

Talking about Challenges of Being a Teacher

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Review Essay:

Woff-Michael Roth (2002). *Being and Becoming in the Classroom*. London, UK: Ablex Publishing, 187 pages (English), ISBN 1-56750-670-4 (hardcover)

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Abstract: *Being and Becoming in the Classroom* presents a reflection established inside educational practice, which allows us to understand the learning process of teachers while they are immersed in their daily work. ROTH analyzes very concrete situations that are experienced by educators as part of their professional lives. Thinking from a teacher's point of view, I intend to suggest that the idea of situated knowledge, which integrates the background of the book, can be expanded when it includes an articulation of social conflicts. For discussing that idea, I take advantage of my own practice as source of empirical evidence, trying to learn one of the most important lessons that the book brought me, relating to the implications of the concepts of praxis and the understanding of practice. I discuss ROTH's key concept of Spielraum (room to maneuver) starting from the ideas contained in the book, and again proposing a counterpoint with my own experiences.

Table of Contents

- [1. Central Ideas of the Work](#)
- [2. Identities and Differences in Perspectives](#)
- [3. Confrontations Inside the School](#)
- [4. The Notion of Irreversibility](#)
- [5. Becoming with Others](#)
- [6. Assuming the Classroom as a Non-equilibrium System](#)
- [7. Conclusion](#)

[Acknowledgment](#)

[Appendix](#)

[References](#)

[Author](#)

[Citation](#)

1. Central Ideas of the Work

In Being and Becoming in the Classroom, Wolff-Michael ROTH develops a way of reflecting on teaching that goes from practice to theory, returning to the practice and, in a continual movement, supplying the theory. He makes an effort to reveal the concrete conditions, which involve the teacher's work in the light of a theoretical framework centered on praxis and praxeology, a dialectical relation. He creates an alternative to current theories that restrict themselves to the chronological dimension of time, erring by over-generalizing, reflecting an inability to describe reality as it unfolds in a teacher's day-to-day activities. The author

points to limitations in the understanding of the time dimension showing the fragility of such theories. [1]

In chronological time, reality can be represented, or rather re-presented, in the form of an interpretation of what occurred in the past. Here, there is only one dimension to the past, the present and the future, thus revealing the limits of interpretation. ROTH expresses the gap between theories and practice when he describes his feelings during the time he had to go back to studies at the university after teaching for a year: "The experience of being in the classroom and talk about it in terms of the theory at the university was very different, and sometimes incompatible" (p.xii). This gap exists, in part, because theories based only on chronological time tend to consider events as reversible. It means that those theories presuppose the possibility of obtaining formulas of translating realities into other realities independent of the differences in their respective situational configuration. In this sense, these words, which ROTH shared with his teacher, were more than a simple complaint: "This may work in your theory, but out in my school, it is a very different matter" (p.xii). In this passage, ROTH clearly showed that such theories are unsustainable: their faith in a possible generalization of knowledge obtained only by *thinking* about teaching. Subsequently, ROTH articulates another element to be considered:

"Praxis, because it is entirely immersed in the current of time, is inseparable from temporality. It unfolds in time, is non-linear, and remains irreversible. Its temporal structure—rhythm, tempo, directionality, and irreversibility—is not only constitutive of its meaning but also the central element that distinguishes praxis as a lived experience from praxis as re-presented (made present again) in theory. In other words, praxis as lived experience takes place at a level of immediacy that does not allow stepping back and talking time out to either reflect or construct a theoretical understanding of the situation before making a rational decision" (p.6). [2]

I understand ROTH as having built a praxis-situated and praxis-relevant framework that allows us to understand the dialectical relationship between those two dimensions of time in praxis. In my way of understanding, these attempts at generalization imply and are directed toward the possibility of control over educational action starting from the adoption of some standardization of resources and behaviors. I intend to discuss, further on, the ideological character of that need for control. [3]

ROTH develops arguments, showing that there are forms of knowledge produced and available strictly in practice that are therefore unavailable to those who do not engage in practice. These forms of knowledge concern the production of tools that aid teachers in their work, in the here and now, where there is no time for reflection, for dealing with continually emerging unexpected events. These forms of knowledge are not acquired in theoretical readings, or in the study of prescriptions, but in facing the real conditions of work, and it differentiates an experienced teacher from a beginner. The author calls it "Spielraum." [4]

The book is divided into two sections: "Being in the Classroom" and "Becoming in the Classroom." The first section contains five chapters, each focusing on one major concept that has arisen from the author's own teaching. These chapters are entitled: "Temporality of Teaching," "Being in and being with," "Habitus," "Spielraum," and "Relationality." The second section consists of four chapters describing situations in which teachers continue to develop their praxis while working in the classroom: These chapters are entitled "Becoming in the Classroom," "Coteaching," "Cogenerative Dialoguing," and "Praxis and Praxeology." [5]

The perception of the issues involved in the temporality of teaching consists in the elemental question that drives the author's work. Once he articulated the multiplicity of the temporal dimension, ROTH shows us how it works in and on practice. Subsequently, in the second part of the book, he describes some consequences of his proposals in showing how it is possible to take advantage of them in the formation of new teachers. ROTH also assumes improvement as inherent in the profession, and by this he shows how teachers can help one another to understand more about practice by acting as well as reflecting together. [6]

2. Identities and Differences in Perspectives

I identified with the positions presented by ROTH in his introductory pages, when he writes about his intentions as a beginning teacher and what he endured learning in the context of praxis. As he began considering a teaching career he wanted to adopt instructional practices that he found useful as a student. He tried to avoid imposing on his students the same suffering that he had been exposed to while being a student. In his words:

"For lack of a better starting point, I considered the most enjoyable learning experiences I myself had experienced [...] these were mostly associated with situations that were not formally organized [...] I wanted to avoid giving my students the experience of failure that I have had in the past." (p.xi) [7]

Evaluating his experiences as teacher, ROTH articulates an important lesson that he learned along his career trajectory: "As a teacher, I learned that, for students to be successful, I needed to listen to their needs, enter their reality, and come to understand where they are" (p.xv). [8]

I learned that same lesson, although following a different professional path and facing difficulties of another order. From my perspective, some aspects were more salient, reflecting differences in the understanding of what happens in practice. Explicating here episodes of my own experience (see Appendix), I show some elements from my point of view, with the hope of contributing to the debate on the process of being and becoming a teacher articulated by ROTH. [9]

I arrived at school with some revolutionary ideas. However, having the desire to change conditions and being confident in the possibilities of the success of my ideas, I encountered the reality of the concrete conditions that considerably

restricted my room to maneuver in the classroom. It is what I intend to show recounting some episodes of my initiation as a teacher. [10]

3. Confrontations Inside the School

At the university, discussions about education were limited to the courses offered by the education faculty; in the physics department we did not discuss the subject despite following a regular teacher education program. In the education faculty, I studied theories that were opposed to traditional teaching. Those theories mainly were based on the constructivist proposals promoted by Jean PIAGET, which constituted the grounds of a new school pedagogy. Inspired by these new ideas, we prepared projects for didactic application, intending to articulate challenging experiments to present to the students in high school. [11]

Before finishing my teacher degree in 1978, I had my first teaching experience in a confessional private school (Roman Catholic). I began the work with the illusion of building a practice that—unlike what had been offered to me—would animate my students as I was. The work conditions, however, were quite restrictive and they imposed upon me some harsh lessons. The words of SANTOS (1992) offer a good description of what happened to me in that year and, for that reason, I transcribe a complete passage of his work:

"In a capitalist system, the school recruits teachers (workers) to train workers. It is the workforce being used in the production of another workforce. It is a workforce sold by the teaching workers that, within a certain teaching institution and with a specific organizational form, contribute to the formation of more workers. When those same teachers arrive in a school setting, although they have been trained in their university courses that they are the epicenters of teaching, they will come across a very different situation. Immediately, they will perceive a sharp contradiction between them and the way in which teaching is organized. In addition, there is a rift between the teachers and the means or instruments of work. They will notice, therefore, that established relationships with those means, with other workers or with the students, do not derive from their own free will. To the contrary, there are expectations that dictate the way the process organization of work is structured within the institution. The human element is therefore subjugated to the material element. The technical-pedagogical procedures, the teaching methodologies and technology in general, determine and condition actual educational practice. It is not simple data, nor can it easily be seen in its material form; but it is the fruit of the human creation that has been produced under certain historical conditions. It is [...] the outcome of social relationships. Consequently, the organizational forms and technology are not neutral—they cannot be divorced from the social relationships established by the constituent social classes of the capitalist system." (p.52, my translation) [12]

There is a tension here, little explored and explicated by ROTH, but to which I would like to devote some comments. I somewhat agree with SANTOS because I believe that work conditions really exercise a powerful influence on practice. SANTOS tries to avoid an absolute deterministic position, as the passage suggests. The tension emerges when we are confronted with the concrete

conditions that determine the organization of the work and the movements that try to break with the established limits. [13]

In that first school, I tried a practice what was contrary to a tradition that presupposed a presentation of content and the subsequent execution of model exercises ("banking education" FREIRE [1978]). However, I taught four classes, each consisting of more than 60 students. There were TV cameras in all of the rooms connected to the managing priest's office. He was not interested in the didactic content of our classes, but in the political content. He was an informer of the military dictatorship's police, famous for its systematic disrespect of human rights. In this school we did not have meetings about pedagogy. The supervisor attended my classes only once to test my competence. On that day, knowing that my tenure was threatened, I presented my students with the objectives of the chapter that we should have been studying, formulating them all in agreement with BLOOM's taxonomy: a way of ordering curriculum content hierarchically, which has influenced educational curricula around the world. The supervisor was satisfied. In saving my job for some months, what I had studied in one of the disciplines in the Faculty of Education had served me well at least once, although for purposes not originally intended. [14]

I took the students to the laboratory in spite of all existing obstacles. The laboratory was always closed. From the principal's understanding, it was not to be used frequently. He hid the key and only allowed use of those facilities after some negotiations. However, the worst part was that I had to face students' resistance. They were used to the traditional forms of teaching and many considered me an outsider. One group of students put forth a petition asking for my dismissal. But there was also a group that defended me and they circulated a petition that supported my remaining at the school. I was dismissed only at the end of the year. [15]

That experience illustrates the difficulties teachers can find to a larger or smaller degree depending upon where they teach. It means that their room to maneuver—a central concept in ROTH's book—dialectically arises from a teacher's agency and existing internal (abilities, inclinations) and external social (principal, students) and material (lab, school) structures. In other words, the making of that space does not only depend on the teacher's acquired abilities, it critically depends on the context. At the same time, external determination is not permanent: the development of Spielraum, the room to maneuver, allows teachers to enlarge the room to effectively maneuver within it. [16]

According to SANTOS (1992), the relationships between social classes are materialized in societal organization (or division of labor). Historical, social, and material conditions constitute, in a specific situation, the field of determinations where the social actors meet. SANTOS suggests that once conditions establish a boundary for possibilities of actions, the field does not *determine* the actions. In that sense, the workers' fights for the improvement of work conditions constitute the other pole of the contradiction; this fight assumes quite varied forms depending on the particularities of every moment. [17]

The concept of determinations field helps us to understand which were missing in ROTH's treatment of being and becoming as a teacher. That perspective enmeshes us in a totality that passes through the walls of the classroom, the walls of the school, the borders of the city, and it embeds us also in a broader temporal dimension. However, SANTOS owes us a more extended explanation of how transformation possibilities appear inside the classroom, a subject that I intend to address below. [18]

4. The Notion of Irreversibility

Reflecting upon my earlier experiences, I perceive that I encountered many problems and had difficulties understanding what was happening. I felt that the theory I had studied didn't help me. Today, drawing on ROTH's ideas, I understand that my room to maneuver in those days was quite restricted. Besides, I had to deal with the situation without the collaboration of any colleague, acting alone as all teachers almost always do. [19]

In trying to move forward in the understanding of the problem of determination in teaching, I borrow from PRIGOGINE's ideas concerning the dynamics of non-equilibrium systems. In non-equilibrium systems, irreversibility is a central characteristic of any event. Let us suppose, for example, the measurement of a variable as the attrition coefficient between two surfaces. No matter how advanced the technology, measurement will involve a large margin of error because attrition depends on many factors and is sensitive to small variations. When considering real phenomena, we need to take irreversibility into account: it is not possible to repeat an event exactly because, in some way, all future states are sensitive to small variations. PRIGOGINE points out the limitations of classical science—still embodied in the statistical models of human behavior that dominate psychology, sociology, and education—when affirming that it is restricted to describing phenomena that are reversible. Thus, classical scientific theories created for describing nature inherently remain unable to do so. This critique of the inability of models to describe real-world phenomena, an inability rooted in scientific generalization, bears similarity with the critique launched by ROTH against educational theories that portray educational practice as deterministic in relation to theoretical knowledge and its execution in real classrooms. [20]

PRIGOGINE studied systems that are far from equilibrium. Such systems are characterized by their dependence on a large number of factors and by the impossibility of foreseeing results with any degree of certainty and by the high sensitivity to variations occurring in any one of those factors, and by the possibility of momentary occurrences of organized phenomena integrating the constituent elements of the system. Recognizing that teachers act in a continuum and irreversible dimension of time, ROTH, as PRIGOGINE did, proposes a new perspective to observe the facts; a new alliance with the understanding of teachers' reality. [21]

ROTH takes advantage of BOURDIEU's (1980)¹ idea of habitus to enhance our understanding of how teachers learn to deal with unpredictable situations and why practices are so resistant to change. In ROTH's words:

"Teaching is an activity that consists of highly spontaneous and contingent actions. There also exist various forms of accounting discourse, in the form of rules and precepts, which are used to describe and explain teaching after the fact. But we need to keep in mind that actions precede the accounting process; whether a particular action conforms to a rule is only established after the fact (though any actions can often be predicted with a certain probability). Once we abandon the relationship in which rules drive actions, we need a different way of explaining practices and why they are so resistant to change. Habitus provides us with such a concept." (p.50) [22]

Habitus is an open system of dispositions patterned and obtained in particular structures. ROTH explains further on: "Habitus generates the patterned ways in which we interact with the world, including those practices that embody action, perceptions and expectations" (p.45). Habitus does not exist without one concrete situation in which anyone has to act "[...] through a practical mobilization of the past in the very moment it anticipates the future" (p.45). It is open because, at the same time in which we act according acquired habitus, we can change in each situation. But because habitus is deeply embodied in praxis and formed through experience, it's so resistant to change. In this sense, to change means to improve Spielraum. "This Spielraum, or room to maneuver in an appropriate manner, sets up a dialectic that generates new options for subsequent actions." (p.59) I understand that the obtaining of Spielraum has perennial aspects and its boundaries are always under construction. The work conditions configure fields where the teacher tries to act in agreement with his/her beliefs and previous experiences. When those configurations change in a more radical way, Spielraum already present has to be reviewed. [23]

Other consequence of recognizing irreversibility concerns the treatment of the curriculum in schools. One school can adopt an inflexible program, planning all the activities for the whole year, including all the steps students have to take. A curriculum such as this is more consistent with the idea of a predetermined, predictable reality. This idea is all too common. Even a technocrat responsible for planning would recognize that many things cannot be predicted. But it does not mean that he will not believe in the possibility of controlling the situation as a whole, or even in the necessity of external control over the events inside the class. However, ROTH takes the opposite direction, as his words attest:

"In a curriculum that is to go exactly as planned, there really is no place for students. It is a world completely controlled by the teacher and interactions have to be minimized—because each time another person is allowed to act we introduce the possibility of changing the situation in a manner that had not been foreseen. If we move away from such a rigid view of curriculum and allow it to evolve in and through

1 For more explanations and critique of BOURDIEU's habitus concept, see SEWELL (1992).

the interaction of students with each other and the teacher, the enacted curriculum will only proximally resemble what has been planned" (p.35). [24]

I have seen many professionals who believe in reversibility. In a certain way, they consider it more convenient to think that teachers can offer a good class, always in the same way, for any group of students, once they have attained certain practical experience. In addition, teachers who have to assume an enormous teaching load, without time for reflection on and improvement of practice, tend to adopt a more constant and monotonous performance, much like alienated factory workers. In those conditions, they tend to create a strong habitus that is hard to change. Maybe that explains why rationalist theories of pedagogical practice are so widely accepted. As ROTH points out, those theories are not useful in trying to understand the events of the classroom because they dwell on generalization, becoming increasingly abstract, and therefore increasingly distant from the lived experience that characterizes teaching. These generalizations generate prescriptions, supposing the possibility of the adoption of rules of wide application, not accounting for real work conditions or the nature and origin of students. Nevertheless, despite their limitations for understanding praxis, they persist and do so in a dominant way.² My intuition is that these grand theories persist because they promise to be more effective in the control of classroom processes. [25]

ROTH describes curriculum as an emergent feature, arising from the transactions of students and teachers. The grand theories promise control and determination, both from inside the teacher: intelligence, beliefs, motivation; and outside the teacher: social determinants of behavior and performance by such sociological variables as socioeconomic factors, culture, and gender. The grand theories do not account for trouble, such as students who resist the reproduction of middle-class culture (see ROTH & TOBIN 2002). The dynamic perspective articulated by ROTH, in contrast, allows us to understand why the same teacher may be having success in one class but fail in another. We therefore need to understand classrooms as being exposed to a series of pressures and antagonisms that generate conflicts impossible to know in advance.³ [26]

5. Becoming with Others

The construction of an articulation between the practice and the understanding of the practice depends on assuming the mutual constitution of those two moments. Praxeology (understanding of practice) emerges from a dialogue with events, while knowledge about practice tends to take advantage of the practice elements that can be incorporated as acquired knowledge (chronological time). ROTH marks the difference, denying the intention of producing knowledge about practice, but articulating praxis and praxeology in a dialectical movement. The

2 I would say that persistence has the approval of a significant part of the population and has its roots in wider social relationships. The fight of classes is also a fight of ideas.

3 Searching for information about violence in schools in the data base the Brazilian newspaper Folha de São Paulo, I found 2 articles in 1995; 22 in 1996; 13 in 1997; 59 in 1998; 185 in 1999; 431 in 2000; 383 in 2001; 515 in 2002; 353 in 2003.

theory is never complete, but in constant construction because each new movement in reality can generate other elements for the understanding of the events. In his words: "Praxeology (talk about teaching) is inherently different from praxis (teaching). In praxeology we find symbolic mastery; in praxis we find practical mastery. Practical mastery can only be acquired in praxis; symbolic mastery is acquired by talking about practice" (p.137). He goes on, "Praxis/praxeology as a unit of inherently contradictory forms of knowledge, is continuously produced and reproduced, in situation, and therefore constitutes learning in and as practice" (p.174). [27]

ROTH promotes a view of teachers and teaching that celebrates their knowing and understanding, and their praxis as the possible location of continuous becoming. He opposes the grand theories that not only are deterministic in nature but also that disqualify teachers, making them mere executors, which would ultimately lead to deskilling in the same way tradesmen have experienced when they entered FORD and TAYLORist factories. I want to follow ROTH in considering myself an educator who considers students to be situated in a historically and socially constituted reality. This implies the necessity of addressing in teaching the specificities of each group and their needs—most importantly in fighting the inequities of today's societies, continuously produced and reproduced by the grant educational systems.⁴ I greet ROTH's effort as an attempt to write against the hegemony of the grant narratives and political control (ideology) of the classroom. [28]

In this sense, when we decide to address the specificities of our class in our teaching, all we have is a general idea that can point us into a direction we would like to follow. However, "we can change our attunement or through reflection become aware of what we are doing, but the next time we have to deal with the same problem, we typically abandon ourselves to our habitus" (p. 58). Thus, ROTH proposes strategies to work with other teachers, one learning with another: coteaching and cogenerative dialoguing. [29]

"Coteaching is a practical situation in which two or more teachers work together in the same classroom at the same time, thereby changing the teacher-student ratios in significant ways" (p.111). Coteaching refers to a sharing of educational action. It means a real presence of two or more educators, each taking full responsibility for the management of a class or of any other educational action. It requires that participants be willing to learn from their partners, to move among their different conditions that can vary among a central position in the action, a proportional division of labor to handle the class and a position more proper to the contemplation of the facts in process. ROTH suggests:

"Coteaching, that is, working together, side-by-side, provides teachers with opportunities to experience lessons from similar locations. The experiences that are salient for one or the other teacher can subsequently become the topic of their professional conversations, which themselves lead to a further understanding of

4 I identify ROTH with that position and I consider his work to be of extreme importance because it illuminates the field where we can look for a theoretical base that strengthens our actions.

teaching and learning. That is, out of their shared experience of working side by side, being in the same classroom and being with each other, teachers develop an understanding of praxis that becomes the bases for their subsequent efforts of articulating what had happened." (p.138) [30]

Coteaching is complemented in cogenerative dialoguing. The chance to understand events increases with dialogue about the experience. Here is a proposal of a continuous movement: the practice supplies elements for the reflection and this means when actions are presented again it allows a different observation of the same facts in chronological time dimension. Each teacher in coteaching is at the same time actor and spectator. In cogenerative dialoguing, one acquires of the other a vision different from the events, increasing their possibilities to act. [31]

6. Assuming the Classroom as a Non-equilibrium System

Education is a political act (FREIRE 1978). Once the wider objectives of education are defined, there is always a coherent positioning relative to the transformation of reality. A critical positioning that faces the real social struggles defines a horizon to be pursued by teachers. That positioning helps teachers to make more coherent decisions based on their faith, desires, feelings, and reflections. ROTH's concept of the Spielraum that teachers develop is then deeply grounded in teachers' own life histories. [32]

At the same time, reality challenges teachers at every moment. It is only possible to promote an education connected to the struggles for a more just society when we understand that students comprehend in terms of the reality in which they are immersed. ROTH shows us that students do not understand what is offered in schools in some abstract way, but understand in terms of their individual biographies. These biographies are inherently diverse, leading to classroom dialogues as irreversible events, in the sense that the conditions of each episode cannot be reproduced (see also ROTH, in press). Classroom conversations will be more fruitful the more room teachers have in which to maneuver at any one point. [33]

ROTH shows us that promoting greater student participation necessarily leads to variability in the results of any teacher action, for how it mediates learning in one group can be quite different from the way a similar action mediates learning in another group or of the same group at another moment. In practice, it is better to assume that the classroom is an open system, far from equilibrium conditions. [34]

The idea of Spielraum is interesting, because it constitutes a dialectic notion: Spielraum is the result of experience, but because the world is never exactly the same, a teacher's room to maneuver is never quite appropriate. This leads to an adaptation of Spielraum, already inappropriate in the next moment. Practical knowledge and therefore Spielraum are continuously recreated in the process of teaching. This leads ROTH to articulate teaching not only as a form of *being in*

the classroom but also as a process of continuous *becoming in the classroom*, a situation that he embeds in the very title of his book. [35]

7. Conclusion

In the beginning of his book, ROTH discusses the inability of grand theories to describe the reality faced by teachers in the classroom. He articulates this limitation as the result of those theories considering only the chronological dimension of time. [36]

ROTH weaves together different ideas, presenting evidence that there is an acquired knowledge in practice, arising from the struggles of professional challenges, in a phenomenological (lived) dimension of time, which is irreversible and, therefore, incapable of being apprehended in representations of reality and through generalizations. The appreciation of the real conditions of teaching and the consequent contribution of a better understanding of practice and the presentation of concrete proposals for a more solid formation of the professional constitute the valuable results ROTH offers to teachers. With this book, we now have a valuable description of the development of *Spielraum*—a teacher's room to maneuver—and how it increases as the result of praxis. [37]

I conclude by proposing some reflections on the idea of *Spielraum*. I think that it is proper for teachers to create challenging situations in their classrooms, situations that prompt students to think about knowledge. However, the degree of interest that a situation can generate is mediated by a series of factors, including a teacher's formation, the history of each student's life, the configurations of the work atmosphere, and the social conditions in school that may vitiate such factors. [38]

In the development of *Spielraum* two dimensions of knowledge interact, one in permanent construction and the other more perennial. The knowledge acquired allows teachers to propose to students an avenue to follow. Simultaneously ongoing events can increase and change the acquired knowledge. While he describes the knowledge that teachers develop in the unfolding of events, ROTH privileges the first dimension in his book. [39]

The knowledge that teachers develop along their career trajectories grows in the second dimension. It allows them to plan actions in a chronological relationship with time. ROTH describes an episode, where he brought an experiment concerning the decomposition of the water into hydrogen and oxygen by means of electrolysis, which exemplifies that dimension. In that episode, he had as his objective the commencement of discussions of hypotheses formulated by students and the promotion of a dialogue concerning scientific ideas. The choice of that experiment was based on his acquired knowledge and on faith in the chances that the experiment would stimulate students in a particular way. Here, his source of inspiration was classical pedagogical content knowledge, historically produced. [40]

My hypothesis is that teachers can create much more challenging situations, using knowledge acquired in training. A person who knows only the problems presented by conventional textbooks has a limited source for choices. Those who know elements of the history of knowledge can increase their possibilities, their Spielraum. Teachers can find a third kind of resource for teaching not articulated by ROTH: the struggles for social justice in society. An incorporation of these resources in teaching has, in my view, a greater potential for the transformation of society to become more equitable. [41]

Wolff-Michael ROTH and Reinders DUIT (2003), analyzing student learning in a curriculum on chaotic systems, use metaphors from non-equilibrium systems to describe classroom processes. In proposing a challenge to students, the teacher creates attractors; that is, structures that might arouse interest for being explored. However, as ROTH and DUIT show, there are additional attractors inside a group, whose objective is to obtain the participants' attention. [42]

Those attractors, therefore, are planned and taken to the classroom. In that space, submerged in a determinations field, they compete with other attractors. Those others are mediated by the interests that each student brings to the events. The results are unexpected, for the power of each attractor can prevail at a certain moment, for the whole class or for a small group of students. [43]

The form of acting in that field depends on the horizon that guides the teacher. If we are guided by the need to develop a closed program, we struggle against the students' manifestations that are not in agreement with that proposal. We are blind to students' needs. [44]

If we work with the idea of a classroom as an open system, we will have more chances of acting in the attempt of coordinating that group of elements that act permanently. In that proposal, we exchange the need to control for the need to negotiate. Small factors can change the path of events once a teacher is aware of students' needs and interests, and given that students' interests are diversified (ROTH & DUIT 2003). There will be a tension here among divergent student needs, where political proposals also count, as the engagement in a social project, the need to promote a dive into the proposed subjects, the need to compare different points of view. In a negotiation, each side embraces some positions as it postpones some desires, or even gives them up. [45]

Future research needs to identify the resources teachers' use in seeking the potential of each built attractor, and to explain how professionals handle those resources before, during, and after the events in the classroom. Such work would contribute to creating better understanding about what to include in teacher training, including how the needs of a professional can be connected to social changes. [46]

Acknowledgment

This review essay actually began as an essay. Because ROTH's book gave me many opportunities to rethink my experiences, I was reading ROTH's works and taking notes on how I became an educator and a teacher. Then, knowing my great interest in the book, ROTH challenged me to write this review. I therefore translated my Portuguese notes into English, and sent the draft to the author. ROTH took my text and assisted me in transforming it, sometimes by rewriting a section, sometimes by completing passages without ever changing what I wanted to express even when I was critical. Therefore I consider this text as a dialogue and I am glad to have had the opportunity to share some ideas with the author.

Appendix

Being an Educator

I believe that the importance of a book can be judged by how it guides us to our own stories and allows us to rethink them in ways that differ from those that we are accustomed to. That is why I decided to write this review focusing on the book; this appendix focuses on some aspects of the reality of teaching as I have experienced it. In this first part of the appendix—presenting some of my own experiences—I intend to illustrate how my teaching experience come close to what ROTH describes as his experiences in teaching, despite following a different professional trajectory. I begin by describing a few of my first experiences of "being and becoming" as an educator. My intent is to show that those experiences provided me with important skills. However, when I had to face the hard conditions at my first school I felt as if those experiences had not improved my capacity to handle the conflicts inside my class.

While still a student in the academy, I announced to an interdisciplinary group that we ought to read Paulo FREIRE (1978) and try to establish informal contacts with the resident community in a favela⁵. We formed a group consisting of 5 permanent participants and others who participated sporadically, or participated in our discussions only. We arrived in that community with the help of a religious group. Quickly, we noticed that the women in the favela were always busy with household chores and the men, at least the majority of them, entertained themselves by drinking, playing cards, talking to one another and other leisure activities to take up a Sunday. Given this situation we chose to approach the children. In the beginning, we gathered in an open space near their homes, under the shade of a great eucalyptus. There we told stories, we talked to the children, and promoted painting activities on paper, and so on.

Repeatedly we faced unexpected events and had to decide on the spot what to do. One of those episodes happened close to Christmas. The children spoke

5 A favela is a space occupied by poor people in some non-regular way; it often means an occupation of any public or private space without previous authorization. Normally, a favela is full of rustic houses and has typical problems associated with starvation and low levels of health and education.

about toys that they would get once they had made requests to Santa Claus. We knew that they spoke about impossible desires and, thinking about promoting a debate, we prepared a theater of puppets where Santa Claus would dialogue with a poor child and a wealthy child, thereby staging the difference between the two. The piece was proposed for the first encounter after Christmas. On that day, we prepared the scenery and we led off the presentation. As soon as the Santa Claus puppet came on stage, some boys threw rocks at him. We continued trying to ignore what was happening, but the number of stones increased, followed by loud boos. Noticing the impossibility of continuing the play, we decided to change the plot. Santa Claus became an evil character, hurling insults at the children and challenging them. At the peak of the conflict, Santa took a beating from the other puppets, and in the end was decapitated, to the great joy of the audience.

The awareness of the differences between the rich and poor children, which we had intended to discuss with them were already embodied in our favela children in the form of their revolt. Those boys and girls clearly gave expression to their understanding, and that forced us to give up the planned plot. That situation, and many others not foreseen, taught us that our faith, though full of good intentions, did not correspond to the children's feelings. To understand as they did we would have to maintain an open posture, attentive to the elements that appeared in the here and now, that could determine the direction the events would take, which turned out to be very different from what was previously imagined.

We developed our work over approximately two years. We were young, but we already obtained knowledge about how to act on the basis of trial-and-error; we acted together and we discussed our actions subsequently. At every turn, we thought about what to do to reduce the distance between the community and us.

After every encounter we distributed sandwiches for the children. This caused great embarrassment on our part. The news that food was being distributed spread throughout the favela, and not long after children and adults appeared from everywhere. There were always conflicts because there was never enough food for everyone. But one day, there was a little left over after everyone had eaten. To make sure that some children did not have more to eat than others I began leaving with what was left. By doing this, I provoked a tremendous revolt: I had to leave running, dodging the rocks thrown in my direction.

The distribution of food put us in an awkward position in the favela. We decided to abandon the practice and to simply offer our presence. We discovered that the children liked going for walks. We joined a group of interested children every Sunday morning and took a several hour-long walk to a wooded area. On our journey we used to stop at a little grocery where we bought bread and sausage. Noticing that we were spending our own money, the children insisted on contributing, each in her or his own way. They took charge of preparing the sandwiches and passing them out, without argument or fight. We discovered that this was a means of overcoming the differences that had distanced us from the children. Becoming a part of the group, a part of the students' culture (FREIRE, 1978), suddenly became possible.

After those first attempts at educating others, I became a trainee in an institutional program that promoted actions in an outlying neighborhood of the city, where low-income workers lived. Again, I became part of an interdisciplinary group, which was composed of students from psychology, sociology, pedagogy, and education. For a time, I worked with 18 children considered rebellious and declared incapable of becoming literate by the teachers at the local school. As I did not get to develop many activities within the confines of the classroom, I did reproduce the activity of the walks that I learned with the children of the favela, and I achieved reasonable success. Informally, we divided the work among and fostered dialogues within the team, constantly evaluating our actions. My experiences in those days reflect what ROTH identifies as coteaching and cogenerated dialoguing.

Becoming a Veteran

I like ROTH's concept of Spielraum because I can relate it to my own practice and experience. As an experienced educator, my Spielraum is that of a veteran. Yet despite my professional experiences, each moment in class has many challenges and consequently does not involve routine actions. My actions therefore differ with the setting. I provide the following two examples from my own practice in quite different educational settings.

I teach a college course in the interior of the state of Minas Gerais. The classes go from 7:00 PM to 10:30 PM. The work conditions do not allow the incorporation of coteaching or cogenerated dialoguing, the two contexts that ROTH proposes to lead to increased teacher learning. The monthly meetings of the department are short and therefore pose considerable limitations for engaging in pedagogical discussions.

Many of the students are workers who have little time to study. They often arrive at school after a day's work, tired for class. In teaching physics, I attempt to build on their understanding and on situations that are familiar to them. For example, in the study of electromagnetism, I proposed to begin by examining household items and some typical problems faced by consumers. However, my proposal met with difficulties of various kinds. The students were not accustomed to an open system that allowed them to inquire, and it left some of them anxious. They felt safer when I presented explanations, definitions, equations, and so forth, even though they did not come to understand many concepts and ideas in this way.

One student questioned me, wanting to know how he could study in agreement with my method: the matter was not explained in the textbooks in that way and the group was therefore not learning the concepts they were supposed to be learning. This is a typical conflict, one that exposes the need to negotiate. As a result, I included more traditional teaching approaches for this group. With another group of students such conflict did not occur: My teaching method was met with enthusiasm, especially by those students whose work included the maintenance of electrical equipment. Thus, my room to maneuver was configured

in different ways by the two groups, more restricted in the first, enlarged in the second.

The students' technical preparation constitutes another level of difficulty. Some students had not studied physics prior to entering college. Among those who already knew some physics, very few managed use it.

The inherent tension in the process emerges in the conflict between the attempts to multiply the possibilities of actions, the students' and mine, and the established limits in the determinations field of the real classroom. I tried to maintain openness to the possibilities, allowing my students to choose to break with the traditional configuration of teaching offered to them. But institutional and personal limitations (the students' and mine) were revealed at every moment. Consequently, our teaching efforts lead to progressions and regressions in a continuous, unfolding movement.

My second example relates to a school that began as a parent movement. These parents had wanted a school where their children developed knowledge more appropriate for facing social problems—they founded a cooperative that supported a school. This provided more favorable conditions to create a curriculum centered on real problems. The organization of the school allowed for considerable time for the collective work of the educators. However, we have also been configuring a permanent struggle because the school is not independent of its societal context. The values of traditional teaching were advertised to the schools as having profit and control as central motives of their practice. Our cooperative school attempted to be more inclusive, accepting students considered too difficult to be kept in other institutions. But this brought difficulties that we could not have foreseen when we began: Many students felt disadvantaged by the inclusion of the difficult students. In a highly exclusive society, where material benefits and professional success are restricted to the middle- and upper-classes, few families understand the benefits that come when their children coexist with students who differ from the norm.

Comparing the two institutions, I notice that in schools that intend to work with an open curriculum and in a collective way, we have much more room to maneuver than in schools where the organization of work supposes a more conventional curriculum. Even so, tensions remain and arise in the course of our work; they are pervasive.

Ubiquitous Challenges in Capitalists Societies

For me, it is important to understand the treatment that societies in general concede to educational systems because it affects us directly. As teachers, we are pressured by large social interests that cannot be ignored. In this section of the appendix, I present some reflections about the Brazilian educational system that I have had while reading the book.

Teaching offers continuous struggles. Today, Brazil has a political democracy. The problem is that it contains, among public and cooperative school systems, many private educational systems that have profit as their primary objective. These private systems constitute the best example of outcomes of the conditions dictated by contemporary and rampant capitalism in education. Methods of teaching are consistent with this industrial view, and teachers are expected to implement routine curricula as if they were implementing routines in a car factory. That is, teachers generally are the recipients of the curricular content that they have to teach, in a specific time, completely formatted, and by drawing on determined instructional materials and standardized pedagogic techniques. It is against such views that ROTH has written, favoring instead an emergent view of the curriculum, arising from ongoing transactions between students and teachers, resulting in a living form of curriculum that allows agency and decision making by teachers and students alike.

The problem in Brazil, as in other nations, is that private education has become a system that is controlled by technocrats and structured for teachers to be mere executors of tasks, of which they become aware during systematic training. An experienced teacher once told me that in one school he taught 9 classes of the same level. To each one, he presented the same contents exactly in the same form. According to him, while doing a particular lesson in one class after the other, the same student questions seemed to arise so that eventually he was anticipating the questions and addressing them even before the students had asked them.

Today, education, as embodied in large education private systems and their ideologies, views teaching and curriculum as reversible phenomena. In that sense, it expends a great deal of effort in creating conditions that allow the greatest possible control of teachers' and students' actions—schooling is not about education but about the social control of teachers and students. Each class is taken as an equilibrium system, whose variables are under external control. That a class is not an equilibrium system but a dynamic open system in which ordered phenomena occur is the central thesis in ROTH's book.

The strategies of the private educational systems include advertisements, which, in a ferociously disputed market, seduce a willing middle class to purchase the promises of (individual) success for their children. These systems extended the school service from kindergarten to university. They also trade with foreign systems to incorporate MBA courses among their offerings. Thus, they multiply advertisements, taking advantage of the preconception that foreign knowledge is better than a national one.

ROTH may have shown us an antagonism or contradiction. On the one hand, there are educational systems that intend to render pedagogical actions uniform, with the ultimate objective of maintaining the control of schooling and the way it reproduces an inequitable society. On the other hand, we have ROTH's position that favors control in the hands of the actors, teachers and students alike, with the result a dynamic conception of reality and the possibility for social change.

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