Aprendices

APRENDICES 4 - TRADUCCIÓN AL INGLÉS

Alejandro Maiche

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INTRO

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Computational thinking, in terms of a program of actions that achieve a global objective, seems key to understanding today's world.

PREVIA

Do psychologists still follow currents?

Yes, but that's at a clinical level. It's not my field.

It's true people associate those who work in cognition with people who study "Behavioral Cognitive", but I don't do clinical work. I do research.

Now there are lots of new data acquisition techniques, you know? Coming from the living brain.

Look up.

What's more, we've done some things in schools, studying how learning actually occurs.

Very good.

Ah, you can see the change.

See?

Hi, how are you?

Let's say hello.

Back.

How are you? All good?

All good.

I finished my degree in February 1997. I had gone to Barcelona for the first time in 1996, though their work was very different from mine.

I was a typical Uruguayan psychologist. You don't belong here, but I'm sure they understand me. I was a potential psychoanalyst, let's say.

But I truly did feel a part of the Autonomous University of Barcelona, which is where I did my doctorate and where I worked for 10 years.

I went there with a small suitcase, at 25 just with a suitcase, and I returned with a woman and a son. My little daughter was born here.

My older son, who is 17 now, Guille, was born there. He is Catalan, and my little daughter was born here.

When we came back, we did it in force: myself, Eve, 3-year-old Guille and a 40-foot container with a car and a house set up.

So, it was a productive trip.

Yes, yes, quite.

It was a productive trip.

Exactly, in the implementation part with the Territory team.

Are you a born engineer? No.

No, Chemistry teacher.

I see...

I did a Master's Degree in Educational Technology.

So, Apprentices season 4, Alejandro, take 1. Second clap.

ENTREVISTA

I knew you'd start with that. Not fair.

I see myself as a teacher. Obviously, a professor at the Faculty of Psychology, so you might say professor at Udelar. I feel very much a part of Udelar as an institution.

But it is also true that, if I look at a typical day of mine, there is a lot of time I spend as a father. And though it may seem to contradict certain things, I would define myself as Uruguayan, without the nationalistic interpretation of the word.

But it is clear that there are things about the country that... from reading the press every day to doing things for Uruguay.

You say you define yourself as a teacher. Did you always dream of being a teacher? What was your dream as a child?

I had the typical dream as a kid to be an astronaut, like so many children.

Afterwards, I spent a good part of my adolescence thinking that I was going to be a systems engineer. I liked that very much. I had a ZX Spectrum, which was a big deal then. You're much younger than I am, so you won't even know what it is. But they were little computers that did wonders with 48k.

And that got me into the logic of computers. And I always thought I was going to be a systems engineer. In fact, I did Engineering at high school.

But something made me see that mathematics, at that moment, for me, might become too abstract, too removed from the human.

And then I started looking for other options. I enrolled in Economics and Psychology, and finally I opted for Psychology.

I'm still interested in economics, I'd say. But I never thought about being a teacher until I started my academic career. During my entire Psychology degree I worked as a Mathematics teacher in a private institute. I was being a teacher, but not a faculty professor.

I also had a position in Social Sciences, helping with a fairly crazy project, which was for the different courses in Social Sciences to incorporate Mathematics in the first year. Many saw that as a kind of filter.

And the professor there, who had been my high school teacher, summoned us with the goal that Mathematics should not be perceived as a filter. This later became an objective in my life for various reasons.

So, that was the first time I started to have the idea of being a faculty teacher.

To be honest with you, when I define myself as a Udelar teacher, I think something more is involved, which happened to me in recent years. It has to do with being involved in the management of Udelar, in decision processes, in institutional transformations.

We'll get to Udelar soon. But what was the process like?

You started in Social Sciences where a professor detected your love for mathematics, but you also liked the world of psychology. When did these two great worlds of mathematics and psychology come together?

How did you come by this union?

It's a complicated story because, for me, they were always parallel tracks. I mean, I studied Psychology because I liked it at the time, some 20 years ago. I worked as a Mathematics teacher, but I could've been doing anything else.

But then came the possibility of going to Barcelona to do my doctorate. And there I discovered a psychology that needed mathematics to function, which was something that I didn't know existed.

Psychology in this country, and even more so at the time, was only clinical. In fact, I still remember when my master's thesis director told me: "I'm glad you realized that you had to do this because you were the only one... the only one who understands mathematics".

A person who worked in psychology was telling me that knowing mathematics was important for psychology. Those two things that seemed separate... then, I was 27 years old, and it had not occurred to me to combine both things.

And later it became more voluntary, let's say. I began to try and weave these two things together.

And then you decided to teach ten years at the Autonomous University of Barcelona. And then you came back. What happened? Why did you decide to return?

Yes. I didn't entirely decide to stay. I always wanted to return. What happened is that the conditions to return weren't there.

When I finished my doctorate and took the first assistant positions in Barcelona, cognitive psychology in Uruguay was still embryonic. Every time I came I met with the dean at the Faculty. And they rightly told me: “Ale, it doesn't make sense for you to come. There is nothing you could...”

That began to change in 2007, when Dean Leopold took over. He won with a project to academize the Faculty of Psychology, but also to incorporate new perspectives. And that coincided with the rectorship of Arocena and the pro-rectorship of Gregory Randall and a desire by Udelar to bring people who had done advanced studies abroad. These positions allowed you to make a living.

Well, that's when I started to seriously consider coming back. I had a one-year-old son. Guille was born in 2006. So coming back was a serious change, and it caught me at a complicated time.

I call my partner "my roommate" as a joke since we are not married. She is Catalan, but she always knew that I wanted to move back, so it was no surprise. So, the truth is that I started working with Luis, who was dean at the time, and put together a proposal to do a doctorate in Psychology. There was no doctorate in Psychology.

So, together with Luis and other teachers who were doctors, we started to put that together. And it brought me home.

Alejandro, tell us more about the world of cognitive science. What do they study?

Well, it basically studies how human beings process information. It's about how we learn and so it has links with the educational process, you know?

The faculty created the CIBPsi, it gave it a platform. Two laboratories were set up, one for psychophysiology and another for psychophysics.

Even though it was great, and for Uruguay it was a novelty to be able to do basic research in psychology, we quickly realized that in a country with so many problems it was a luxury for cognitive science to only have a basic anchor.

So, with the help of Ceibal, around 2013 we began to think, based on some readings, about how visual perception was linked to the learning of mathematics in children, for example.

In fact, children begin to learn mathematics, or at least numerical relationships, from visual stimuli and from understanding that there are more balls here than there and things like that. That's when we did the first big project, with a lot of support from Miguel Brechner.

So we did a first research project with 1000 children, using the first 1000 tablets that arrived. It was a crazy undertaking, since we did not know how to perform such large experiments. We had no experience and neither did Ceibal.

In truth, that was the initial project that got us into more educational issues. Cognitive science and education ended up being a very important part of CIBPsi at the time. Later, we realized that if cognitive sciences and education continued to grow, it would end up overwhelming the research area. So, luckily, we got funding from the Interdisciplinary Space, which is a central structure of the University, and the entire structure of cognitive science and education was moved to this Space.

It is what is now known as CICEA, which is quite well-known and recognized in Uruguay, right? And the core quota of research stayed at CIBPsi. Meanwhile, CICEA developed other projects. A very powerful, interactive ecosystem was created between education and cognitive science, fundamentally in four areas: mathematics, language, development and technology.

What was that process like? I imagine that involving the educational system with the academic world must not have been easy. As a

teacher, I sometimes see academia as being very far from the classroom.

So, how did you experience the process and how do you see this interaction today?

I think it's much better than before, but I also see everything that is missing. The best mechanisms for the education system to handle this subject are still under debate.

I believe that there is a very clear issue, which is that we cannot continue thinking of teachers as "blackboard teachers", that is, teachers who are paid for being in front of a blackboard. That model of teaching, of education, is no longer compatible with the modern world.

The teacher, the professor of Chemistry, Physics or whatever, has to have paid time in order to read, to write a research article or a magazine article. This is part of their training and we have to be able to articulate a system that incorporates these matters.

Maybe all teachers have to have a free morning for this kind of thing. You have to be able to ensure that there is not just one teacher for a class, but that there are also itinerant teachers who can cover those free mornings at school. We are already testing some of this in schools as a potential model, to see how it works. But we cannot continue with the old blackboard model because it kills potential creativity.

That's what we don't understand. It's not just about studying, it's about thinking.

What do you make of this fear that we teachers and parents sometimes have, concerning an approach to education focused on competencies, on the skills that children have to acquire for their lives today, but also for the future, especially in a world that changes so fast? There is also concern as to whether we are preparing them to face university, if they are truly ready to be university students?

What opinion do you have as a professor at Udelar?

You know that we charge words ideologically, falsely. I think this happened with the word "competences". It seems that if you speak in favor of or against competencies, you have a certain ideology behind you. This intrinsically bothers me, because it impoverishes language, communication, and thought.

That's why I'm going to try to avoid that, but not to avoid a position.

What is happening now is that kids read much less than us, and I don't remember us reading much. And that has to do, I think, with something hovering over the entire educational system that has to do with social media and the time they spend in front of TikTok or Instagram, basically, and how that ends up affecting many things.

So, when you ask me about competencies, so as not to avoid the essence of the issue, yes, I believe that we have to raise citizens and we could talk about competencies in that sense. But we are also going to have to make some decisions regarding the things that are happening.

Two months ago, the New York City Council sued Facebook, Instagram and TikTok. What are we waiting for to make Antel control the hours that a minor can spend on TikTok per day?

We are at a point where we have to accept that social media, fundamentally those designed to be addictive, are interfering too much, not only with the mental health of young people, but also with education. And so we are not going to settle the matter with an ideological discussion about competencies.

Recently, Marina Bers was here in Uruguay and spoke about computational thinking and programming as a new language to learn and acquire. And you have also had research and work experiences with Ceibal.

What role does technology have to play from this perspective, from the cognitive sciences?

See, it's good that you ask me this question after what I said, because one might confuse these two things. When I replied to your previous question I wanted to be very precise.

I'm not talking about technology, I'm talking about social media designed to be addictive. I'm not including all technology. But well, we could discuss it.

But technology is much more than that. And technology is not just screens. There's also classic technology like the typewriter, I think we can agree. But technology today also includes tangible objects. What technology gives us is the possibility of infinite testing and feedback without the need for a human being in the process. I am convinced that technology, in general terms, should be an ally of educational processes.

Also, computational thinking, in terms of a program of actions that achieve a global objective, seems key to understanding today's world. I believe that teaching computational thinking, making people understand how a machine works, is something that we owe ourselves as a State.

Do you know what hurts the most about seeing kids on their cell phones all day? It's that we think they know computers. That is making us lose sight of the fact that there is actually a whole area that is increasingly important in the world, but is being relegated in reality, because most adults assume kids are tech experts. "Look how they handle Instragram!". Yes, but that means nothing. In terms of learning, in terms of understanding how things are done, in terms of knowing what is behind "the algorithm", it is nothing.

I have some very basic ideas because I have talked to many people who work in computational thinking, but this is not my area. But I believe that we must be able to link, to attach the facts of everyday life to computational thinking.

Gustavo Armagno, an engineer who collaborated with us for a long time, plays "Forward 20, Right 90" with his children, which was the motto of our time, but in life, right? To guide them: "Where's the fork, Dad?" "Forward 20, right 15". And so on. And I thought it was a great idea to implement in children's classrooms or things like that. Later, some friends of mine who know the area told me it's no great invention.

But I truly believe there are three languages in the world: mathematics, the written language, and computational thinking or programming or whatever you want to call it, you know?

Maybe it's my heart speaking, but I have the intuition that all three have underlying mathematical rules. So if I had to teach them in order, I would start with mathematics, but you may attribute that to the fact that it is my field of work.