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On alienation in the mathematics classroom

Luis Radford

Université Laurentienne, Canada

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ABSTRACT

The goal of this article is to discuss a question that, curiously, has passed unaddressed in mathematics education research: the question of alienation in the mathematics classroom. In the first part, I bring out the conceptual structure of Marx's idea of alienation as it appears in Marx's *Economic and Philosophic Manuscripts* and discuss four different senses of alienation. In the second part, I argue that two of the most influential models that have informed mathematics education in the 20th century, namely the transmissive and the progressive models, are both alienating. In the last section I discuss the possibilities of overcoming alienation through a reconceptualization of mathematics teaching and learning based on a cultural-historical communitarian ethic of solidarity and critical stance.

1. Introduction

While the theme of alienation has a long history in philosophy (see, e.g. Lukács, 2012; Mészáros, 1972; Sayers, 2011; Schacht, 1970), it has not been prominently featured in mathematics education research. Were it not for a few exceptions (e.g., Baldino and Cabral, 2011; Brodie, Slonimsky, and Shalem, 2010; Williams, 2011, 2012), alienation, I would say, is not even obliquely addressed. I do not think that the reason is because alienation does not exist in contemporary mathematics classrooms. On the contrary: alienation in the mathematics classroom seems to be the rule, not the exception. Although differences may be noticeable from one country to another, *in practice*, to considerable extents, disciplines (and mathematics in particular) continue to be taught according to the precepts of the "transmissive" educational model (see, e.g., OECD, 2009, p. 99). The transmissive model is anything but new (Katz, 1971). For instance, Babylonian scribes in 2000 B.C. (Kramer, 1949) and students of the Renaissance Abacus Schools (Franci, 1988) were confronted with a transmissive pedagogy. But the transmissive model that we know today emerged in the late 19th and early 20th centuries in what came to be known as the "educational reform." With its intellectual origins in behaviourism, the transmissive model was promoted by bureaucratic pedagogues who focused on implementing mass education to efficiently address the demands of industrial and business production (Tyack, 1974).

Although nowadays this model has acquired a sophisticated complexity – e.g., a digital capacity for monitoring school performance and student achievement at the local, regional, and international levels – its alienating nature has been kept intact. On the one hand, it reduces teachers to bureaucratic implementers of a prescriptive curriculum (Brown, 2011). On the other hand, it reduces students to passive, deficient receivers of knowledge (Freire, 2005). In this educational model, knowledge, indeed, is considered as a *commodity* that teachers deliver. To come to possess it, the students have to work hard through drill and repetition. And now that the market competition has reached an unprecedented fierce intensity, drill and repetition are no longer enough. Teachers are expected to teach creativity or to do whatever it takes to manufacture it. In a

E-mail address: lradford@laurentian.ca (L. Radford).

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recent article in *Macworld* magazine, Cipriani (2015, p. 71) notes: "In an increasingly competitive market, Bluetooth keyboard manufacturers have to seek out ways to differentiate themselves from the competition." To cope with such market demands, curricula around the world, like the Ontario Curriculum, are adding *creativity* to the list of that which witnesses student skill development and knowledge acquisition (see, Ontario Ministry of Education, 2005).

The transmissive model puts forward a specific idea of human beings: it conceives of human beings as *private owners*. In the same manner as workers get a salary for their work, students get school marks for theirs; while the workers labour to acquire things, the students labour to acquire their own knowledge. In an interesting article published a few years ago, Lave and McDermott (2002) proceeded to read Marx's famous section on Estranged Labour included in the *Economic and Philosophic Manuscripts*, written in Paris in 1844. They systematically replaced the word *labour* with the word *learning*. What they found was that Marx's text, which was intended as a critique of political economy of the 19th century, turned out to be a contemporary critique of the school system:

> Simply put, in critiquing the theories of political economy available in 1844, young Marx unwittingly wrote a quite devastating critique of the theories of learning in 2002. This is possible because education has been institutionalized under advanced capitalism as an integral part of the political economy (Lave and McDermott, 2002, pp. 21–22).

Why, then, has the theme of alienation passed generally unaddressed in mathematics education research? The question is a striking one given the fact that, *in practice*, the school operates like a "teaching factory," much as if it were a "sausage factory," as Marx already pointed out many years ago (1976, p. 644).

In principle, one might expect that proponents of the "child-centred" or "progressive" model would bring to the fore the question of alienation. However, this is not the case. The "progressive" model, which emerged about the same time as the transmissive educational model (Parker, 1990; Rugg & Shumaker, 1969), has focused on the student and the ideas of individuality, self-expression, freedom, and autonomy (Labaree, 2005). Since its inception up to today, proponents of progressivism have considered freedom and autonomy to provide the central condition for the students' authentic learning. It is in this context that proponents of the "child-centred" or "progressive" model have often equated the principles of freedom and autonomy with the goals of education (Dearden, 1972, 1975; Morgan, 1996). Education, according to them, should not be about receiving truths through or from someone else. As Piaget put it towards the end of his life, "The goal of intellectual education is in learning to master the truth by oneself" (Piaget, 1973; p. 106). Education should rather be the creation of spaces for the student's personal intellectual growth (Cobb, 1988).

Progressivists could not care less about alienation for they consider their program to be the actual anthitesis of alienation: the progressive educational model is thought to be emancipatory in itself. For instance, In Neill's (1992) famous book *Summerhill*, alienation is not even mentioned once. To worry about alienation would be futile, a waste of time. Really?

The goal of this article is to discuss this question. It is also to explore new possibilities for overcoming alienation in the teaching and learning of mathematics. To try to meet these goals, I need to start from the beginning–that is to say, I need to discuss with some detail the concept of alienation. This is what I do in the next section. Then, I move to a discussion of the forms of alienation that underpin the progressive model. I note, *en passant*, that my interest is not merely theoretical. On the contrary: the progressive model continues to inspire mathematics education research and a critical analysis seems to be required. In the Synthesis Section I discuss the possibilities of overcoming alienation through a reconceptualization of mathematics teaching and learning based on a cultural-historical communitarian ethic of solidarity and critical stance.

2. The concept of alienation

It is impossible to discuss the concept of alienation without considering at the same time a set of interrelated theoretical constructs–such as the concept of the *individual* on whom alienation is predicated, and the *activities* that make the individual an alienated subject.

In the *Economic and Philosophic Manuscripts*, Marx develops a concept of alienation (*Entfremdung*) whose structure rests on:

- an anthropological concept of the individual;
- a specific concept of labour; and
- a precise relationship between the individuals and the objects they produce through labour.

Let me briefly dwell on these elements, starting by referring to Marx's anthropological concept of the individual.

2.1. Humans as natural beings of need

Marx considers humans as *natural beings*. What this means is that humans are part of nature and, like other natural living beings, humans are (1) *beings of need* that (2) find their satisfaction in objects *outside* of themselves. Marx writes:

> *Hunger* is a natural *need;* it therefore needs a *nature* outside itself, an *object* outside itself, in order to satisfy itself, to be stilled. Hunger is an acknowledged need of my body for an *object* existing outside it, indispensable to its integration and to the expression of its essential being (Marx, 1988; p. 154).

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