Interview with Leon Botstein, President of Bard College

Leon Botstein is President of Bard College, Director of the American Symphony Orchestra, and Board Chairman of the Central European University. He is also an accomplished musicologist and historian of education. Among his publications on education is his book, Jefferson's Children: Education and the Promise of American Culture. The following interview took place in Moscow, on April 1, 2015, when Dr. Botstein was in Russia to conduct the Russian National Orchestra's performance of pieces by Prokofiev and Bartok at the Tchaikovsky Concert Hall the following day.

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Could you tell me what, in your view, are the most important advantages to a liberal arts and sciences education?

Leon Botstein: The liberal arts model is an approach to the first three or four years of university education, and it is distinguished by two very crucial features. For one, the student is permitted to study more than one subject. So students don't have to decide straight out of high school what they're going to study, which faculty they're going to go into. They don't have to decide that they're going to be doctors, lawyers, teachers, businessmen—whatever the career choice is, it is delayed. And the reason it is delayed isbased on the theory that widening the general education will do two things: it will clarify what their ambitions are and it will make them better professionals. So a doctor who has studied philosophy, sociology, psychology, ethics, or history will be able better to understand the cultural factors surrounding disease and patients; will understand the economics and structure of the health system in a country. So students will be better and more innovative professionals, especially in a rapidly changing world.

Part of that first reason is also that the disciplines—law, medicine, and especially the sciences (chemistry, biology, physics), because the actual conduct of science, the cutting edge of science, in biology, for example, involves the knowledge of physics, chemistry, and biology... The boundaries between the disciplines are more porous. So you want the student, in the very beginning, to further refine the need to know, on the theory that you only learn something that you really need to know, as opposed to going through several required steps that have been established by a previous generation that stand for the official way to become a professional *X*. So, you want to be a better lawyer, a better businessman, a better doctor, an innovator, an engineer—this

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kind of liberal arts education is the best training for creativity, and also innovation, and also for a more competitive professional training.

That's the first virtue. The second virtue is the system of teaching. The system of teaching in liberal arts is the seminar. The student from the beginning of his university days is not simply listening to a lecture and doing assignments according to a strictly set curriculum. The liberal arts curriculum is set, but students have to do a lot of speaking and writing. It is very writing-intensive. In the first semester [at Bard], for example, we have a Great Books class, and the student, within a semester, has to write anywhere between 5 and 7 papers forone course. And they learn how to revise what they write. They learn to really command the language of writing as a very active, not a passive way of learning, such as listening to lectures and taking an exam. So it's both an approach to teaching and an approach to the curriculum that distinguish liberal arts education.

That makes perfect sense. I've done some work in Writing Across the Curriculum, and I really believe that students retain knowledge better when they write about something than if they just take a course about it.

Right. Another crucial thing is the fact that most people think of the liberal arts as being mostly humanities and social sciences. It's not. The greatest defenders in the United States of the liberal arts are the premiere engineering schools—MIT, Cal. Tech, Harvey Mudd, Georgia Tech. They want literate, thinking people to do science. But one thing that is hard is that in Europe and in Russia the secondary school system is different. Thus the argument against the liberal arts is that Europeans get what we call a "liberal arts education" in gymnasium and in secondary school.

Probably in Russia, but certainly in Europe, there are a lot of complaints about the lowering of standards and the democratization of secondary schooling, which is a natural phenomenon of broadening access to schools. So the more you expand university education, the more this kind of liberal arts training is very important. And in America now, one of the basic skills that is integrated into the liberal arts is coding and computing. So even if you're not a computer scientist, you need to be able not only to use a program passively, but also to adapt computation to your area of interest.

Right—even if you're just building a website, you should at least know some HTML and java script. Going back to the argument against the liberal arts and sciences... In the programs that you have set up internationally, do you feel like the students, say, in Russia or Palestine, are prepared to take advantage of a liberal arts education?

First of all, there's a huge conceptual barrier, and the barrier is the suspicion of a liberal arts education as being either dilettantism or not rigorous by traditionalists in universities and also by parents who are conservative. And there's the question of whether it cuts against a very good reason to go to university, which is to learn something to get a job. But what's interesting is that in some places, the realization that, say, a person may get a liberal arts degree then go to a medical school in America, and that medical training is four years. So it's a pathway to professions—architecture, business, medicine—and those pathways are enhanced, not reduced by liberal arts education. So explaining the idea is the greatest barrier, but students who are drawn in to it are very loyal to it.

I can believe that. I'm a proponent of it myself, but I might like to play devil's advocate a little bit…

You should, and it's particularly interesting because its greatest defenders are the leading researchers and scholars in their fields. For example, when we revised our science curriculum more than a decade ago, we brought together leading scientists in all the major disciplines—chemistry, biology, physics—and said, "If you had to do it all over again and design from scratch for a first-year university student the pathway to becoming a chemist, physicist, or biologist, what would it be?" They all agreed on a liberal arts approach to the sciences, not going down a narrow track. And all of them highly recommended integrating liberal arts programs, and, as I said, among the most vociferous proponents of it are those in the sciences and engineering.

I find that easy to believe. I also feel like a lot of objections to it are probably self-serving—if you do well in a different system or tradition, you might feel threatened by this new thing.

Yes, I think there's a certain amount of nationalism in Germany, for example, and in Russia—there are great university traditions. And there's the legitimate thought, "we've had great universities for centuries…"

"… so why change it?"

Yes. But what they don't understand is that the liberal arts are not an American invention. It's a hybrid of the English university, the German university, and the American university.

With roots in Ancient Greece.

With roots in Ancient Greece, yes. But that's what the English and the Germans are the most forceful about. The other thing is, who can

teach it? The burden on the teachers and university faculty is quite high. So, for example, a very famous, now retired physicist at Harvard began to develop courses in physics for non-majors and he became interested in the history of science. And he used the history of science as a way of getting a social scientist or a future lawyer—and imagine being a lawyer —to take scientific literacy.

You can't be a lawyer nowadays without understanding science, computer science, information sciences, and biology. You have to prosecute cases about patents, medical treatment, freedom of speech and information, intellectual property, copyright. If you don't understand the technology and the science, you're scientifically illiterate in the environment. If somebody sues a company because they got sick and you don't know anything about how to prepare yourself to understand why they got sick, you have to rely on an expert. In other words, the task of the liberal arts is also to provide students, even those who are non-scientists, with basic scientific literacy.

It gives them enough exposure to have some literacy no matter what career path they go into.

Yes. For example, the internet is, in essence, a very slippery place, because you can get on the internet and find information, get on sites which don't remotely tell the truth.

Yes, you can get a lot of misinformation.

You can figure out that if you eat carrots, you'll turn orange. And, I don't know, I'm not a physician... maybe if you eat enough of them you will turn orange. But at least, with a liberal arts education, you can begin to discriminate all the mass of information in front of you. One of the things that we have to teach young people is: how do you sift through the huge volume of information?

It takes information literacy beyond just knowing how to find something in a library.

Exactly.

What do you think the most valid, unbiased, non-self-serving objections to liberal arts and sciences education might be? Is it the burden on teachers?

Getting good people to teach this stuff... So, the criticism of it, which can be valid, is the question: are first-class people willing to teach in a liberal arts system? And the answer is "yes." I take the example of the great physicist Richard Feynman, who is quoted as saying that if you can't explain something to a first-year student, you don't under-

stand it. At the University of Chicago, Enrico Fermi, the great, Nobel Prize winning physicist, taught first-year physics, and a lot of people in that class were people who were not intending to become physicists.

Right, they just needed a science class.

They needed a science class, and they're going to end up being, maybe doctors, lawyers—but he wanted to teach the beginning classes. But those are exceptions. There are a lot of specialists who don't want to teach beginning students. And so there's a little bit of a barrier in teaching. And then there's the fact that most people's opinions about education are autobiographical. "I went through this system. I had to take this course and this course and this course, and here I am, a first-class *X*. Why should the next generation do it differently?"

I want to return to this question of liberal arts and sciences education and research, but while we're on the topic, I thought I might ask about the arts and STEM[1] fields. I believe that it's possible, for example, to teach drawing, and by teaching drawing, to help students get better at math or engineering. And I've heard anecdotal evidence about people studying music from a very early age being better at math. Do you believe in that, and could you comment on it?

It's not my field, so I don't know the research in the area, but in the Soviet era, the Russians made an enormous advance in the teaching of mathematics in the early grades. American math teaching is terrible, and the Soviet math teaching was terrific. And the reason Soviet math teaching was terrific was exactly your point. They did not put an exclusive emphasis on arithmetic early on, but they included geometry early on. Now with the computer, giving visualization is a major capacity...For architects, for example. You can visualize a building and what it looks like much more easily than with the old system of building a model. You can play around with it. So the best example would be that the arts, the aesthetic sensibility, is extremely helpful in the concept of STEM. So you know it from several examples. For example, the popularly held opinion is that the success of Apple is a mixture of technology and design.

Yes, Steve Jobs even said that himself.

Exactly right. So that design sensibility is something that can be taught.

And what about music?

[1] STEM is an acronym for: Science Technology Engineering Mathematics.

> Let me give you the example of Albert Einstein. It's well known that Einstein was an absolutely fanatical amateur musician. And he loved music. And in 2005, the scientific historian Peter Galison from Harvard put together a conference and a book about Einstein and the miracle year of 1905, when he made three earth-shattering discoveries. And Galison approached me about doing a chapter on trying to look at the question of whether Einstein's musical interest influenced his science. Now, I'm not a scientist and not a historian of science, but I had enough scientific education to try to write it, and I did write it. What I discovered is that Einstein's tastes in music, his idea of what was great in music, was located in the Classical and early Romantic periods: so, Mozart, early Beethoven, Haydn…they were the pinnacle. The aesthetics of these pieces are a lot about symmetry, clarity, transparent structure, extremely persuasive closure—a beginning, middle, and end. This is similar to Einstein's aesthetic sense of what a plausible scientific explanation might look like, what an elegant solution to a problem is. Those are also aesthetic criteria. They prejudiced his simplicity, the notion that a scientific explanation is coherent, clear, and inclusive. He is quoted as saying that God doesn't play dice with the world. One of the reasons he was resistant to a lot of the claims of quantum mechanics was that for him there had to be a kind of implicit set of rules about general theory, about physical laws, and that probably was reinforced, cultivated, by his thinking about music, which operates by a certain type of grammar and form.
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> So the aesthetic elements, I think, make a difference in the quality of scientific work. I agree with you aboutthe teaching of drawing. I especially think that learning by doing is important. Reading is doing. Working at a lab is doing. But drawing is an extremely good discipline in observation. And music has many things—from memory, for example, to making connections through analogous thinking—which are very good habits to train a young mind.

I can see how that would exercise the brain in a way that one could adapt to doing different types of intellectual work. Thank you for the story about Einstein—I didn't know what his tastes in music were; that's fascinating.

I've noticed that there is a trend here in Russia—I'm not Russian, I'm from the United States, so this is my outside view looking in, but I guess the reason I'm here is because of this trend—universities here and institutions of higher education are hiring faculty from abroad. There seems to be a big emphasis on publishing internationally and increasing the world's awareness of research that is going on here, along with an unfortunate emphasis, in my opinion, on indices and rankings and things like that. But at the same time, I see these trends of adopting positive American ideas—maybe not necessarily American ideas, but things we have in the United States like writing curricula and certain aspects of a liberal arts education. How would you say

that a large institution like the Higher School of Economics or something of its size, like St. Petersburg State or Moscow State can integrate liberal arts and sciences education? They're big research universities, so they can't transform enough to really provide what small liberal arts and sciences colleges offer.

Bard has been at St. Petersburg State for well over a decade with the honors college at Smolny. So one way is to put in a kind of seed program, and that has proven very successful at the university of St. Petersburg. The most difficult barrier is the false belief that universities are, in their content, national institutions. A school system is national. That's part of the problem of what we teach children and young adolescents—things they need to learn to live in their society, their homeland, their nation—so there are national school systems with a national agenda. But a university is an international apparatus by its nature. For example, the economic world is global, the nature of disease is global, our difficulties or our need to grapple with climate change are global. Universities are organized on a national basis, but their agenda is not national. So you have to look at this process not as a threat to the national integrity of the university, but as part of the process of modernization.

That leads to an interesting dilemma I've seen here, which is that I don't see the same emphasis on diversifying the student population as I have seen on diversifying the faculty and encouraging collaborative research projects. I haven't heard as many people here say, "We should have more international students." How important do you think that is?

First of all, there's a market issue. To have an open market for students internationally, you have to compete effectively. There are several barriers. One is money. Two, since most universities are funded by the state, there is a prejudice towards educating the people who are going to serve the nation. So, if you have a state university in Moscow, you expect your graduates to serve the Russian nation. That's reasonable.

But for the university to be successful in recruiting internationally, it has to have a transferrable quality. And that's where the curriculum change is crucial. If you have credits from a university in one nation, they have to be transferrable. In other words, you need a currency equivalent in education. People are going to be reluctant to go to a university where it looks like they have a degree and credits, but when they go to the credits of another nation, they are discounted by fifty percent.

Do you think that might be behind these programs that are popping up in Russia that are offering bachelor's and master's degrees instead of the specialist tokandidatdegree track?

Yes, I think that Russia's very rapid post-Communist entrance into the world economy and politics in a different way than existed in the Soviet Union does create pressure on making sure that what is taught is competitive. And only then will you have international students coming. Now, the Soviets had a lot of international students. They took students from places where access to higher education was very limited. They did a very good job. And America did, too. During the Cold War they competed over getting international students to come. Then, of course, what happened? Every nation is concerned about "brain drain." Nations are concerned about people coming back with many years of experience in a different setting. There is a natural desire to hold the talent at home within the framework of a familiar state apparatus.

It sounds like a liberal arts and sciences curriculum could help establish an equivalence for the education you get here versus elsewhere, but do you think a diverse student body is necessary for a liberal arts and sciences education?

There are several ways to construe diversity. One is if you have a country with mixed nationalities and ethnicities where people are going to have to live with each other, then having an international student body is very helpful. [At Bard] we're lucky to have eighteen percent of undergraduates from abroad. Students from abroad benefit, but also our own students from the United States benefit. They meet people with different views. Say there's a debate about Ukraine. They hear someone their own age...

... arguing the other side of the debate.

Right. And they have to learn how to debate that. That's a good thing. We have a joint program, for example, with West Point. The cadets at West Point and our undergraduates, American undergraduates, have slightly different backgroundsand ideas about questions of the military.

How essential is diversity, not in its most complex form, but economic diversity, geographic diversity?

I think homogeneity often can result in self-reinforcing debates. One of the things that good liberal arts programs do—and not all liberal arts programs are good, by the way—but in the good ones the student is confronted by colleagues, other students, who have a different point of view. It is very important to have, and universities should create an extremely civilized context for the debate of ideas.

I've noticed that my own students often learn more from each other than they do from me.

Because you have good students. And they also learn in a small class that is active. In America, they've started introducing these machines, these clickers, where in a big lecture hall, if somebody doesn't understand, they click. We encourage students to always ask a question, especially when they don't understand what's being said. Not only because it's helpful for you to get the explanation again so you understand it, but usually the way you don't understand will be helpful to somebody else. A good university has a situation in which the students, in fact, are energetic and are one of the primary reasons that the other students learn.

Speaking of students learning together through collaborating and debating with each other, I'm sure you've seen the stories of schools in Finland adopting topic-based courses, not necessarily as opposed to or to exclude subjects like history or math, but to study a topic and learn five or six different subjects at once through doing that. I can imagine how that could be effective, but I'd like to know what your thoughts on it are.

Explain how the Finnish system works...

From what I've read about it, they'll teach English and geography and history during certain terms, and then, instead of constantly dividing up all the information into subjects, they'll teach a class where students have to look at a map, and the map is in the foreign language that they want to learn, and they have to identify things and talk about them, and talk about what famous musician is from there, what battle happened there... So they're getting history, geography, and English all in one course.

The idea of setting a curriculum by the *problem* and not by the *discipline* is very important, and they're right, fundamentally. Specialization doesn't necessary overlap with disciplines. If I'm interested in genetics, I have to know everything from statistics to biology, but that is based on the problem I want to solve. If I'm interested in law and I'm concerned about the political processes of the system of government, I have to be able to ask questions about history, questions about culture, about religion, and various things. So organizing the curriculum not by subject area, but by problems, or issues, is a very good idea.

So, do you think that there is a better time in someone's education for that than others?

Yes. Again, I'm not a cognitive psychologist, so you have to understand that my prejudices are merely that—my experience.

I really thank you for taking the time to speak with me, it was a great pleasure to have this conversation.

It was my pleasure. Great to see you.

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