CONNECTING THE NOTION OF FOREGROUND IN CRITICAL MATHEMATICS EDUCATION WITH THE THEORY OF HABITUS

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The dialectics between individual and structure is an important issue in any sociomathematical study of students’ learning conditions in mathematics education. On the basis of a conception of learning as action and intentionality as a basic element in any action, Skovsmose introduced the notion of the student’s foreground as an element in critical mathematics education. The intention is to make visible learning obstacles as a political instead of an individual phenomenon based only on the student’s social and cultural background. In this paper, a discussion is initiated to re-establish the significance of students’ background by integrating the notion of foreground with Bourdieu’s theory of habitus as systems of dispositions as principles of generating and structuring practices and representations.

Keywords: connecting theories, critical mathematics education, foreground, habitus,

INTRODUCTION

In mathematics education research, the grounding questions concern people’s cognitive, affective and social relationships with mathematics. Conditions for students to learn mathematics is one of the key issues to be studied whether the focus is learning environments established in the mathematics classroom; e.g. didactical situations (Brousseau, 1986) or landscapes of learning (Alrø, Skovsmose & Valero, 2007); or the focus is students’ motives for learning mathematics; e.g. motivation (Wæge, 2010) or instrumental and social rationale (Mellin-Olsen, 1987). In sociology, the grounding questions concern the connection between people and society or, from a philosophical point of view, the dialectics between individual and structure. In a sociomathematical study of learning conditions, this dialectics is an overarching theme because the societal context for teaching, learning and knowing mathematics is taken seriously into account (Wedege, 2010).

In a recent overview of the sociomathematical research field it is stated that students’ positioning may cause structural disadvantage for learning mathematics:

It has long been recognised that neither education systems in general nor mathematics education in particular is neutral in terms of learners’ positionings with respect to class, gender, “race”, ethnicity and global position. With respect to each of these (and other) positionings, some learners are systemically, structurally disadvantaged. (Povey & Zevenbergen, 2008, p. 4)

Skovsmose (2005) has pointed out that learning obstacles are often identified in students’ social and cultural background and thus, in his understanding, “individualised”. Skovsmose’s countermove is to introduce the notion of students’
foreground but I find it important analytically to connect people’s motives for learning – or not learning – mathematics to their lived lives in order to investigate the dialectics between individual and structure. During my first reading of Skovsmose’s (1994) “Towards a philosophy of critical mathematics education”, I wondered why he did not have any reference to the Bourdieuan concept of habitus when the term “dispositions” and the meaning attached to this term through his definition of foreground point in the same direction: “Dispositions are grounded in the social objectivity of the individual, and simultaneously produced by the individual, partly as a consequence of the actions performed by the individual” (p.180), and the future of different social groups of students “is present in the dispositions of the students” (p. 191).

The purpose of this paper is to initiate a discussion about the possibility of integrating locally a concept of foreground in the theory of habitus. I will do this by presenting and discussing the compatibility of the notion of foreground in critical mathematics education respectively the concept of habitus in Bourdieu’s sociology. As a part of this, I will try, in an analysis of a narrative interview, to link habitus and foreground of a Swedish student in vocational education.

THE NOTION OF FOREGROUND

Intentionality was the pivotal point when Skovsmose (1994) introduced the notion of foreground in his book “Towards a philosophy of mathematics education” where three notions are interconnected: learning as action, dispositions and intentions. His point of departure is that knowledge development or learning is an act and, as such, it requires indeterminism: the acting person must be in a situation where choice is possible. To be an action, an activity must be related to an intention. A person acting must have some idea about goals and reasons for obtaining them. Skovsmose sees learning as caused by the intentions of the learner, thus, he does not see enculturation and socialisation as learning. Dispositions are seen as resources for intentions: “Intentions are grounded in a landscape of pre-intentions or dispositions” (p. 179). As Skovsmose does not see the background (the socially constructed network of relationships and meanings which belong to the history of the person) as the only source of intentions he divides the dispositions into a “background” and a “foreground”. He finds the foreground equally important and, in 1994, defined it as

the possibilities which the social situation makes available for the individual to perceive as his or her possibilities. (...) The foreground is that set of possibilities which the social situation reveals to the individual. (Skovsmose, 1994, p. 179)

Skovsmose stresses that the background as well as the foreground are interpreted and organised by the individual. However, at first, the foreground of a person was
defined as the opportunities in future life made available to her/him by society. In 2002\(^{59}\), Skovsmose clarifies the functioning of the individual:

By “foreground” of a person I understand the opportunities, which the social, political and cultural situation provides for this person. However, not the opportunities as they might exist in any “objective” form, but the opportunities as perceived by a person. (Skovsmose, 2005, p. 6)

In this article, the notion of foreground is presented as the pivotal point in the introduction of learning obstacles as a political phenomenon. And foreground becomes the key word in one of the principles for the pedagogy of critical mathematics education. “Third, critical mathematics education must be aware of the situation of the students. (…) A way of establishing this awareness is to consider not only the background of the students but also their foreground‖ (Skovsmose, 2006, p. 47).

Foreground is introduced – and used – by Skovsmose (1994, 2005, 2006) as a notion not as a concept, i.e. an element of a theory. But students’ foregrounds have been investigated empirically in two doctoral thesis which have fleshed out the notion (Baber, 2007, Lange, 2009). In the publication “Inter-viewing foregrounds‖, Alrø, Skovsmose and Valero (2007) have continued the work by giving a “conceptual definition” of students’ foregrounds. They stress that the concept allows linking two of the key conceptual elements of educational theory, learning and meaning, and that foreground is a concept emphasizing the socio-political nature of education and learning. It is actually the notion of dispositions – defined by Skovsmose (1994) as pre-intentions –, which disappeared from his writing (2005, 2006), that links foreground with learning. Alrø, Skovsmose and Valero (2007) point to the basic principle in the theory of learning-as-action, which presupposes the person’s readiness to find motives for engaging in action; i.e. the person’s dispositions:

Dispositions can be seen as the constant interplay between a person’s background and foreground. The background of a person is the person’s previous experiences given his or her involvement with the cultural and socio-political context. In contrast to some definitions of context which see background almost as an objective set of personal dispositions given by one’s positioning in different social structures, we consider background to be a dynamic construction in which the person is constantly giving meaning to previous experiences, some of which may have a structural character given by the person’s positioning in social structures. The foreground, as previously defined, is also an element in the formation of dispositions. The person is all the time finding reasons to get engaged in learning activities not only because of the permanent reinterpretation of his or her background, but also because of the constant consideration of his or her foreground. That is, the person connects previous experiences with future possible

\(^{59}\) The article “Foregrounds and politics of learning obstacles” was published 2002 in a preprint: Publication no 35, Centre for research in learning mathematics, Roskilde University.
scenarios for action (pp. 7-8).

The authors see a person’s dispositions as readiness to engage in intentional practice or action and they associate them selves from understanding the background as decisive. However, the awareness is present of students’ positioning resulting in structural and systematic disadvantages, as well as advantages, in mathematics education. “Dispositions”, which are objectively rooted but mediated by the individual, thus expressing subjectivity (Skovsmose, 1994, p. 179), is the term making it relevant to think about connecting foreground and habitus. However, the very idea of integrating foreground and habitus is based on the central place of action in both frameworks and the related critique of structural determinism.

THE THEORY OF HABITUS

“Socialization” is a key term – and concept – in sociology meaning the process of internalizing or of incorporating norms, traditions and ideologies which provides people with habits and dispositions necessary for participating within their culture and society. Like this, socialization is one of the mechanisms ensuring the reproduction of the society. In Danish and Swedish, a distinction is made between socialization as a process (socialisering) and socialization as a result (socialisation). Using the term “habitus”, Bourdieu has conceptualised the result of socialization.

Many theories of socialization are based on a fundamental dichotomy: out there in society there are norms which are internalized in the individual. In Bourdieu’s sociology people are most often agents in the etymological meaning of the word (Lat.: agens, agere = act). His project has consisted in combining studies of human experience with studies of the objective condition under which the same people live (Broady, 1991). Thus instead of “internalization”, Bourdieu (1980) employs the term “incorporation”, and the theory of habitus is incompatible with the idea of people as “bearers” of social structures and norms. In his work, according to Broady (1991) there is no direct, unmediated influence from social structures and norms to individuals. At this point, it is notable that Bourdieu’s notion of socialization is consistent with the idea of social background in Critical Mathematics Education as presented above.

Habitus is the concept developed and employed by Bourdieu for a system of dispositions which allow the individual to act, think and orient her or himself in the social world. People’s habitus is incorporated through the life they have lived up to the present and consists of systems of durable, transposable dispositions as principles of generating and structuring practices and representations:

The conditionings associated with a particular class of conditions of existence produce habitus, systems of durable and transposable dispositions, structured structures predisposed to function as structuring structures, that is, as principles generating and organising practices and representations which can be objectively adapted at their aim without presupposing the conscious aiming at goals and without the express mastery of
the operations necessary to attain them. Objectively “regulated” and “regular” without being, by no means, the product of obeying rules they are collectively orchestrated without being the product of the organising action of a concert leader. (Bourdieu, 1980, pp. 88-89, my translation)

The term “dispositions” is only defined implicitly by Bourdieu. According to the dictionary it means “ability to”, “instinct”, “taste”, “orientation” etc., but, as it appears from the definition of habitus, it is not a case of innate, inherited or natural abilities. To make this visible, I have chosen to translate “disposition” into the Danish word “tilbøjelighed” (En.: inclination). The term “system” stands for a structured amount which constitutes a whole. Habitus (as a system of dispositions) contributes to the social world being recreated or changed from time to time when there is disagreement between the people’s habitus and the social world. The dispositions which constitute habitus are “durable” (Fr.: durables). This means that although they are tenacious, they are not permanent. Bourdieu (1994) has discussed precisely these two matters in an answer to attacks on him by critics for determinism in his theories.

There are several reasons for importing habitus as an analytical concept in mathematics education and trying to connect foreground with the habitus theory:

- The theory of habitus has to do with other than rational, conscious considerations as a basis of actions and perceptions, and it provides a theoretical starting point for criticism of the ideology of inherited abilities.

- Habitus is durable but it undergoes transformations. Dispositions point both backwards and forwards in the current situation of the individual.

- The concept of habitus aims at an action-orientation anchored in the individual and can simultaneously explain non-actions. Furthermore, habitus “allows for economy of intention” (Bourdieu, 1980, p. 97) (see Wedege, 1999).

I would claim that the notion of foreground, developed and belonging in critical mathematics education can be integrated as a theoretical element with habitus in a problematique of mathematics education. Bourdieu (1994) emphasises that the theory of habitus is not “a grand theory”, but merely a theory of action or practice. The theory has to do with why we act and think as we do. It does not answer the question of how the system of dispositions is created, and how habitus could be changed in a (pedagogical) practice. There is no sense in seeing habitus as the

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60 Note that at the end of the 60s the term, habitus, achieved a central place in Bourdieu's terminology, where it is presented as product in the pedagogical activity in the book “La reproduction” from 1970 about the function of the educational system in social reproduction. Here a durable formation and habitus achieve equal status (Bourdieu & Passeron, 1970, pp. 46-47). Several references in educational literature refer to this work and thus deal with habitus as a result of formal education.
result of an isolated pedagogical activity (a product of learning). But it is fruitful to employ the concept of habitus in the work of descriptive analysis about the conditions for people learning mathematics, precisely because habitus is formed through impressions and acquisition, either directly where the objective structures are experienced and leave traces, or indirectly when we are exposed to and engaged in activities that make impressions (see Wedege, 1999).

Bourdieu has not studied people’s sense of doing mathematics (Fr: le sens de pratique mathematique) and, thus, he has not developed a concept of “mathematical habitus” a notion introduced by Zevenbergen in a study of implications of ability grouping in school (the middle years). Zevenbergen (2005, p. 608) proposes that when the practice of ability grouping “is enacted in mathematics classrooms it can create a learning environment that becomes internalized as a mathematical habitus.” However, this structuralistic interpretation of habitus is neither compatible with the understanding of the dialectics between individual and structure in Critical Mathematics Education nor in the work of Bourdieu. Furthermore, Zevenbergen presents the mathematical habitus as a product of school mathematical practices alone. The data from interviews with 96 students from six schools serving upper-, middle- to working-class families were explored in terms of gender, school and year-level, not in terms of social class. Thus, I do not find that this notion of mathematical habitus resonates with the sociological theory of habitus.

**LINKING BEN’S FOREGROUND FOR LEARNING MATHEMATICS WITH HIS HABITUS**

As a part of an essay, one of my students, Jonas Lovén (2010) did a narrative interview with a male student at the vocational programme at higher secondary school in Sweden. The purpose of doing a mathematical life history interview was to test the analytical power of combining the concept of habitus with the notion of foreground. Carrying out the interview, Lovén followed the methodology of the narrative biographic interview as developed by the German sociologist Fritz Schütze (Andersen & Larsen, 2001). The interview with Ben, as Lovén has named the student in his essay, was taped and transcript and they have both approved my use of the transcript for further analysis. The disadvantage of this procedure is, among other things that I did not have the opportunity to follow up the interviewee’s narrative. But the advantage of a young Swedish teacher student as interviewer is a reduction of the built-in asymmetry in any inquiry and hence a diminution of what Bourdieu (1993) has called symbolic violence. However, the mere fact that Lovén has a position as a future mathematics teacher and as such has been a trainee in the mathematics classroom of Ben seems to have an impact on his discourse when he – as an interviewee – answered the question about mathematics in his life, in a very favourable way.
The initial question put by the interviewer is “Could you please tell about mathematics in your life? Quite simply – you may begin precisely where you want to and try to recount what comes into your mind” (l. 6-7). Ben seems to join the mathematics teacher discourse of “mathematics is everywhere”:

One uses math, yeah, every day – in principle. (I: Mmm) Yeah, where is it (Pause) Yeah, it does not work without math – nothing works. It is something you have to know and just carry on. Start in an early age. (Pause) Yeah … (Pause). (I: Yes, precisely.) Yeah, later on it is often in the shops; these unreliable shop assistants and so on. It is fantastic being able to think and to do the sums rapidly. If they take one or two Krona from you. Not much – maybe, but (….) Quite often I am surfing on my mobile. Then it is good to calculate how much the cost is a minute if you do not have free surf. Which I do not have. Then I have to calculate a little, and eh., you are on Facebook every day so.. So it is good to know it … that the money does not flow away just like that. What more can one tell? Yeah a great hobby, I am playing golf (…) (l. 41-63)

And Ben continues by telling about the scoring in golf and again about not being cheated, this time by his father. Ben’s narrative takes off when he was “a little boy” just at the school start with supportive parents at home: “At that time, it was very cool. Everything was pretty simple, at the beginning. But after some years. Everything new is difficult. (Pause)” (l. 12-13). A central figure in Ben’s narrative is his grandfather, who also supported him in mathematics. He is introduced like this: “Even my grandfather [helped me]; he is a genius in mathematics. So already as a small kid I started to calculate” (l. 17-18, [my insertion]).

“Yes, OK, I … Yeah, one has been doing mathematics for 11 or 12 years now”, Ben states (l. 32). School mathematics has been a part of his lived life over a long period and, together with the social interaction in out-of-school situations, influenced the socialization process resulting in his dispositions for doing mathematics today and tomorrow. In Ben’s biographic narrative about mathematics, two persons are important: First his grandfather, who supported him also by serving as a great example, and second Magnus, who owned a store where he had a job as a 15-years old kid. Together they did a piece of joinery:

I think that it was much fun. Then I decided to aim for joiner and to apply for this vocational school to be a joiner, but later on you circle around – you have to try everything from construction work to house painting. And I fell for the sheet metal work (…) New exciting stuff, and more great challenges and I have nothing against solving difficult problems (l. 134-139)

Ben tells that he had some difficulties with mathematics in grade 9 but the grandfather helped him and later on his uncle, who is graduate engineer and has a “sharp brain”. “Unfortunately”, Ben just passed in mathematics at the end of lower secondary:

… but I knew that I could do better and then I came here in August 2009 and started with
the mathematics here. And I do not find it difficult at all because it is mostly repetition from lower secondary. (...) But when you are in the workshop it is not only $1 + 1 = 2$. As I told you before it is diameter multiplied by pi. And how many degrees you have to twist a disc wind (...) It is cool, really cool. (l. 145-150)

In Ben’s narrative, the link between his habitus and his foreground for learning mathematics is visible. His lived life resulting in habitus acts as the background for the interpretation of his future life (foreground). Likewise, his experiences in the vocational school opens up for a foreground with sheet metal work When Ben at the end of the interview is asked if he has any plans for a higher education, he refers to the fact that many of his friends have already left school:

… and mathematics above all because they think that it is damned boring. But I have nothing against it. I am doing fine. It is showing up at the test, you have to learn, it’s just like that. Yes … no, I do not care what others are thinking. It is my life. (...) I do not think that university is something for me. In fact, I have never been considering it, I think … No …” (l. 263-270).

In the Swedish society, the possibility of a higher education is available for Ben but this is not a part of his foreground.

**INTEGRATING FOREGROUND AS A CONCEPT IN THE THEORY OF HABITUS**

With this paper, I hope to initiate a discussion of possibility and potential of connecting the notion of foreground as a theoretical element in Critical Mathematics Education with the theory of habitus. I have argued for the compatibility and the connecting strategy suggested is *integrating locally*, i.e. some elements from one theoretical structure are integrated in a more elaborated theory, and the aim is theory development (see Wedege, 2010).

At first, the notion of students’ foregrounds was based on anecdotic evidence (Skovsmose, 1994). Later it is given a conceptual definition based on qualitative empirical studies (Alrø, Skovsmose, Valero, 2007). Broady (1991) has argued that the key concepts in Bourdieus’s sociology should be regarded as research tools or condensed research programmes. They get their full meaning when they are set in motion as tools in investigations. The notion of foreground has inspired research within Critical Mathematics Education. I claim that the concept of students’ foregrounds locally integrated in the theory of habitus should be regarded as a research tool and I see the possibility of further theoretical development based on a combination of future large scale quantitative studies and qualitative studies in mathematics education.

When theories are imported from sociology, psychology, anthropology etc. into mathematics education they are adapted and reconstructed, in time. The notion of habitus has guided some studies in mathematics education (e.g. Gates, 2003;
Wedegge, 1999; Zevenbergen, 2005). I hope that local integration of foreground, which originates from the “homebrewed” theory of Critical Mathematics Education, into the theory of habitus can strengthen both concepts as research tools in mathematics education.

REFERENCES


