

Schooling is the Problem: A Plaidoyer for its Deinstitutionalization

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Abstract

Education appears to be in a perpetual crisis. In this article I suggest that one of the key contributing factors in educational crisis is the institution of schooling, which re/produces the failures to learn and, thereby, contributes to the re/production of inequities that it (schooling) is supposed to overcome. Ideologies and practices intended to bring about equity through schooling re/produce societal inequity. I show how activity theory allows us to understand that the origin of inequities lies in societal relations, which are relations of ruling. The implications are that a real change of schooling does not come from this or that curricular change but in a reformation of schooling as societal activity generally and science and mathematics education specifically. In ending, I suggest using the deinstitutionalization of psychiatric care as a model for rethinking schooling. Thus, as Bazzul (this issue), I make the beginning of a plaidoyer for redrawing the lines of society by rethinking the very institution of schooling rather than its curriculum contents and practices.

Keywords societal-history of schooling; physical discipline; intellectual discipline; labeling; re/production of inequity

The standpoint of the old materialism is the bourgeois society, the standpoint of the new [materialism] is the human society or the societal humanity. (Marx/Engels, 1978, p.7)

Philosophers have only *interpreted* the world differently; the point is to *change* it. (p. 7)

Wherever we look, education is in crisis (Education International, 2014). Educational researchers around the world are involved in trying to understand the origins of this crisis. Some seek change by inventing curriculum that makes students engage in socioscientific activism (Bencze & Carter, 2011; Bencze & Sperling, 2012); others by organizing informal science learning opportunities in “at the margin” (e.g., Rahm & Ash, 2008) or by challenging the Eurocentrism of mathematics (e.g., Powell & Frankenstein, 1997). However, even though such scholars and their teacher affiliates already have their students engage with issues of social pertinence, they still operate within and are defined by traditional schooling. Because such approaches do not change the motive of schooling, the production of grades and report cards (Roth & McGinn, 1998), even such extraordinary changes in the teaching of science mean little. Schooling is a reflection of the standpoint of bourgeois society (Bourdieu & Passeron, 1979; Foucault, 1975; Holzkamp 1993). Using Marx/Engels’ words, we need a new standpoint, which is that of a societal

humanity; to reach this standpoint, we need to *change* rather than merely to understand schooling generally and science/mathematics/technology education specifically. This requires a radical rethinking of schooling, as radical as was the move that deinstitutionalized psychiatric hospitals. We have to do more than tinkering with science/mathematics/technology curriculum; we need more than individual teachers changing the conditions in their science/mathematics/technology classrooms. Such an overhaul is a political project that “would inevitably open up the field and let the ‘rabbits run loose’” (Bazzul, 2013, p. 250). In this essay, I provide a brief analysis of the history of schooling and the re/production of dis/ability. I then provide the outline of a theory that allows us to understand why leaving schooling as it is will lead to little if any change in the re/production of social inequities. I conclude that a much more radical change is required than engaging students in socioscientific activism: we need to work towards/for the deinstitutionalization of schooling. Because the full plaidoyer likely would be a book-length project, this essay necessarily constitutes a gross simplification of a necessary and already possible endeavor. Although it may sound sometimes as if this essay was not about science/mathematics/technology education, the fact is that achievements in these subjects—rather than geography, history, or physical education—tend to be used to limit opportunities and access to many careers.

The Motive of Schooling and the Re/Production of Dis/Ability

Education has been and is a way out of poverty, especially for minority students. (Robledo Montecel, 2013)

Formal education often is hailed as the solution to the problem of societal inequities, as exemplified in the introductory quotation; science/mathematics/technology education specifically tends to be hailed as the requirements for the jobs of the 21st century (e.g., EQAO, 2012). The fact is that historically, schooling has been the source of societal inequities by re/producing the class system (Bourdieu & Passeron, 1979; Willis, 1977). Mathematics and science traditional have been school and university subjects used to filter out students from certain career trajectories—such as when taking specific high school science or mathematics courses are made entrance requirements for university or when certain “killer courses” are used to eliminate students from university science, mathematics, or engineering programs (e.g., Rowe, 1983). In the following subsections, I (a) sketch the historical emergence of schooling as a way of producing individual difference and social stratification and (b) provide some evidence for the production of dis/abilities in schooling that hinder rather than assist people.

The Historical Motive of Schooling and the Master('s) Ideologies

Discipline produces in this way subjected and exercised bodies, “docile” bodies.” . . . The “invention of this new political anatomy must not be understood as a sudden

discovery. . . . It can be found at work very early in middle schools [*collèges*], and later in elementary schools. (Foucault, 1975, p. 140)

Schooling in its modern form emerged to inculcate social stratification. One incisive historical analysis shows how schooling emerged together with other institutions of control—prisons, hospitals—to inculcate physical discipline, which also is at the origin of academic disciplines (Foucault, 1975), where discipline is a virtue and affordance. Schooling became an institution that turned wild and untamed country folk into a subservient body of people, by means of bodily punishment, ready to submissively work in the military and factories. Although punishment was an important means in the production of docile bodies, gratification was another one in the polar opposition of punishment and gratification. This opposition created a field between good and bad. Gratification was implemented by means of point systems, which quantified good and bad, gave rise to a micro-economy of grades and other performances that students could accumulate like a capital. Because students ended up with different amounts of accumulated symbolic capital (points), distributions¹ were generated that had multiple functions. On the one hand, distributions marked gaps (in points, knowledge, skill) and created a hierarchical order of qualities, skills, and aptitudes. On the other hand, distributions became a way of rewarding or punishing individuals because these promoted and demoted people along a hierarchy-creating differential of accumulated symbolic capital. Those ending up on top of the hierarchy subsequently obtained more desirable leadership positions. That is, the distributions produced in schooling lead to the distribution of people among different collectivities and institutions (Nissen, 2003). To the present day, examinations embody the quintessence of this system and therefore are at the center of a system of “procedures that constitute the individual as effect and object of power, as effect and object of knowledge” (Foucault, 1975, p. 194). The examination, by combining hierarchical surveillance and normalizing sanctions, ascertains the distribution and classification of society. That is, schooling is an activity in which subjectivity is objectified and objectively achieved (Holzkamp, 1993; Nissen, 2005).

The actual (enacted) motive of schooling is not to assist students’ learning of science, mathematics, or history. This is apparent in the everyday observation that students and their (bourgeois) parents are interested in and fuss about grades and grade reports, which become keys to access educational institutions and jobs (Roth & McGinn, 1998). These scholars suggest that schooling has become a system of activity where the production of (science) grades and grade reports is the object/motive that drives the activity. Students, parents, teachers, and post-secondary institutions all are oriented towards this production rather than at the students’ expansion of control over their conditions, the expansion of their agency

¹ The very point of testing is to generate *distributions* (Holzkamp, 1993). School and university discourses concerning “grade inflation” and chastising those “easy” instructors/courses where all students get A’s occur in the context where grades have to be distributed.

in everyday life situations, or their knowledgeability. Consistent with this observation is that students do not exhibit in college or university much of what they supposedly have been taught in high school. Even though “prior knowledge” is often stated to be a factor in subsequent learning, studies show that there is little (weak) if any relation between any measure of prior experience or lack of it and success in university physics courses (e.g., Meltzer, 2002; Sadler & Tai, 2001). Important parts of the apparatus of differentiation are the disciplines of science and mathematics. Two types of differentials are produced: the first along the lines of how well high school students do in academic mathematics (e.g., algebra, calculus, AP math), the second whether students take academic mathematics or a less prestigious applied mathematics. Both types of differentiation mediate university access. Differentiation continues in the university where, in certain programs, there are one or two “killer courses” that are used to select among those encouraged to continue and cull those encouraged to pursue different types of studies (e.g., Office of Technology Assessment, 1988; Rowe, 1983).

Anyone who has had children, has gone to a regular school, or has attempted to enter a more prestigious university will have experienced that the micro-economy of grades is more important than knowledgeability and competence in science/mathematics/technology. Middle-class parents in particular are concerned with the grades their children get and put more effort into their education (De Fraja, Oliveira, & Zanchi, 2010)²; and these children know that access to the prestigious colleges and universities is based on high marks. In addition to the grades, there are other things an individual can do to increase the number of points upon which hierarchical ordering is based. Athletics and service are but two of the areas where students can further accumulate credit that can be used to gain access to the university of choice or receive entrance scholarships. A quick analysis of any private school website shows that these institutions are particularly focused on providing their students with those experiences that will provide them with the edge in the competition for the limited spots available for new students in the prestigious colleges and universities (Roth & McGinn, 1998). In turn, graduates from the “elite” institutions have more symbolic capital than those from others in accessing the more prestigious (and better paying) jobs. As I know from personal experience of having taught in a private school, these have an important function in creating social distinction, because (parents’) economic capital is turned into (their children’s) symbolic capital. In a more hyperbolic example from my teaching career, a private school student was accepted to the prestigious University of Notre Dame, because the parents made a big donation. In other prestigious universities of the US, tuition fees are prohibitively high, again leading to a link between the two forms of capital.

Bourgeois (middle- and upper-class) ideology also holds that schooling guarantees the possibility to overcome social inequities—people who made it despite their origins in extreme poverty (e.g., like myself) tend to be used as examples, when in fact most children from poverty end up in poverty (e.g.,

² This study shows that the effort levels of others than the individual, his/her ability, household total income, and socioeconomic peer group determine how much effort a student puts into succeeding in school.

McLanahan, 2009). Every person is said to have the same chance in a democratic society; democratic schooling is said to treat every student the same and, thereby provide every student with the same opportunities to succeed. This, of course, is part of an ideology, for being treated the same in the face of difference means that exactly the same treatment leads to different benefits (i.e., the masked problem of meritocratic liberalism, J. Bazzul, personal communication, September 29, 2014). It is precisely because treatment is the same for all students, standardized to certain norms, that some fare much better than others. When different treatments are justified, such as when “learning disabled” students are taken out of the classroom to receive “special help,” then this also occurs at a loss: fewer opportunities to interact with others in a network of activity-specific societal relations (see below).

The ideology of schooling and its master(s) ideology. One grand societal ideology is that schooling generally and science/mathematics/technology specifically is required for success in 21st century life. That this may be one of the biggest deceptions can be observed by looking around ourselves, which shows that most people do quite well without any knowledgeability related to science or mathematics; and conversely, being a highly successful scientist does not mean that one successfully copes with mundane life problems. Moreover, economists state that “a healthy capitalism *requires* unemployment” (Schweickart, 2011, p. 101, original emphasis), which in addition requires that a substantial rate of individuals no longer look for jobs. That is, even if every student were to do a PhD in science or mathematics, there still would be a requirement for people without or not even looking for a job so that the global and national economy does well. This does not yet take into account that there is an actual need for farmers and farm hands, knowledgeable and skilled tradespersons, or street and (school, university) building cleaners all of whom have special and specialized practices that may not necessitate science and mathematics at all. That is, even if every student were to obtain a science or mathematics PhD, only the tiniest of fraction of them would be able to find employment in the respective field because, as a society, we still need knowledgeable and competent people in all those other fields. A (space) scientist cannot do anything without the construction workers making the building and equipment; they cannot do anything without all those in farming and the food industry that produce to nourish their brains; and they would be hard pressed without the whole societal network required to provide for the research funding that allows them to pursue their experiments (Redfield, 1996). But knowledgeability and competencies required in all of these other occupations that make science possible, legitimate contributions to the function of society as a whole, are absent in most K-12 settings.

Part of the ideology is that students need to learn specific mathematics or science content because it is important later in life. But taking a look at any curriculum, such as that in my home province of British Columbia, shows that much of the prescribed learning outcomes are not useful in everyday life. For example, in eighth and ninth grade, students are “expected to” “determine the approximate square root of numbers that are not perfect squares (limited to whole numbers)” (BC Ministry of Education, 2008a, p. 62) or “model and solve problems using linear

equations of the form $ax = b$; $\frac{x}{a} = b$, $a \neq 0$; $ax + b = c$; $\frac{x}{a} + b = 0$, $a \neq 0$; $a(x + b) = c$ " (p. 66). When and where in everyday life do we require the forms of knowledgeability specified in this curriculum? One of the arguments in defense of the politics of curriculum is that mathematics helps students learn to think. But all the research on ethnomathematics shows that there is little if any relation between the amount and kind of mathematics done at school and everyday problem solving that psychologists and educators use as contexts for teaching (word) problem solving (e.g., best-buys) (e.g., Lave, 1988). That the argument does not hold can be seen in the results of research showing scientists who do not correctly interpret the simplest of graphs from introductory courses in their own field (Roth, 2012; Roth & Bowen, 2003). If the argument *were to hold*, the conclusion would have to be that these scientists have deficient graphing skills because they not only get the interpretation wrong but also provide incorrect responses with respect to particular points on graphs.

With respect to the square numbers, I have hardly ever had to use the squares or the approximate squares of numbers, and the few times I did was in a context that few people encounter: in construction and tile laying, when a perfect 90° angle is required. In those situations, craftspeople do *not* work with the Pythagorean theorem but with rules of thumb such as 3–4–5 (or multiples thereof): The angle is perfect when points on the two legs are 3 and 4 feet from the intersection, respectively, and the diagonal is 5 feet. As one of my studies in the electrical trades shows, the rules of thumb are much more powerful and much less prone to errors than the formal mathematics taught in formal education.

The situation is not different for science education. Thus, the British Columbia curriculum specifies as one of its prescribed learning outcomes that students are to "explain radioactivity using modern atomic theory" (BC Ministry of Education, 2008b, p. 48). One of the indicators of this learning outcome is relating "the following subatomic particles to radioactive decay: proton (1_1p), neutron (1_0n), electron (${}^0_{-1}e$), alpha particle (${}^4_2\alpha$) (4_2He), beta particle (${}^0_{-1}\beta$)" (p. 48). When did my reader encounter this knowledge the last time? Virtually every prescribed learning outcome in the British Columbia curriculum guide is of this nature. In fact, even the most scientifically prepared individuals often face simple problems in life, such as health-related ones, where they are find themselves unprepared for generating solutions. Simply knowing some science is insufficient. Required instead is the knowledgeability to participate in collective endeavors of politicizing and challenging extant ruling relations that re/produce and constitute doctors and their patients differentially (e.g., Roth, 2009).

The increasing division of labor and the continuously growing stock of cultural knowledge of all kinds makes it impossible for any one of us to remember facts, equations, and even procedures. Even the most educated physicist might find himself helpless in the medical system when confronted with a serious and mysterious illness (Roth, 2014). More important than knowing anything specific is *knowledgeability*, that is, the ability to learn and know whatever the context. Moreover, it is not required that everyone *has* the same kind of knowledgeability, because someone else already has what it takes to solve *my* problem. What we need

is the ability to engage and participate in societal relations so that we expand our individual control over life conditions by contributing to the generalized control of collective conditions. Thus, for example, in complex everyday situations, scientific literacy tends to emerge in collective political praxis rather than being a skill or capital that an individual owns or can own (Roth & Lee, 2002). Here, scientists (or doctors) are often among the most illiterate people because they fail to communicate in ways so that others understand (e.g., Roth, 2009); and they are produced as illiterates (disabled) because they fail to understand that in mundane problems of society, proper solutions have to include more than scientific theories and facts. It is to this societal re/production of dis/ability that I now turn.

The Re/Production of Dis/Ability

Schools are part of the educational crisis problem because they produce failure and dis/ability rather than documenting it (in the grades and grade reports). More importantly, individuals who are subjects of and subject(ed) to these failures have to bear (are subject and subjected to) the consequences. In fact, the subjects and subjectivities are the very effects of school science and mathematics (Walkerdine, 1988).

It is not difficult to make even the most schooled and experienced look bad. Empirical evidence shows that even the most highly trained scientists and science teachers may look bad on the simplest of tasks. One study asked experienced and successful research scientists to think aloud while interpreting graphs from introductory university courses in biology (Roth & Bowen, 2003). Depending on the graph and graphical aspect, between 1 and 12 of 16 scientists were correct. Among the public sector scientists, the mean item success rate was about 22%. That is, only a fraction of scientists answered items in ways that the instructors of these university courses would accept as correct. In another study I conducted, eighth-grade students and pre-service science teachers—all of whom already had either a BSc or MSc degree—were given a task showing a map of an area subdivided into sections (Roth, McGinn, & Bowen, 1998). In each of the sections, the amount of light and the percent coverage by a certain plant was indicated. The participants were asked whether there was a relation between amount of light and plant density. The study showed that there was a statistically reliable difference between the groups: the eighth-grade students had more sophisticated mathematical models for the data than did the university science graduates. In these studies, the purpose was to find out about data and graph interpretation practices within the different participant groups; but these results show that if we are interested in making some people look bad despite the low task difficulty and despite the extent of the scientific training, it is easy to design such tasks.

It is not difficult to make disadvantaged and at-risk students look good. In the preceding section, I provide evidence for the fact that even the most highly trained individuals can be made to look bad. But by the same token, we can design tasks and task settings such that even disadvantaged and at-risk students look good: not by focusing on basic skills and other strategies suggested for overcoming the problems of urban schooling (Delpit, 2006), but by overturning those forces of the

ruling relations that make certain students look bad (e.g., by teaching to the book and testing in paper-pencil format). I provide three examples from my own teaching and research. First, during my first years of teaching and prior to having any education background (certification), I found out that normally low achieving students did very well in my ecology courses. I was teaching in a small isolated fishing village. In ecology, I took students into the field to observe, collect data, and learn about succession. In this course, students who had low grades, including in science taught by their previous teachers, did exceptionally well (A or A+) in my course where they could mobilize their knowledgeability with the environment. That is, those children were drawing on their knowledge of the local environment and mobilizing it for researching, making sense, and reporting their findings. Second, while teaching an experimental curriculum sixth-/seventh-grade students learned scientific concepts while designing machines. Following a general call for proposal, students designed artifacts, learned to use (power) tools for the purpose of building *their* prototypes, and had opportunities to manifest what they knew and learned across different expressive modes. Our study showed that 5 of the top 7 students in the terms of conceptual understanding and practical problem solving were actually termed and treated in the school as “learning disabled.”

Third, in another teaching experiment, where students learned science while engaging in environmental activism, we observed a student (Davie) who was labeled by and treated for learning disability (Roth & Barton, 2004). In his mathematics class, where the tasks were organized in traditional ways, Davie acted in ways completely consistent with the diagnosis of a learning disability: rather than doing a graph from data provided, he spent over 24 of 26 minutes off-task. But in science, he not only was continuously engaged while conducting his own investigations but also demonstrated graphing skills not observed in mathematics. By that time, I had already published an article in which I called for the deinstitutionalization of science education. This led me to ask Davie whether he would be interested introducing another teacher to teaching science through inquiry. He not only agreed and did that but subsequently supervised two groups of peers in that teacher’s class while these did their fieldwork; and he then taught children and adults during an environmentalist open house about his scientific inquiries and their results.

Science educators have the tendency to think that there are superior and inferior students (Bazzul, 2013). We showed our videotapes to many individuals who did not know about Davie: every single one was surprised to learn that he was supposed to be learning disabled, for in his relations with others, he demonstrated knowledgeability and competent practice. As before, the purpose of those studies was not to show that some students would look good. Instead, we found out that the kind of learning environments did not make those students look bad that are made to look bad in traditional task settings that schools provide. Instead, the kinds of relations that re/produce schooling also produce conditions so that learning disability, as McDermott (1993) suggests, had acquired yet another child or more children. The upshot of the observations from my studies is that learning disability or autism are not diseases or illnesses that befall students but instead that are names for the result of societal (ruling) relations—e.g., “Davie-in-the-mathematics-

class-required-to-do-data-analysis or Davie-in-another-seventh-grade-class-as-teacher-scaffolding-inquiry-in-and-about-the-creek” (Roth & Barton, 2004, p. 150–151) that institutions themselves create (cf. Bazzul, 2013). In this way, any deficiency that apparently is owned by the student is in fact traceable to institutional processes (Nissen, 2005). Here, again, it is quite evident that schooling as institution is the problem, creating conditions and the failures that they then call to be the problem.

Knowledgeability is an expression of relations pinned on individuals as their characteristics. To explain the preceding results, Roth and Barton (2004) suggest that *apparent* knowledgeability is an expression of relations that is pinned as a characteristic to the individuals participating in the relation. Thus, Davie received the *LD* [learning disabled] label as a consequence of his way of being and what he produced under the conditions over which he had no control (e.g., examinations). He did not function in the expected ways in the institution evolved to inculcate physical discipline—Davie was walking around all over the classroom rather than sitting at his desk doing what he was asked to do in the mathematics class—and work according to the regimes of time, space, and curricular content. These regimes are integral part of the microphysics of power (Foucault, 1975), but students like Davie fail and come to be marked as a consequence. Even more serious, the consequences of this labeling are “special help,” which, in Davie’s case, meant being taken out of the classroom and put into a special room. That is, he was removed from the very societal relations with his peers on which integration of the individual into a network is built. That is, taking Davie out of the classroom to “fix” his “learning disability” in fact increases levels of individualization that results from the objectification of subjectivity. On the other hand, when he was part of different systems of relations, as part of the science curriculum, no learning disability was detectable; or rather, the differential abilities of all of us became clear to me. Once students such as Davie leave school, they are marked for life, carrying with them the tag or stamp of schooling. It is very difficult for persons to get a job once they are marked by labels such as *LD* or *autism*. Yet, all we have to do is look around and we can see conditions where such “disabilities” are invisible because the forms of societal relations do not allow these to appear—with long-term consequences for the further development of the individuals.

I lived a personal example of the role of societal relations with Bill, an employee of a supermarket working behind the fish and seafood counter. When I first met Bill, he behaved like a person who we have become accustomed to characterize by means of the adjective *autistic*. He spoke little, if at all, appeared to be uneasy about speaking to customers, and moved in particular ways. However, each time I bought fish, I talked to him whether he was serving or not—and I am sure some other customers did likewise. Over time, one could see a change in Bill, increasingly becoming sociable in the way we understand the term. Today, Bill will greet me and begin to talk whenever he sees me. He no longer exhibits the behavior of an autistic person but is integrated into the network of societal relations at work. But there should be a place for Bill even if he were not becoming sociable in the normalized and normalizing way of thinking the term. We simply have to accept our differential

abilities: differential not merely between persons but differential within each person (Roth, 2008).

My experience with Bill is not a singular event but, as a documentary showed, some companies have realized that there are economic benefits to hiring “disabled” employees, including those with Down syndrome (CBC, 2014b). Another documentary featured autistic individuals who not only hold jobs doing, without tertiary education, do and do much better what normally university computer science graduates do but also who develop levels of sociability not observed in them before (CBC, 2014a). One of the featured individuals is Dakota Kiriachuk, a 21-year-old woman who after school comes to be recognized as an “IT whiz.” Her “autism” actually constitutes an advantage in that people like Dakota much better than others track down software glitches. In both instances, those with the “disability” label turn out to be fact more abled, having tremendous talents that remain untapped when these individuals are not provided with opportunities to participate in the respective societal relations. That is, those relations are both the condition and the product of including “disabled,” which are not disabled but differently abled.

In these examples, we can see how participating in particular activities make people shine even though they have been outcasts in the system of schooling. What have been determined to be “mentally” or “socially” disabled persons actually contribute in fully functioning and “normal” ways in societal activities. That is, when people participate in societal relations, they not only re/produce these relations but also subsequently exhibit behaviors that allows the attribution of knowledge and skills that they were judge before as incapable of. These examples therefore show that when provisions are made for participation in societal relations, those who *appeared to be* disabled are in fact as abled or more abled than those others who do not carry the disability label. Vygotsky knew this long ago:

The speaking deaf, the working blind—they all participate in general life in its entire fullness—no longer will feel their deficiencies, and they will not give reason to do so to other people. It lies in our hands to act that the deaf, the blind, and the feebleminded child are not defective. Then the word, the true sign of our own defect, will itself disappear. (Vygotski, 1975, p. 72)

Again, we must abandon thinking persons in terms of normalizing normality and begin thinking them in terms of heterogeneity and difference (Roth, 2008). In cultural-historical activity theory, heterogeneity and difference *within* a person are the result of the ensemble of societal relations persons entertain in the course of their lives—and so are the processes that re/produce inequities and dis/ability levels. Thus, activity theory provides us with a framework for understanding/theorizing the issues raised so far in this essay.

Understanding the Re/Production of Inequities and Dis/Ability Labels

Every higher psychological function was external, that is, it was social; before it could become function it was a social relation between two people. . . . In general form: *The relation between higher psychological functions was at one time a real relation between people.* (Vygotskij, 2005, p. 1021, original emphasis)

In the preceding section, I suggest that formal education is part of the problem and provide examples where existing ruling relations are overcome and reconfigured such that differential abilities come into view. Both my analysis and the examples feature the role of societal (ruling) relations in the production of difference and dis/ability. Activity theory allows us to understand this re/production. One requirement for a change in schooling is a change in ontology and epistemology from a focus on the individual—re/produced in the traditional, historically received approach to education—to a relational ontology and epistemology such as that apparent in the opening quotation (Nissen, 2005).

The *individual* is the result of schooling processes that creates a means (grades, report cards) for differentiating (Foucault, 1975). The resulting individualistic ontology goes together with, and deals into the hands of those drawing on individualist epistemologies. Rationalist epistemologies are premised on the human individual who “constructs” his/her world, knowledge, or identity. The process is understood to occur in the head of the person, sometimes to be beginning *in* the relation with others from where it is then internalized. Vygotsky, as exemplified in the introductory quotation to this section, has a very different view on this, a view that his student A. N. Leont’ev (1983) and following him critical psychologists have also adopted: everything that we ascribe to human beings as characteristically human, every higher psychological function, everything that makes the human personality, has been a societal relation [*obščestvennye otnošenie*] with others first. Thus, if Davie, Dakota, or Bill come out of schooling with learning disability tags, it is not because they *are* learning disabled but that it is naming something that the societal relations themselves produced. If Bill or Dakota Kiriachuk do not initially have access to a job because of an *LD* or *autism* tag, it is because schooling produced these tags that come to be attached to the individual. Societal differentiation is created by societal relations, which are *relations of ruling* of which schooling is an integral part—e.g., by re/producing the disadvantages for single parent families and their children (Smith, 1990). Vygotsky does not write that something has been constructed *in* the relation. He is very explicit about the fact that the relationship between higher psychological functions *is* or *has been* a relationship with others generally and between two people specifically. In the social psychology subsequently established by Vygotsky’s student and collaborator A. N. Leont’ev, the emphasis is on the *societal* nature of the human relations that constitute the first instantiations of psychological characteristics ascribed to individuals (Leont’ev, 1983). Leont’ev formulated *activity theory*.

In activity theory, societally motivated activity constitutes the minimum unit and category that allows understanding specifically human characteristics. Here, activity (*dejatel’nost’*) refers to a part of society (system) that produces something meeting a generalized need (Roth & Lee, 2007).³ Although one can identify the agential subject, tools used, objects worked on, outcomes produced, division of labor, community of practice, and relation governing rules/norms, none of these can be understood on their own: these stand in a part–whole relation with the activity. For

³ In Russian, *dejatel’nost’* (activity) is distinguished from *aktivnost’* (vital activity). What students do in school *are not* activities but tasks.

example, (grain) farming is an activity that produces as outcome grain required to meet dietary needs—not of an individual but a *general* and *generalized* need. This is so because those contributing to society—conceived as a system of societal relations [*sistemy obščestvennyx otnošenij*]¹—in some other activity and receive a salary for it, which affords purchasing grain, whole or milled, to feed themselves.

There are activities that do not immediately produce goods. Among these are leisure activities, which constitute a form of consumption (as eating, or wearing clothing) that can itself be analyzed in terms of production (Marx/Engels, 1857–58/1983). Among these we also find schooling: while its object/motive often is stated to be student learning, its de facto object/motive is the production of grades, report cards, and diplomas (Roth & Lee, 2007). It is a system of societal relations as any other form of activity that is part of and makes society, a network of activities. By contributing to society and, thereby, to meeting generalized needs, teachers, administrators, or cleaners receive salaries, which they use to control their individual life conditions (e.g., purchasing whatever is required to meet basic and extended needs). What students do therefore is not understood to be the result of some innate capacity, interest, and motivation. Instead, it is understood in terms of schooling activity, where the individual not only is the agential subject but also to which s/he is subject and subjected.

The important point of activity theory is that we cannot understand what humans do at scales smaller than societally motivated activity: what science and mathematics students and teachers do is intelligible because they are part of schooling not because they are currently studying how to solve the linear equation $ax = b$ to find x . This is so because any particular action of an individual takes its sense from the activity it realizes such that the same action has different sense in a different activity. Thus, whereas looking something up or asking a co-worker when I do not know or understand is a smart move, it is a punishable action called *cheating* at school. If we changed the motive of schooling from social differentiation to contributing something to society that is of *general* interest (i.e., in the interest of *all*) then that action of drawing on others would again be a smart move. If the motive of activity no longer were the production of grades and grade reports but the contribution to societal needs, then *cheating* would be a non-issue: looking something up or asking a co-worker would then be a smart move. In making smart moves, “students” expand their agency, that is, learn, because this is in the general and in the individual interest.

Activity theory generally and the societal relations every activity sustains specifically allows us to understand the re/production of society and social classes in and through the very societal (ruling) relations that re/produce schooling and all forms of subjectivity that result from it (e.g., Nissen, 2005). First, the forms of relations between parents and their children differ across social classes. In bourgeois families, parents tend to have much more time to spend with their children than parents of working- and under-class status. For example, as one of my studies shows, in bourgeois families parents spend time with their one-year-old toddler reading books, and engage in forms of relations that also characterize those between scientists (Roth, Goulart, & Plakitsi, 2013). Those children who do not have such relations in which the praxis *reading* first exists do not start off (if at all)

literacy in the same way. That is, if there is a problem of illiteracy, then (some of) its origins lie in the forms of relations that some people (predominantly from certain sections of society) have very early in their lives.

Second, studies have shown that the relations among working-class youths, *burnouts*, are very different than those between youths of bourgeois descent, *jocks* (Eckert, 1989). Burnouts *resist* and thereby re/produce ruling relations, whereas the jocks resonate with ruling relations. In the working class, young people tend to have friends across age levels, in part because the younger often accompany older siblings. That is, the groups include youths that are three, four, and more years different in age. Bourgeois youths, on the other hand, tend to spend time with same-age peers. They are part of the same team sports, leisure activities, and spend time together in other informal gatherings (parties, playground). When they go to school, therefore, bourgeois youth find themselves in the same classes as their friends, whereas working class youths are often separated from their differently aged friends and role models. As Eckert shows, the forms of relations to which students are held accountable are those of the bourgeois class but differ significantly from the forms of relations in the working class. That is, there is a resonance between the forms of societal relations in bourgeois families and those enforced by schooling institutions, but a clash between the relations of working class students and the *corporate norms* of the institution (e.g., Bourdieu, 1979; Holzkamp, 1983). Some studies in science and mathematics education document the deep-rooted nature of social relations in the resonance of fundamental speech frequencies, frequency contours, and speech / bodily rhythms (e.g., Roth, 2011; Roth & Tobin, 2010). My research shows that conflict announces itself in and is produced by differences in these frequencies and rhythms, and solidarity expresses itself in resonance. Importantly, these resonances mediate science and mathematics learning even though speakers are not aware of it. Here, schooling creates the conditions that lead working-class students to fail, in part because schools treat every student the same, holding them accountable to the same (bourgeois) norms that resonate with bourgeois students but are in conflict with those from the working class. In activity theory, this would be modeled by a contradiction between the working class youths and the norms mediating their relation to the object (tasks) and motive of production (grades).

For a Deinstitutionalization of Schooling

In this essay I outline how and why schooling is part of the very problem that schooling is to solve: the creation of societal inequity and the production of disability. Activity theory, a relational ontology and epistemology, allows us to understand the re/production of inequities and differential abilities (Nissen, 2005). It also allows us to understand that when certain societal relations are enabled, there are cognitive consequences. Thus, one of the consequences would be that the very societal relations need to be changed that currently re/produce schooling—e.g., by reconstituting collectivities and the relevancies of the forms of knowledge on which they are premised. One way of addressing may be by means of deinstitutionalization of formal education. *Deinstitutionalization* is a term used to

refer to a public policy in psychiatry, which led to the dismantlement of psychiatric institutions, “a major contributing factor to the mental illness crisis,” and a movement towards integrating the “mentally ill” in societal relations with others. Why should it not be possible to redo schooling in the image of the deinstitutionalization of psychiatric care? Why do we not engage youths in societally relevant activities, where they learn while doing something for or contributing something to society *without getting grades*? Why do we not engage youths in something like environmental or social activism so that their collective action makes a difference—changes the world rather than merely understanding it?

In the spring of 1865, 150 years ago, K. Marx/F. Engels (1865/1978) wrote the famous 11th thesis on Feuerbach, which points out that actively changing the world matters rather than merely understanding it from a remove. The real point, however, is to change the world. In the same way that there are no good reasons for discriminating along the lines of culture, race, gender (sex), nationality, color, or socio-economic status, there is no good reason for discriminating against people on the basis of their age (Lemke, 1990). Why then should students be *future* citizens, citizens-in-the-waiting, rather than being immediately recognized as citizens-continuously-in-the-making? Most important, however, is the fact that world (schooling) needs to be changed because it re/produces inequities. Rather than being the solution to the problem of an inequitable society, schooling is (a great part of) the problem. This is so because, to transform slightly the tenth, much less frequently quoted thesis on Feuerbach, the standpoint of existing (educational) institutions is the bourgeois society, which re/produces itself by means of schooling. If schooling is part of the problem, as pointed out above, then the point is to change this part of the world.

Deinstitutionalizing schooling means that youths learn while contributing to meeting the generalized needs of society where those products matter rather than grades. Wild learning—such as it can be observed in the self-organized and self-run *Lycée autogéré de Paris* that predominantly serve those who have dropped out from regular high schools (Collectif d’élèves et de professeurs, 2012) or among youths in the streets of Copenhagen (Nissen, 2012)—may be models for alternatives to schooling. Wild learning is an acknowledgment that the idea of a curriculum as something that can be planned administratively is a fiction (Holzkamp, 2013). There are no reasons why people of all ages cannot contribute to making and remaking society while contributing to the satisfaction of generalized needs or in organizing the conditions and contents of their learning—e.g., by engaging in environmental activism or in mathematics for producing social justice. In the way my students contributed to the communal knowledge about a local creek, and taught children and adults alike about research method (Roth & Barton, 2004), youths of all ages can contribute something useful (artifacts, services) and, in the process, learn. This also means recognizing and building on our differential abilities; and it means assisting *one another* to cope with our infinite number of disabilities. A key part of the rethinking should be concerned with ways in which youths already can participate in the production of generalized needs and, in the course of doing so, continuously become as citizens. In the way the psychiatric system has been deinstitutionalized in some parts of the world, it should be possible to

deinstitutionalize schooling so that its subjects produce different forms of societal relations—among others, relations that re/produce a different form of society.

I do not pretend to have a panacea of how to change schooling. But there exist around the world fine examples that show how to make a difference. I know from my own teaching praxis and from experiences I have seen that education can be very different. Moving away from grades and focusing on the expansion of agency that is inherently rewarding—e.g., when people see that what they do leads to an expansion of their room to maneuver in life and to an expansion of control over their life conditions (Holzkamp, 1993). Even those students who appear to be the most unmotivated in the school context can be seen spending hours on a new skateboard, surfboard, or snowboard. *Low motivation* is not a characteristic of a person. Instead it is an expression of a situation where persons do not inherently recognize the expansion of their control over conditions.

Getting rid of grades is an important ingredient in alternative approaches. There are reports of schools that do not use grades (e.g., Waldorf schools). In a Belgian village school, one third of the students experienced difficulties—until the school abandoned homework, punishment, examinations, grades, and repeating a year (FranceTV, 2012), those ingredients upon which schooling was founded (Foucault, 1975). As the founder of the Belgian school suggests, once children no longer are in fear of punishment, they relive. Here, as in other schools where they are in control, students love coming to school and learn according to a curriculum that they themselves create in the context of a community of knowing. Their's is a form of acknowledged and accepted *wild learning*. They exhibit motivation and interest that had not been seen in them before. As I reported elsewhere, the official testing in France shows that the students without curriculum and grades are slightly above the national average; and during the graduating year, being free to organize when to come and what to study allows those who failed in the regular school to completing their diploma at twice the normal success rate. Schools also can be conceived as open spaces, where “students” come at their leisure, and where “schools” are open to other members of the community, integrated in the life of the community so that adults come and, using available resources, expand their room to maneuver and control over life conditions (Roth & Lee, 2006). Having run open classrooms as a practicing high school teacher, where all students and teachers as well as visitors could come to work when they felt like it (with the sole condition that those scheduled had priority access to the limited resources), I know that such open spaces are possible and increase everyone's interest in learning.⁴

There are many examples around the world showing that abandoning the traditional, historical regimes of schooling lead to success for those who historically ranged among the casualties of the system (e.g., Freire, 1972). Such examples may serve us as prototypes for how schooling can be transformed, which involves a critical collective praxis of reflexive remodeling from within the institution that comes to be overturned and retained (Nissen, 2005). The problem of scaling-up

⁴ School administrators had my physics laboratory locked at 10pm because too many students tended to be there in the evenings—not only doing physics but also working on any other subject.

efforts lies in the attempts to create conditions *within* schooling. It is time to rethink schooling to the point of abandoning it in the form it has been and re-conceiving it in the form where students, rather than encouraged to learn, learn by contributing to the common good.

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