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INTERVIEW WITH OLE SKOVSMOSE

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The interview with Professor Ole Skovsmose was held on May 7, 2019, at the Department of Mathematics Education of the State University of São Paulo, UNESP, in the city of Rio Claro, São Paulo. Professor Skovsmose holds a master's degree in Philosophy and Mathematics from the University of Copenhagen (1975) and a PhD in Mathematics Education from the Royal Danish School of Educational Studies (1982). His professional career began at the Royal Danish School of Educational Studies in Copenhagen, where he worked as a full professor from 1996 to 1999. From 1999 to 2009 he worked at the University of Aalborg, where he retired. He remains as emeritus professor of this institution until the present day. He is also a contributing professor at UNESP, Rio Claro, working as a teacher and adviser in the Postgraduate Program in Mathematics Education. In the interview transcribed in this dossier, Skovsmose talks about the Philosophy of Mathematics Education, about the work he has developed in Africa and about his interest in studying and working with Philosophy of Mathematics Education and with Critical Mathematics Education.

Q1: Professor, can we talk a little bit about issues related to the Mathematics Education Philosophy, about the beginning of your interest for this area?

This we can do! I wanted to become a teacher. I came from a small city in Denmark, from a family without any academic traditions. I had no idea of going to study at a university. In Denmark, teacher education is not part of university education. It is taken care of by teacher training colleges, and there was one in my city. I had no doubt, I wanted to become a teacher. I felt I could become a good teacher because then in my free time, I worked as a coach in handball. I was 16, and I was managing children who were 15. I knew I wanted teaching to

be my life. In the college, we had to study all subjects: geography, history, Danish, all of them, and also mathematics. One could choose to specialise in mathematics, but it was within the frame of general education. This specialisation in mathematics was taking place within only six hours per week.

After finishing teacher training college, I became interested in going to study at a university. I felt I was good in mathematics. However, formally speaking, I could not enter the university because I had not gone to the Gymnasium, which provides the entrance exam for the universities. However, as a teacher, one was allowed to enter the university in the topic in which one had specialised at the teacher training college. I entered mathematics, and I was happy studying mathematics, but when I started I was far behind the other students, because I had not studied all the topics they knew from the Gymnasium. In fact, mathematics was not the topic I was most interested in. I was interested in mathematics because I liked it, but the topic I was really interested in was philosophy. However, I could not study philosophy at the university because the only topic I was allowed to study was mathematics.

I studied mathematics for three years. Then came a new law that allowed me to study philosophy as well. So, I started studying philosophy, and I specialised in the philosophy of mathematics. At the teacher training college, I had been reading all kinds of philosophy. I did not understand anything really, but I felt this was somehow my life. I wanted this, I liked it. I liked reading Søren Kierkegaard, and I could honestly say that I did not get what I was reading. But, anyway, I felt that it was important. I read about existentialism. I read about Sartre. I read everything in a mix. I read about art. I read about all kind of topics. However, at the university, I paid particular attention to the philosophy of mathematics.

When I started studying at the university, I was already qualified as a teacher, so I could get a job as a teacher. I taught in the evening, teaching adults from 20 to 30 years old. Then after some years, still studying at the university, I became a teacher at a teacher training college. There I started educating teachers in mathematics, and there I became interested in mathematics education. I started at the university in 1968, and it was there that I experienced the student movement. This movement included many ideas about education, and also ideas about critical education. The ideas were around when I became teacher at the teacher training college. The Pedagogy of the Oppressed by Paulo Freire was translated into Danish in 1975 by one of my colleagues from the college. At that time, I also joined a workshop guided by a person who had worked together with Paulo Freire. All this made me interested in formulating a

critical mathematics education. I was not a mathematician moving into mathematics education. I was a mathematics educator who became interested in mathematics, in philosophy, and finally in formulating a critical mathematics education. I feel very happy with my education because right from the beginning I knew I was a mathematics teacher[4].

Q2: Your current researches are still turned to the Mathematics Education Philosophy? How?

Yes, however, if I should put it in one phrase, I am concentrating on critical mathematics education. This topic covers many issues, also in the philosophy of mathematics. Together with my colleague Ole Ravn, I have just published a book in the philosophy of mathematics[5]. We feel that we are doing something new; that we are contributing to the philosophy of mathematics itself. In that book, we talk about a four dimensional philosophy of mathematics. What is the first dimension? It is the ontological dimension, and this is the classic one. One can ask "Where is mathematics?" and according to Plato, we should point towards the world of ideas. According to Newton and Galilei we should point towards nature. In nature, there is mathematics. Both Galilei and Newton were deep believers in God. So, what did God do? He used mathematics when creating the world. He used mathematics, and we, human beings, speak the same language as God. The fantastic idea of Galilei and Newton is that we are able to discover God's logic, when he created the world. He had used the same mathematical algorithms and theorems as we might come to know. If Rembrandt paints a picture, he might sign it. Newton had the idea that God also might have signed his creation. We just have to find where and how he said: "I did it!" That was the reason Newton was extremely occupied in studying the Bible. In the Bible there are many numbers, and Newton was particularly interested in the temple and its proportions. If we know the proportions of the temple, the Jewish temple, we might come to recognise that the same proportions can be found somewhere in nature, maybe among the distances between some of the planets. Somewhere in nature we might be able to find some of the religious proportions. This is how God might have signed his creation. However, Newton did not locate the signature, but this was his project. Anyway, this was about the first dimension of a philosophy of mathematics, the ontological dimension.

The second dimension is the epistemological dimension, which also belongs to the classic philosophy of mathematics. The central questions here are: How do we come to know about mathematical objects? How do we access

them? These are epistemological questions. And we can also ask: How certain is mathematics knowledge?

The third dimension in a philosophy of mathematics is the social. The guiding question is: How social is mathematics? One can also ask: Are mathematical truths eternal? Or are they basically social constructions? Does mathematics have a history? Is the reason it appears to have a history just because we are developing our mathematical knowledge, while the whole body of mathematical truths remains the same, always? These questions belong to the third dimension.

The fourth dimension, Ole Ravn and I refer to as the ethical dimension. The guiding question is: How good is mathematics? This question concerns the point that we can do good things or bad things with mathematics. We have elaborated the fourth dimension in details through discussions of mathematics in action. One can do something with mathematics, and one can do good things, bad things, problematic things, risky things, or whatever. Addressing the ethical dimension is somehow our contribution to the philosophy of mathematics. We finish our book by saying we have mentioned just four dimensions, but we do not exclude the possibility that there are more dimensions.

The classical philosophy of mathematics is two-dimensional, concentrating on the ontological and epistemological issues. Our principal concern has been to move beyond such a two-dimensional philosophy of mathematics. Others have contributed to the social dimension, we are not the first here, this is for sure. During the 1930's, Wittgenstein opened the social dimension when he started considering: What is a mathematical rule? How do mathematical rules emerge? To him, such rules are similar to grammatical rules. Grammatical rules are not God-given, they are social constructions. Everybody agrees that a language is constructed by humans, but Wittgenstein was not a relativist; he was in fact an absolutist. One can make mathematical mistakes in the same way as one can make grammatical mistakes. Such mistakes are relative to what has been constructed. They are not "eternal" mistakes. But still they are considered mistakes.

Q3: How have your research group, your students, been working with the Mathematics Education Philosophy?

We do not work with the philosophy of mathematics education as a topic. I do not propose texts that my PhD students should read. I have never asked them to read something in advance, not even my own books. In fact, I have never

read any of my own books after they have been published. I do not read them, I write them. When they are written, it is done, and others can read them. I even have difficulties in recommending others read them. That is not my business.

When working with the research group, we always take a departure in what their projects are about. Then we see what would be relevant to read. It could be some of my writing, but it is up to them to decide that. The reading is first of all related to what they are doing. One member of the group is working with students with disabilities who have entered university. I do not start saying anything about what she should read. First, we see the project, and then we see what could be relevant reading. Maybe it is good to read Foucault, maybe not. If it is relevant to address philosophic issues, deep philosophical issues, then we enter into them. Another is working with Problem Based Learning (PBL) at the university, and this brings us to the ethical dimension of the philosophy and mathematics. This dimension concerns how mathematics operates through modelling, and how mathematics is brought in action.

I would never ever determine what others need to read. I might come with suggestions, but not more than that. Research does not start with literature; it starts with problems and uncertainties, and from then one can see what follows. This idea forms the way we are working with the philosophy of mathematics education, and philosophic literature in general.

Q4: How do you comprehend today's Mathematics Education Philosophy in Brazil and abroad?

When in 1994 I came to Brazil for the first time, I was extremely impressed by the mathematics education research in Brazil. I came to Rio Claro because of the richness of research I found here. I knew it was rich, but I was surprised that it was so rich. In Denmark at that time, I had maybe one PhD student. In Denmark, because it is a small country, there was very little research in the area. At that time, all the researchers of mathematics education could easily sit in this room here. I was the first PhD in Denmark in mathematics education. It was something new at that time. We did not even know what we were doing, the supervisor and I. We did not think of it as research. We were engaged in developing mathematics education.

I was accepted as PhD student in 1977. I sent my first proposal for a PhD project in 1975 about critical mathematics education. They said "no" because critical mathematics education did not exist. But I wanted to make it exist, even if it did not. I convinced them that it could come to exist. But it was only in 1977

that I got the scholarship. Mathematics education research did develop, but in 1994 we were still a small group in Denmark.

In Rio Claro, I gave a talk, and there was a big group of mathematics educators listening. Then I knew I was not in Denmark. I was far from Denmark, and I saw how many things there was in fact published in Portuguese. Not that I could read any Portuguese in 1994, but I could recognise that the literature was rich. I was impressed by the scope of interests. I was impressed by Maria Bicudo knowing about Husserl. Nobody in Denmark in mathematics education knew anything about Husserl. He did not exist there. Irineu Bicudo knew about Euclid. They were all in the same building. There were mathematicians here and mathematics educators. It was fantastic to see mathematics education and mathematics together in the same building. This was not common. In Denmark, I was the only mathematics educator in a mathematics department. That was my life in 1994, and I had to fight very much to get just one PhD student. My response to this situation was to turn international.

In 1993, I became involved in a big project in South Africa: I became supervisor for the first generation of PhD students after apartheid. I was supervising six or seven of them. I was very happy. It became a huge experience for me. To establish contact to Brazil was also a hugely positive experience. I was impressed by mathematics education in Brazil, and also by the development of the philosophy of mathematics education.

Q5: Could you tell about your work in Africa?

I was very honoured by becoming invited to work in South Africa. For some years, I had been working on the book Towards a Philosophy a Critical Mathematics Education, which was published in 1994[6]. This was very much, if not a Danish, then for sure a north European book. My examples were from Denmark. Many of my references also.

Mathematics education in South Africa had been formed during the apartheid regime. There was research, but some of it was racist, deeply racist. Some research had set out to prove that black children could not understand mathematics. This was the spirit of the official mathematics education research during the apartheid. This was not any research that anybody wanted to bring to the new post-apartheid nation.

I am white, I am from North Europe, and I was invited to supervise the first generation of black and Indian students. It was people who, just because of their skin colour, had not been allowed to get a degree. I felt very honoured, and

I learned a lot. The first principle was that the students should not move to Denmark in order to get a degree. Their study concerned South Africa and should be conducted in South Africa. It was not them that needed to get to Denmark to read some literature about something. The supervisor had to do the travelling. So, I travelled to South Africa stayed there a month, then back to Denmark, then to South Africa for another month, and so on.

In South Africa. I saw schools in very bad conditions. Once visiting a school I asked: "I want to see the toilets, where are the toilets?". The school was without toilets. You will go into the bush if you needed a toilet, both teachers and students had to go there. It was dangerous to go there, one could get raped. So, the solution was not to drink anything. How to do critical mathematics education work in such a context? Imagine, I came from Denmark where the schools and everything are somehow nicely organised, and to do critical mathematics education had first of all to do with convincing teachers to open a political agenda through their teaching. However, after visiting South Africa, I had to rethink my whole conception of critical mathematics education.

I felt clearly, I do not come traveling from Denmark to South Africa to tell people "I think you should do so and so". I had no justification for making any such statement. We had to ask each other: What is the problem? The South African PhD students had to tell me how they saw the problem, and how they saw the situation. Of course, I had read many things but I could not say "this literature is relevant for you". I could not say anything like this. We have to really look at the problem: Maybe this reading could be relevant, maybe that one.

Q6: Could you speak a little bit about the main authors that influenced or still influence you in Mathematics Education Philosophy?

This I can do, but it is not philosophers nor writers in the philosophy of mathematics education. I am very much concerned about to what to do, but I am not feeling that I am contributing, first of all, to the philosophy of mathematics education per se. I like this area, and I have written Towards a Philosophy of Critical Mathematics Education. I feel I am more into critical mathematics education than into the philosophy of mathematics education. However, I operate very much from a philosophical perspective.

If we look at the authors who have been important to me, one is Paulo Freire. His Pedagogy of the Oppressed, has been a deep inspiration[7]. The book

was published in English in 1972 and translated into Danish in 1975. I read it that same year. Then there was one article by Theodor Adorno, "Education after Auschwitz"[8]. This gave me a deep inspiration also. The article is short, only around 10 pages. In "Education After Auschwitz", Adorno starts saying that the obligation of any education is to prevent a new Auschwitz from happening again. By saying so, he placed education in the middle of the political scene. Education has an obligation. Through education, one can make a difference. Adorno's article also makes a big change in perspective compared Paulo Freire's. Freire was concerned about the oppressed, while Adorno is also concerned about the oppressors. When he says that it is an obligation for education that a new Auschwitz should not happen again, one can ask: Who is in his mind? Is it the oppressed? Does he think of an education for the Jewish people that they could resist better? It could be, but I am sure that he had in mind also the Nazis, the oppressors. He wanted education to prevent any such right-wing movements from emerging again. Adorno's conception of education concerns everybody, but it could mean different things for different groups of people. I am inspired by Adorno, when I talk about critical mathematics education, I am not saying it is only for the oppressed. It is not only for poor children in a favela. It is also for children from wealthy environments. How are we to think critically at any social level? I am very much concerned about the oppressed, but also about potential oppressors. It was Adorno who made this clear to me[9].

Then I have read a book Modernity and the Holocaust by Zygmunt Bauman[10]. This book put things very clear to me also. First you have the two words "Modernity" and "Holocaust" in the title, and Bauman's point is to see the two things as connected. One finds many theories about the Holocaust. Some see the Holocaust as being detached for the regular historical development. It was a pathological event. Bauman's point, however, is that the Holocaust became an integral part of Modernity. Modernity includes the Holocaust as a possibility. Modernity with all its celebration of knowledge and sciences includes the Holocaust as a possibility. The book Modernity and the Holocaust provides a deep critique of Modernity.

This is somehow my departure when talking about critical mathematics education. As with any technical discipline, mathematics is in need of critique. I write, for instance, about mathematics in engineering. Mathematics is playing a role in Modernity and creates horrors, extreme horrors. I talk about the banality of mathematical expertise. I am echoing Hannah Arendt, who talked about the banality of evil after she followed the trail of Adolf Eichmann in Jerusalem[11]. Eichmann was captured, and was charged there. He had been a principal

administrator of the Holocaust programme. He organised it. It was a difficult thing to do. How to organise the train transport? The German military also needed trains. One could imagine Eichmann as being a malicious person, roaring against the Jewish. But he did not appear anything like this. He was a small office person. He had no conception of what he had been doing. He just appeared an insignificant personality. This is what Arendt captured by the expression "banality of evil".

Inspired by Arendt's expression, I talk about the banality of mathematics expertise. When you have mathematicians working in a company, in an organisation, in the military, or at the university, they might be doing things without reflecting on what they actually are doing. They do their jobs; they perform their calculations; and they publish a paper here and there. This is the banality of their expertise. With respect to critical mathematics education, my concern is very much about the education of mathematicians at university level. The university tradition produces an expertise that can do things without preparing students for reflecting on what becomes done.

It is horrible; so often mathematics has isolated itself at the level of the mathematics programmes. Here in Rio Claro in 1994 the mathematics environment was rich. It was quite different from traditional programmes in Denmark, Norway, or wherever, isolating themselves from the social dimension of mathematics. When I came to Rio Claro, the programme included people interested in mathematics, mathematics education, philosophy of mathematics, and philosophy of mathematics education. In such an environment, it is possible to address mathematics as a social agent. One can do many things with mathematics: create risks, estimates risks, discuss sustainability. As Ubiratan D'Ambrosio has emphasised, mathematics can operate horribly, but also wonderfully. It is one of the concerns of critical mathematics education to address all such possibilities. With respect to critical mathematics education, I am not only thinking of oppressed children, but also of, say, the engineers and mathematicians who might come to act out a banality of mathematical expertise. I am concerned about all groups of students: how to come to do mathematics, and how to come to reflect on doing mathematics.

Q7: How, nowadays, do you consider the relevance of philosophy in mathematics education researches?

As I am a philosopher, I am interesting very much in philosophical issues. In fact my Master's Thesis is in philosophy so, formally speaking, I am more

philosopher than mathematician. Philosophy includes very many issues, also issues that I do not find of much relevance for mathematics education research. For being relevant, in my view, a philosophy should be open to the political dimension. If this is the case, then I find philosophy to be relevant. There are many issues, philosophical issues, having to do with the nature of politics, the nature of democracy, the nature of corruption, etc. If a philosophy is open to such issues, they can be explored with huge relevance for mathematics education. However, there are too many classic philosophic issues that appear completely depoliticised.

Once one of my students said she wanted to study Levinas, I know Levinas, who is quite difficult to read. She wanted, anyway, to study Levinas as he gives a different way of looking at students' possibilities and might open new perspectives for interpreting students' foregrounds[12]. Levinas' philosophy can operate in a completely depoliticized context, but as soon as we become open to some controversial issues which philosophy can help to address, then I find philosophy to be relevant.

If you look at my own writing, you might find much in the philosophy of mathematics education. It could be, but I am not really feeling myself as a philosopher of mathematics education. I feel much more like a critical mathematics educator, who operates with philosophy[13]. I am interested in philosophy, but it is not my main concern, which is critical issues. However, one cannot operate with any critical concerns without a deep philosophical awareness.

Q8: Could you tell more about the historical of Critical Mathematics Education?

Let's start with my experience in South Africa, because it has has a close relationship to my conception of critical mathematics education. Before my experience in South Africa, I had the conception of a Northern European educator, which means that it becomes assumed that the classroom is well-equipped, that the students are not hungry, and that they are not afraid of violence. Such assumptions cannot automatically be assumed in South Africa. While I was there, I could not experience the same school environments as I was used to, and I started to think: "What does critical mathematics education mean in the context of South Africa?" Critical mathematics education came to mean many new things as the oppression there was much more profound. The significance of solidarity also becomes different. Paulo Freire makes extremely

good sense of this notion. One needs to consider: With whom can critical mathematics education demonstrate solidarity? And how?

When I came to Brazil, I felt very enriched. I had got the opportunity to work in three different contexts: Denmark, South Africa, and Brazil. This experience developed my conception of critical mathematics education. In South Africa there was, in fact, a movement, which was almost invisible, it was called "People's Mathematics for People's Power". It was a critical mathematics education movement, which operated during the Apartheid period. It was dangerous to be involved because it was a resistance movement. I was very impressed by this movement. If you take critical education in Europe, not just critical mathematics education, but critical education in general one can ask: Which time was it conceptualised? Only after the Second World War; only in the 1960's. Imagine if it had been formulated during the 1930's? The Nazis would crush it completely. But such an educational resistance movement was operating in South Africa during the apartheid period. Paulo Freire was also working in difficult times here in Brazil, during a dictatorship. So, what does it means to be critical when you have the dominant political powers against you? Back to the 1930's, there was no conception in Germany, of critical education. One could find "progressive education". It was romantic as, for instance, the Waldorf pedagogy inspired by Rudolf Steiner. The children should be free, developing their activities, making drawings of kings and princesses, colouring the rainbow. Then came the Second World War, and everything got interrupted. The Second World War came to an end. And then pedagogy in Germany, and also in Europe, continued as if the Second World War had not taken place. It was the same topics discussed in the 1930's that became discussed in 1946. Apparently, the Second World War did not exist according to educational research which just reverted back to "normal". It was only when Adorno wrote this paper "Education after Auschwitz" in 1966, (it was actually a talk on the radio) that education recognised: We have had a Second World War; we have to think politically; we have to react to violence and oppression. So critical education appeared during a period where peace had come to Europe. It did not appear during the hard times.

In some of my talks and writings, I have compared what is happing around the world today with what was happening during the Weimar Republic before Hitler came to power. The Weimar Republic (1919–1933) was a democracy, but a weak democracy, it was not really operating powerfully, it was institutionalised democracy. Simultaneously, an erosion of democracy took place. Today in several counties, we are also facing an erosion of democracy.

However, today we have the concept of critical education and of critical mathematics education. What does critical mathematics education mean in a context of erosion of democracy? It is a very important issue, because we cannot pretend we are in the 1930's. During the 1930's, we had not thought that education could play a political role. Now we know, it can; we are now confronted with how to face this challenge today.

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Footnotes:

[1] Doutoranda no Programa de Pós Graduação em Educação Matemática na Universidade Estadual Paulista "Júlio de Mesquita Filho" *câmpus* de Rio Claro
[2] Mestrando no Programa de Pós Graduação em Educação Matemática na Universidade Estadual Paulista "Júlio de Mesquita Filho" *câmpus* de Rio Claro
[3] Doutor em Educação Matemática (Unian/SP)
[4] See also Skovsmose (2012).
[5] See Ravn and Skovsmose (2019).
[6] See Skovsmose (1994).
[7] See Freire (1972).
[8] The article appears in Adorno (1971). See also http://ada.evergreen.edu/~arunc/texts/frankfurt/auschwitz/AdornoEducation.pdf.
[9] See also Skovsmose (2017).
[10] See Baumann (1989).
[11] See Arendt (1977).
[12] For a discussion for students' foregrounds, see Skovsmose (2014a)
[13] See, for instance, Skovsmose (2009, 2011, 2014b).