys wanted to fight, OK. He'd take them in to the other room and let them fight. Well, after about 5 minutes with those doggone heavy gloves they'd had all they wanted! (laughs)

He was very fair in everything that he did. At noontime he'd play baseball with the rest of us. And it was probably that aspect of him, as well as the education side of it, that was a greater memory than anything else.

LS:

Was this a one-man school?

DD:

Yeah.

LS:

How many kids were in the classes?

DD:

I'd say 25 in the whole school, from grades 1 to 8. He'd take the 3rd grade class up front maybe, for recitation and questions. There was a certain benefit to all the rest



of the school: while one group was supposed to be studying they also absorb some of what was going on up there.

Thereafter I got working in Poughkeepsie in a machine shop, that's where I did most of my machine learning. I was married and had a child when World War II come along, so I wasn't the first choice of the draft.

In the machine shop I was thrown into the middle, sink or swim, and I was one of a good many others, farm boys and city boys and what not, who didn't know anything about machining. That gave me an advantage because, while I didn't know very much, I knew a little bit more than they did.

I got started, and in a couple months I got to be the boss of the machine section. I learned as much from those guys as anywhere else. There was some old-timers in there too, and of course in those days, jobs being scarce even in the war, the older mechanics were not too anxious to share their knowledge with you. But by observing, again, I picked up a great deal from them.

For 27 years that I worked there. I went on from one position to another, and I finally wound up as the manager, I guess you would call it, of the Research and Development machine section.

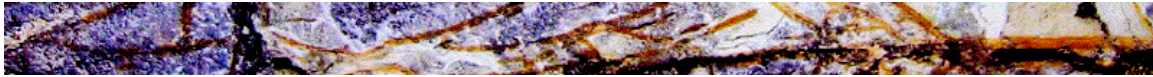
The company gave me a great deal of latitude in what I could do. I come up with this and that and what not, and then, finally, I retired from there at age 55, I think it was. But before that I had started a machine shop in my basement. That would be around 1955 maybe.

From there I got started on my own, built it a little bit bigger, and finally built a shop down here. And then eventually lost that, and then started the shop that I have here, piece by piece, one building at a time, until I had a combination of about 4 different buildings put together.

The exciting part was coming up with new ideas; it was the ideas that I had. Out of that I got four US Patents on various items. That's where the excitement come in: developing something, and overcoming the problems that you encounter every time. You have an idea and in your mind it's beautiful, and you get it on paper, and from paper you go to the actual machining, and the building, and then right there, like they say, you're back to the drawing board! (laughs) That is exciting.

After we lost the big shop and I come back here, I still had to make a living because I lost a lot of money on that project. In fact, I was back to zero.

The one item that I developed for the former company that I worked for — I had good relations with them, with their research section actually — I got together with them on one product, and they went for it. That got me out of the hole. I got the



patent that I assigned to them, with a contract that I would be the exclusive maker of the product over a 5-year period. That got me out of trouble financially.

That was a big machine that I called the “Merry Go-round Milker.” In fact, last year I sent off the last shipment to DeLaval Separator in Kansas City. This was a device like a Merry Go-Round: it rotates, and as it rotates the cows are milked. They’re all standing on this rotary platform, maybe 10 or 12 cows at a time.

LS:

It’s large then.

DD:

Oh yes, yes. The part that I made was a part that went up on the ceiling. These cows are milked by vacuum, and it requires some electricity to operate it. In order for this to rotate and not wind up the whole detail, you have to have a slip-joint affair up on the ceiling, that the vacuum comes through, and the electricity comes through. That device was the big one for me.

LS:

Tell about the process of succeeding, and the process of failing. Do you regret your failures? Are you disappointed with your successes?

DD:

Well, nothing is ever 100% in this life in my mind, no matter what angle you tackle it from. Yeah sure, I’m disappointed that we failed, but I didn’t have time to be disappointed too much. I was broke, and I had to start over, start making some money if I could. Sometimes that drives you, it’s got to. That’s got to drive you.

And as far as the successes are concerned, I always think they could have been greater, I could have done more, but I didn’t because along the way... I guess everybody has certain defects, and one of mine is I don’t persist long enough. There’s a good many items that, had I developed them, I could have been way up yonder. But I didn’t. I can’t fault myself altogether either, because those times were tough and you couldn’t get money very easy. And then, after that, you’ve got to have money to push something, no matter how good it is.

For one thing, I made what was probably the first electric wheelchair in the country, as far as I know. That was in ’55, I made that for my father because he got Muscular Dystrophy. I took his wheelchair and motorized it, and he traveled all around the country with that. He could make a 4-mile flip around this back road, you know up your road there and down behind the pond, and come back down the state road, and come back on the shoulder of the road. That must have been quite a sight, come to think of it — I thought it was quite normal — to see a guy pattering along the highway in a wheelchair! (laughs)



Now you see what that developed into today. As far as I know I had the first. Previous to that, according to what I looked though, very rich people in the 1900's could have a gas-powered wheelchair, but it would be a \$10,000 job, or something like that. And there's various other things that I did too, 101 different things that I lost out.

LS:

So maybe you like to build things better than to market them? I can understand that.

DD:

Yes. And besides I'd rather admit that I didn't have the skill myself to market. But then again, if you have money, you hire all kinds of guys to do that for you.

LS:

What was your experience with schooling? Did you find that school was where you learned the most important things? You said you learned most in the shop.

DD:

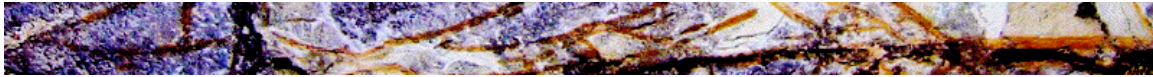
That's pretty hard to define: the most important, but the important, yes, it was important. But at the time I didn't appreciate it, I didn't care about school no way, I wanted to be outside building my stuff. It seemed like such a waste of time when I could be at home making an airplane! But the strange part of it is though, a lot of what I disdained altogether I realized later on how valuable it was.

For one thing, among other things in high school I took French. I didn't care about that at all at the time, but the strange part of it is that today I can recall just about all the French words and phrases. And I can pick up something written in French and I can get the gist of it.

And the mathematics too; I didn't care about that, it was just something I had to do. But later on, when I got into the machining and so on, I found out how very important it was that I knew my trigonometry; tremendously important. You think of that in terms of surveying and what not, I mean that's very useful there too, but you get down to small stuff and the trigonometry is very important.

I remember one man I had working for me in the shop. He never got beyond the 3rd grade, but he was so interested in the work he was doing that I simply showed him the simple parts of trigonometry, and how to work the tables, and that totally uneducated guy was so doggone good at that you'd be surprised. It's funny: you never know where the talent lies.

And I suppose too, the education in English. I didn't care about at all, and I couldn't see any sense in reading some of these classics, which we had to read. Well,



strangely, my English teacher would be horrified to know that wrote three or four books! Absolutely! (laughs)

LS:

Surprised or horrified?

DD:

Both, both! Course she still might be horrified at some of my English. I never paid any great attention to it. I got no problem in putting out the thought, but the form, (laughs) it's something to be desired!

LS:

When did that desire arise? Where did that inspiration come from?

DD:

Inspiration, I don't know, but I got started in the 1970's I guess. No particular inspiration, but different ideas would come to my mind, and different thoughts, and now and then I'd write them down and put them in the desk over there. And after a while I got an accumulation, so I did the first book, and then three more after that.

I think, all in all, one has to have an interest in something. Either that or a number of somethings, cause without the interest, and without getting up in the morning and having something you're going to do, it's no good.

LS:

So where do you find an interest?

DD:

I'm not sure that you find it, I think it comes to you, maybe, I don't know. Of course, self-interest sometimes promotes a lot of that; I mean promoting yourself.

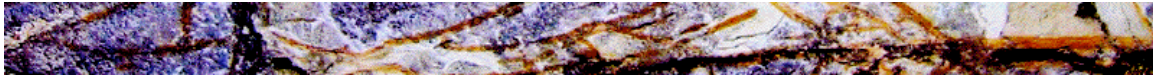
Although, the acquiring of knowledge is all it takes in itself for some people. Sometimes looking for knowledge and getting it is enough in itself. But knowledge, without putting it to some use, is kind of a waste too.

LS:

Bessie tells me that you go to church now. Did you always go to church?

DD:

Yes, yup.



LS:

Well, that kept you from being too alone, didn't it?

DD:

Yes, in a way it did. Yes, yes sure. My Grandmother saw to that. She was quite religious and made sure that all her grandchildren got to church. And of course, we all accepted it to varying degrees. I've been connected with the church, Good Lord, about 70 or 80 years.

LS:

Do you have any feeling of what life might be for kids these days? Any feeling of what they should do, or shouldn't do?

DD:

Well, not really, only the standard "Don't Do's," such as the drugs, and the alcohol, and so on. And if course, if you had the courage to tell them to stay away from sex it would do no good. When the time comes things have to happen.

LS:

One of the nice things about this project is that I get to talk to younger people at some depth. Some of them tell me that they appreciate speaking with me because they don't get talk about this stuff to their friends.

DD:

Well, this is true. This goes on a lot and even, it seems to me, creates a certain bar with the parents. I think that the children, the kids, the young people, they'll talk with you a great deal easier than they'll talk with parents. What do you find in your experience with them? What they're mostly looking for?

LS:

Well, I'm attracted to kids that are energetic, and I mostly talk to kids who are inspired to do something. And I often ask them how they got inspired, and where did it start, or when did it start. Most can't tell me. They don't really know.

It's a thoughtful process, and it seems impossible to explain it to somebody unless they're already doing it. In this project I want to encourage people to use their own thinking, make their own decisions, and not to accept what they're told.

DD:

Well, that's the way to go, especially. I don't know how much the younger people absorb from TV, and the newspapers and whatnot, and the magazines, whether they're interested in it and get that much into it, but if they are, then just thinking for



themselves is the most important thing in the world. Because what's being focused on them, on all of us, is a misguided picture of what it's really like up there. It's really a sad thing that we're getting such a cock-eyed view of the world.

LS:

Where can a person get a good view of the world?

DD:

Difficult thing because no individual is able to go out there on his own and canvas the world, and take all this in on their own. They've got to accept what's given to them, or not accept it, but they've got to be aware of it. And here is where their own thinking comes in very, very strong, and not too easy either. I mean, maybe some of us have the idea of the way the world is going, and therefore we tend to accept the part of it that fits into that category, but still, it's very hard to get an honest view of it.

So yes, do your own thinking, and that sometimes bothers me in area of religion. I've been to that church all my life, and I certainly want to accept a good deal of what's given, especially in the New Testament — the Old Testament I've just come to a bit here and there — but even so, doing your own thinking can get you in to trouble! (laughs)

LS:

Well, that's an important point. How do you get out of trouble? Do you stay away from it, or do you explore it...?

DD:

No, it's an ongoing thing, for me anyways. Sure we all like to reach a conclusion on this or that or something. Some things you can't, really, at least not in this world. Maybe we can get a conclusion someplace else.

LS:

How do you avoid being frustrated? Doesn't that get you frustrated?

DD:

Yeah, that bothers me. I guess I get frustrated. Anything that you cannot conclude and put on a shelf as finished, that's got to bother you, at least it does me. I like to conclude things. Some places you're not going to conclude, you're not going to get a total answer. These people who think they've got it all wrapped up, I take a very dim view of that.



LS:

This is important for a young person. How does a person proceed to make decisions when you don't know how things are going to conclude?

DD:

You proceed, like on an unknown road. You don't know what's out there, but on the other hand, you can't sit down on the side of the road either.

LS:

If you were 16 again, how would you proceed? Would you be reckless, or would you be cautious and respectful?

DD:

I think I'd be a cautious middle-of-the-roader. Actually, if we all knew the outcome — call it the conclusion or whatever you want — it wouldn't be very interesting.
(laughs)

I suppose young people, when they have a lot of life ahead of them, tend to think it's going on forever. When you get old you begin to wonder what's next? I think even the atheists can't help but wonder what's next. And maybe one might tend to worry about it a little bit, but that's foolish because we have no choice in the matter.

When the time comes to exit this life it's a good idea to go with the smallest possible amount of evil baggage. A person would be well advised not to load yourself up with a lot of stuff you've got to account for. A young person can start working on that right away.

It's funny how life turns out. You get into things you never suspect you'd be getting in to. All in all, it's quite a trip! (laughs)