Q&A with Alejandro Frank
Interviewed by Joelle Seligson

Alejandro Frank had been a nuclear physicist for around 25 years when, as he explains it, he “turned toward the children.” Eight years ago, Frank, professor of physics at the Nuclear Science Institute of the National Autonomous University of Mexico (UNAM), joined colleagues to determine science’s most important contribution to the country. Their conclusion: Science must be brought to the children. Frank and fellow scientists are now working to achieve this goal through PAUTA (www.pauta.org.mx/nacional/idiomas), which stands for “Programa Adopte un Talento”—the Adopt a Talent Program. Frank discussed the challenges and triumphs of this innovative project, which he’ll present as part of a daylong workshop before the ASTC Annual Conference in Albuquerque this October.

Tell me a bit about your project PAUTA.

First of all, PAUTA is an acronym, but it has a sense. It means—PAUTA means “example” in Spanish. And the acronym stands for Programa Adopte un Talento, Program to Adopt a Talent. That’s the meaning of the word PAUTA. PAUTA is a program that was started about eight years ago by colleagues and physicists from this university, which considered what is the really important thing that science can do for this country and how to develop that idea. We concluded that the most important scientific problem was to get science to the children of Mexico because this country is a very unfair, very unjust country where very few of the children have the opportunity to access this information and thus the country loses its main natural resources, which are the children.

Why were you motivated to put this into a program? What outcomes are you hoping to achieve?

Science in Mexico has a very good quality but a very small dimension. We are, in all, around 15,000 professional scientists in all fields. There’s two reasons, two main reasons—it’s also a matter of equity. My belief is that science and culture and scientific culture in particular are fundamental to achieve a better level for the population and a more democratic society. So that’s the main motivation.

How has it played out so far?

We have developed—we’re attempting to develop a bridge between the scientific community, the few of us in comparison of the scientific community, and the children of Mexico, and we of course also train the teachers. At first we thought of going directly to the children and then we realized we could only get to very few without incorporating the teachers. Basic education and middle education teachers we are also teaching.
So we have developed a set of techniques. The most important one are workshops, a series of workshops on certain themes, where the emphasis is on the development of abilities and reasoning more than the materials themselves, more than the knowledge itself. So our workshops are within the current philosophy of working together democratically and the main—I will explain to you, it will take a little time, what is the main content of these workshops. Each of them is about an hour and a half or two [hours], and then half of the time we spend on working on materials. For example, why some objects float. So we have very simple materials. We organize the room with tables where four or five kids or teachers sit and we have four or five of these tables. They work for half of the time. Then they have a session among each table discussing what they have learned, why is it useful, what are their conclusions, and finally, in the last part, each of them presents this material to the whole class. So this is a very constructivist approach. So that's our main tool. We try to make it fun and we—the materials have been constructed or designed by scientists in different fields, so we have in biology, chemistry, mathematics, physics, etc.

The second step—we have other ways to work with the children, in particular we work in certain museums that could be interesting for you. We are now working in the science museum of the University of Mexico, which is called Universum. Because we distinguish between science popularization and science teaching—you make a clear distinction. So we are trying to create spaces within this museum and another one, which belongs to the—it’s called MUTEC, Museo Tecnológico, Technology Museum—which belongs to the electrical company, which is a national government company, and we have established there spaces where we give these workshops. We teach these workshops to the children and we get the children from the visits to the museum. We believe, and I don’t know how much this is done at the museums of your association, but that some space should be dedicated to these workshops and to dedicate the efforts to teach the children, to let them experiment, but not just looking at the exhibitions but in a more organized way.

So the second step in our project is to select some children, which we thought at first would be a difficult task, but in fact the children almost select themselves because we invite them to be with us for weeks and weeks, months, doing this and they usually—the ones that are motivated and interested remain. We also get them from special—their teachers may select or recommend some of these children. But that’s not really the problem. What I’m trying to say is that this second step almost happens by itself.

The third part of the whole project is the most difficult one, which is the follow-up. In Mexico it is very different than in well-developed countries where perhaps giving them materials, showing them, popularizing science is enough, because the socioeconomic level is good. In Mexico most children, even if they are interested and you give them these materials, they would be lost, they would stop studying because they have to work, they’re helping their parents, and so on. So Adopt a Talent to us means we—once we find these children, we want to keep them, to follow them, and to give them not only if necessary a scholarship but also the means, the program, the support to follow in their careers. So we say we are
getting hold of them when they’re small and we want to take them all the way to higher studies. So that’s the main objective of PAUTA.

**What successes have you seen so far and have you run into unexpected challenges?**

We find we always get unexpected challenges. That’s the most common thing. But also surprising things. We have found the teachers, for example, which are very badly paid in Mexico, have many problems, they are very scared they are going to be pushed or fired or something because they’re not prepared—when you offer the teachers, because I have emphasized the children but we do the same kind of work with the teachers—they sit down, they work at the tables, and then they reproduce the workshops in their schools. Either in school time or after school in science shops, science clubs. We have been very happy to find that the children of course love it and we have had many, many experiences of children really asking their parents to take them to workshops and so on because they are fun, they learn things, but also the teachers, the teachers see a way to grow, to have a path to better themselves, to participate in something more than staying inside a class for years and years and years. So we have been very happy to see this happen.

We are now in five states of the country—we have not wanted to grow too much, too fast. The challenges, of course, are economical in many respects. We have struggled to find finance money from different places, but we’ve been quite successful, the national university, the education secretary—how do you call it, ministry—is supporting us and they’re inviting us to collaborate with them with their departments. We have found help from some foundations like Kellogg’s, which are very generous, and we have actually found or motivated some other rich people in Mexico to consider giving more. You know in the U.S., you complain about many things, but in Mexico, it’s much worse. In the U.S. what I see is there’s this culture of retribution. You’re born in this town so you become rich, you come back, you build something. You give to your college, to your university. Here it’s really difficult to do that. But we’re sort of working in that direction, too.

Recently, we were in Chiapas—Chiapas is in the southeast, one of the poorest states in Mexico. The population has a very strong indigenous component, they speak Mayan languages, so we’ve been there since the beginning, and there the surprises have been many—the reactions of the kids, of the teachers, and we recently made contact with the government, and they are quite excited about helping us. The fact that this is sort of an association between scientists of course, teachers and children and parents because we also try to incorporate the parents, to talk to them, to explain to them, and they participate, too—all of them want their children to be educated, to have a chance to grow. So it’s a very rich program with many, many possibilities and many different branches. In every state, it’s different. We also work in Mexico City, the urban population, which has other problems. So we design some of our workshops differently based on the interest of these people and we are very respectful of the local customs and the local ways.
Do you have a sense of how many students and teachers and parents you’ve reached?

Yes, well it’s difficult, but we have already worked with thousands of teachers. With children we’ve been working more slowly because we don’t want to open a window or a door to these children and then close it. We are just beginning to get enough support to believe that we will survive as an association. PAUTA has received a couple of prizes. People are noticing us. Actually, I’m talking to you because Marie Levens from the OAS recommended our program. She came down to see it, from the Organization of American States there in Washington, [D.C.] And we’ve been in Panama, Surinam, and there’s some interest that we could export some of our methods. We have also talked to an organization you might know, I think that you should know, which is called Teachers without Borders there in the U.S. We met them in Surinam and we have plans to associate because of course we can only reach a limited amount of people directly so we are building a long-distance internet portal to try to reach more people and to create some kind of pyramid. The older children becoming tutors, helping the smaller children all the way up.

I know you are presenting on PAUTA at the ASTC Annual Conference this fall. How will that presentation play into your future plans?

Well, I am, first of all, very honored to have been invited there, I didn’t expect it. I am a scientist, a full-time scientist who has turned toward the children in my last few years. And I am delighted to have the opportunity to discuss with this organization and to perhaps find ways to collaborate with Hispanic people, well, with everybody, but maybe in particular with the Spanish-speaking population in the U.S. and outside the U.S. So I am very interested in listening to the new techniques of communication, of education from I think you call them science, technology, engineering, and mathematics, and well—I’ve been surprised every time I meet—as I was telling you, for several decades I only met scientists, and I have wonderful friends all over the world. I was originally a nuclear physicist—I still am, but I’m working in other projects now, in science, too, and I always find that it is very enriching to discuss with other people. So I am looking forward to being there and learning about what you guys, the Americans, and your associations are doing to promote science.

This interview appeared in the July/August 2013 issue of Dimensions magazine, published by the Association of Science-Technology Centers, www.astc.org.