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# Interview with Linda Vanasupa

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Linda Vanasupa

## INTERVIEW WITH LINDA VANASUPA

#### **Professor of Materials Engineering**

Linda Vanasupa is a Professor of Materials Engineering at Cal Poly and is a jazz musician as well. www.calpoly.edu/~ivanasup

Moebius: The theme of this issue of Moebius is "The Dumbing Down of America." Is this a concern of yours?

*LV*: Yes. I read that book by John Gatos, Dumbing Us Down. It's very good— a little scary. But his context is twenty-seven years in New York public education, so we have to take that with a grain of salt and know that it's limited to his world view. But it's interesting stuff.

So anyway, I'm glad you thought of me when the theme "The Dumbing Down of America" came up. (Laughs)

Moebius: Actually, we weren't discussing the theme at the time your name came up. The Moebius board thought you are a really interesting person, doing interesting things right now, so we really wanted to hear more about what you're up to. I'm wondering if our students learn differently from the way they used to. It's not that they're dumb, or dumber than past students, but perhaps they learn differently? Are they changing?

LV: I ask myself that question a lot, actually. And I think that faculty aren't very good at answering that question accurately. Partly because they think about themselves when they were in college, and when they were in college, most likely they weren't the average student. They were in the 99th percentile, and they probably hung out with people more like themselves. And so a lot of faculty were over-achievers. They don't understand a regular student, so their reference point is biased. I think they tend to remember themselves a little bit more gloriously. But I do ask myself that question a lot. I'm not sure I'm able to answer it. But I do think about culture—culture in the U.S. And I do think that culturally our students are significantly different from the way that we were. And by that I mean, norms have changed. You know, in my day I would never have had the audacity to call a faculty member and say "Call me back on my cell phone."

Moebius: Yes, and I'm surprised at the tone of some e-mails. Students expect an in-

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stant answer. You know, I do think it's an issue of time. With cell phones and email, they operate in a world that gives them instant gratification.

LV: But you know, we might get a few annoying emails, and then we say things such as, "All students do this, or all students think this way." I think faculty, being human, are quite fallible in their interpretations of the reality around them—myself included—but I still do think that students are different in some ways. The truth is that developmentally when we were college students, we were probably very focused on ourselves as well. But we didn't have as many means to express our self-centeredness.

## Moebius: Do you think the world the students are entering is changing? Are we changing enough to prepare them for the world?

LV: Not at all! I think some of us are desperately trying to do that as quickly as possible. But I think, for example, the kindergarten through twelfth grade system is really problematic. I have a daughter, so I see the system up close. In 1985, someone decided that children needed more homework, more practice. And they just took that to extremes. I mean, you've got kids in first grade staying up until 11 o'clock at night and their parents are fighting with them about their homework. It's just totally ridiculous. This pressure destroys the natural, the innate psychological need for children to learn and their interest in it. It totally beats it out of them. So when you ask if we're preparing them to learn, the answer is no. We're asking students to do things that they're totally not ready to do in terms of their own development.

# Moebius: At Cal Poly, our students have to declare a major when they come in. Do you think that limits that kind of "free learning" and makes it more about training?

LV: I think generally the socio-economic make-up of the students at Cal Poly is middle-class and lower. Other universities have primarily upper middle-class students and above, so those students already have their needs met. Looking at the hierarchy of needs, they've got their lower needs met, they've got plenty of money, and they're just out there exploring what is beautiful, how to become self-actualized, etc. But I think that Cal Poly students feel as if they're from a different category of the population, and that's why their focus is on the university as training ground for jobs.

# Moebius: So the world that they're entering is different, and we're trying to adjust to it, but you feel that we're not doing a very good job of that?

LV: No, we're not. You know, the faculty, the university system, is set up to discourage change. There are so many levels of approval, and so it's difficult to make things happen. To me, the university is a system designed for fossilization. Everything is set up for that. Yet I believe we need to act the absolute opposite of that, however, and maybe there's a place for things never changing.

But back to your question, students are different, intellectually. Their exposure to

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ideas is different compared to ours at the same age. However, perhaps we live in a more toxic atmosphere which interferes with student development. The scientific community has published some evidence concerning the levels of persistent organic pollutants in our bloodstream and in our food chain: for example, studies in Michigan show that children who live around the great lakes, where people have a high fish diet, test lower in IQ. The theory is that these persistent organic fluids, especially water, are concentrated in the food chain, so if a woman eats a trout while she's pregnant and she gets a certain amount of exposure, especially around certain times of the gestation period, it affects the child's brain development. So some people don't have the attention spans they need to sustain a certain development. So I think that there is actually evidence in certain places that we are getting dumber. Of course, in some ways an IQ test is not a good measure of our intelligence, but it is an interesting set of theories.

Moebius: I also have noticed that attention spans are an issue. In terms of exploration, in our process and methodology, students have difficulty going through ideation and experimentation, especially when they are eager to arrive at the end product.

LV: I think you're reading it right here. There's evidence of that as well. These pollutants, which apparently chemically masquerade as hormones, and estrogen in particular, often look like estrogen chemically to your body. And they don't break down. For example, soy is a plant estrogen, but your body recognizes it and says, "I've seen this before for millions of years in my evolution. It's soy. It breaks down." But the ones that are manufactured don't break down, and your body can't tell the difference. These plant estrogens are linked to shortened attention spans, lower IQs, and obesity. I swear that video gaming and TV also affect attention span. We know that TV short-circuits brain development. Imagine that you are reading a book, The Chronicles of Narnia, where you're seeing in your mind's eye what's happening: that's the biochemistry of the brain paving these synapses. But when you watch TV, it's all there for you. So you've completely short-circuited the creative process, and you've short-circuited the ability to sustain physiological growth in your brain. So that's why you have these attention deficit problems. So in that way, I think it's highly probable that students today are different.

Moebius: I want to ask you about China. I know from Focus the Nation that you were recently there.

LV: Yes. I've been working on this project for a couple of years. I've been trying to find the right partners to take on a large-scale, systems-level design project in China. I found a partner at Stanford which was necessary because a lot of the funding mechanisms that I know of will not allow Cal Poly to enter into these relationships—they require a Ph.D university to enter into these relationships. So I was able to get the first level of funding to go over there. Next, we gathered a group to go to China in order to seal the deal in

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terms of the project. So I took a group over in early January— half Cal Poly and half Stanford people. Actually, it's kind of complicated. It's actually a university in China, Cal Poly-Stanford, and another organization, and then I also took someone from North Carolina State and someone from Olin College as well. In addition, another organization is involved: the China/U.S. Center for Sustainable Development, which was started by China's Prime Minister's daughter, who is the head of their EPA equivalent.

Another key person is Bill McDonaugh, the architect who, back in 2000, got China to start this organization and commit to sustainable design principles while developing the country. The organization is populated by a number of NGOs and multi national corporations that have interests in China, like BP China. So the idea was that we would partner with the University and this organization would help us—we'd bring these NGOs and these multi national corporations to the table—and we'd have the Chinese government in there as well. At that point, I proposed to them, we would take on the design of a sustainable village. By that I mean all the systems: how people would make a living, how they would live, their living space, etc. At first, I thought it was a crazy idea. (Laughs). But it turns out they loved the idea, and they want to do it with us. We wanted to use a certain design methodology. Barry Lightbrand, who started IDEO, is the person from Stanford who we took with us. He's known for innovation and his teaching. Sustainable design requires innovation. You can't just do things the way we used to and tweak it a little. You really have to think outside the box.

The Chinese loved the idea; however, we found that they were ahead of us in a number of their implementations and in using sustainable design. It was fascinating—embarrassing, really. I showed up there thinking that we were going to help them. Instead, they are ahead of us in many ways. They're using solar collection everywhere. All their apartments use solar paneling for heating and water, and then they can use the waste heat for other things. The institution that we're partnering with is Tong-Ji University, and they have a United Nations Environmental Program Institute. They are essentially the leaders in China for urban planning and green architecture. So they, and we, and Stanford, and now Yale, comprise the group. I brought Yale in because it's well-known for innovative ideas of sustainability. All of these people are coming in June. There are about 12 people from the university coming. I think it's going to be a central learning experience for all of us.

#### Moebius: This is new to me. Is President Baker pleased?

*LV*: Yes, he's excited and has agreed to help us. He sees us as an experimental group experimenting with multi-disciplinary teams. We might be able to break down the whole general education barrier and the major programs. We're eager to work together, to do something meaningful. So we're trying to figure that out how to do that.

This is an opportunity for Cal Poly to have high visibility, working with Stanford and Yale and the NSF (National Science Foundation), who have encouraged us strongly to

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seek funding for this. So right now I'm sort of desperately trying to seek funding.

But you know, in terms of the visibility, I think we have a lot to offer. I think other institutions might actually be surprised—we have a lot of capability. You know we're very different, but that's great, we have a lot to offer. This is an opportunity to impress everyone.

Interview on behalf of Moebius conducted by Katie McCormick, Winter 2008.

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