Two Luther Theses

Two unpublished Letters to the editor

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To improve math education, we need

- Block-classes in Education
- Block-numbers in Mathematics

Does Europe really need Compulsory School Classes?

Compulsory classes force children and young people to follow the year group and its schedule. Compulsory classes made sense when created in Prussia about 200 years ago in an agricultural society; and also in industrial society with its permanent life jobs. In an IT-society, compulsory classes make sense in primary school: with both mother and father in changing self-realizing jobs, the first 3-4 school-years children need a warm and loving nanny with only one class, quickly getting a gaze of each child's characteristics and needs.

On the other hand, compulsory classes mean disaster in secondary school with young people who have left childhood and started an extensive identity work to uncover and develop their personal potential and talent. Here a compulsory class is the last thing they need, which is evident when observing the seven sins of compulsory classes.

Noise. Having an activity imposed that you do not master or find interesting, you quickly switch to other activities, surfing the Web or chatting with others in the same situation. The result is noise, which can be so violent that the rest of the class must wear hearing protectors.

Absence. Once you have given up on learning you feel a desire for absence, perhaps even to drop out. But that will hurt the school’s economy, so you will not be allowed to leave the class regardless of your extent of absence.

Bullying. When you finally meet up again after an absence, it is tempting to bully those who meet every day.

Drinking. Especially if they do not want to participate in the extended weekend drinking starting in lower secondary school and coming to full expression in das Gymnasium, where many are sent to the hospital at the annual welcome parties, or get hurt under excessive drinking on study tours.

Substitute teachers. Once you have conquered the territory, it is natural to bully also the various teachers who come to visit. Some can take it, others cannot and take a long-term sick leave. Skilled substitute teachers are expensive, so often a recent high school graduate is selected instead, or cleaning personnel.

Bottom marks. The extent of mental absence is shown by the written marks. Thus, in Denmark with 5 passing marks, the three lowest are given when answering correctly 16%, 33% or 50% at the final exam in mathematics at the end of lower secondary school. And here the international passing level at 70% gives the second-highest mark. The low level of learning can, however, be hidden by replacing written tests with oral, which is much more effective to increase the marks with floods of leading questions. Denmark is virtually the only country in the world maintaining an oral exam. Its credibility is illustrated by the joke, which is often exchanged over coffee table during an exam: With a friendly external examiner, a good teacher can examine a chair to a passing mark, provided the chair stays quiet.

War against boys. In a compulsory class, girls and boys are forced to go along, although the girls are two years ahead in development. It provides both with a skewed impression of the opposite sex, and school dislike makes boys leave school before upper secondary school, where there are two girls for every boy. In short, compulsory classes pump boys out of school to remain in the outskirts, while girls are pumped into the juggernaut universities in Copenhagen; and in Aarhus, where they then move to Copenhagen after graduation, since that is where the jobs are. With the absence of boys, girls find another girl and a sperm bank so that together they can get a single child.

Which creates the compulsory class' most fatal consequence, a birth-rate in Europe at 1½ child per family. A quick calculation shows that with 0.75 child per woman, Europe's population will halve twice over the course of 100 years. A population decline unprecedented in history.

Unlike in the North American republics. Here young people do not have multi-year compulsory classes. Instead, they are welcomed to high school with recognition: "Inside, you carry a talent that it is our mutual job to uncover and develop through daily lessons in self-chosen half-year academical or practical blocks together with a teacher who only teaches one subject. If successful we say 'good job, you have talent, try out more blocks'. If not we say 'good try, you have courage to try out the unknown, now let's find another block for you to try out. And at the last year you can try out college blocks."

Thus, the absence of multi-year educational defeats allows you to enter a local block-organized college at 18 and get a two-year practical diploma degree or continue at a regional college and get a four-year job-directed bachelor's degree.

Without compulsory classes, Europe could do the same, so that every other boy could be an engineer at the age of 22; and at the age of 25 have a well-paid job, a family, and three children ensuring state survival: one for mother, one for father, and one for the state.

As demonstrated in North America, compulsory classes are not a biological necessity.

As mammals, we are equipped with two brains, one for routines and one for feelings. When we raised up on our hind legs, we developed a third brain to keep balance; and to hold concepts since we could now use the front legs to grab the food and eat it or share it with others. In this way, grapping could provide the holes in our head with our two basic needs, food for the body and information to the brain. For by assigning sounds to what we grasp, we develop language to transfer information between brains.

In fact, we have two languages, a word language and a number language. At home children learn to talk and to count. Then as an institution, the school takes over and teaches children to read and to write and to calculate, and to live together with others in a democracy.

The ancient Greek sophists saw enlightenment as a prerequisite for democracy: knowing the difference between nature and choice, we can avoid hidden patronization in the form of choice presented as nature. The philosophers had the opposite view: Choice does not exist, since all physical things are but examples of metaphysical forms only visible to the philosophers educated at Plato's Academy. Consequently, people should give up democracy and accept the patronage of the philosophers.

The Christian Church eagerly took over the idea of metaphysical patronage and converted the academies into monasteries, until the Reformation recovered the academies. Likewise, nor emperors nor kings had anything against being inserted by the Lord's grace.

Metaphysical patronage ended with Newton's three times no. "No, the moon does not move among the stars, it falls to the ground like an apple. No, moons and the apples do not follow a metaphysical unpredictable will; instead they follow their own will, which is predictable because it follows a formula. And no, a will does not maintain order, it changes it."

Once Newton discovered the existence of a non-metaphysical changing will, this created the foundation for the 1700 Enlightenment period: When falling bodies follow their own will, humans can do likewise and replace patronage with democracy. The result was two republics, one in the United States and one in France. The United States still has its first Republic, France its fifth, since Prussia tried to overthrow the French Republic again and again.

France first got upper hand by mobilizing the population with enlightenment and democracy. As a counter measure, Prussia created a strong central administration with an associated ‘Bildung’ education with three goals: The population must be kept unenlightened so it will not demand democracy. Instead, Bildung must install nationalism transforming the population into a 'people', Germans, obeying the almighty Spirit by fighting other 'people', especially the French with their democracy. Finally, from the population, its elite must be sorted out to form a new central administration; and receive classical Bildung to become a new knowledge-nobility to replace the old blood-nobility, which was unable to strangle French enlightenment and democracy.

The rest of Europe eagerly took over the Prussian Bildung education. One might expect that when Europe became republics, its school form would follow. Here is only to say that still it is not too late. But it requires a comprehensive school reform, for the two school forms are very different.

In continental Europe, compulsory classes are replaced by a mess of competing compulsory lines in upper secondary school and with a confusion of more or less coordinated lines at the tertiary level leading to a 3year bachelor degree, usable only if supplemented with a 2year university directed master degree.

In the North American republics, compulsory classes stop after primary school. With self-chosen half-year blocks, learners can try something new each half year and continue if the trial was successful; and, as important, get out if it turns out to be an area outside your personal talent.

At the same time, the mark reflects the personal effort. Thus, at a half-year math block you can collect 700 points. The daily assignments give 100 points based on neatness, completeness and correctness. Late delivery does not count. The final test counts 200 points; and 400 points come from five tests, of which the lowest is neglected.

The 700 points corresponds to 100%, and the characters A, B and C correspond to 90%, 80% and 70% of the points. A score below 70% means that the block must be retaken or be replaced by another block.

At 18 you can continue at a regional four-year college, or a local two-year community college, which is divided into quarters so it's easy to take blocks while you work or during summer holidays. Likewise, the block system makes it easier to change job in case of unemployment or a desire for new challenges.

But why don’t Europe do the same? Because Europe is so over-institutionalized, that it cannot imagine a society without institutions. And once you have chosen institutions, the school is used to create public servants through compulsory classes in primary school and in a myriad of compulsory lines at the secondary and university level.

And compulsory classes mean disappearance of the freedom to develop your personal potential. Instead school struggle with its well documented seven sins. Sins, Europe believes it can eliminate through its political system. If it has not died out before.

Mathematics, Banality or Evilness

Mathematics is steeped in evilness right from the first to the last class in the 12-year school, which we leave our children and young people to in the belief that the school will prepare them to master their environment and its two languages, the word language, and the number language called ‘math’ by the school. Strange, for we master our world through actions, by reading and writing and by counting and adding, so why is it necessary to learn to ' math'?

Thus the evilness of mathematics begins with its name; and by claiming that counting and adding are mere applications of mathematics, which, as such, of course, must first be learned before it can be applied; and which, unfortunately, is so difficult to learn, that it requires an extra effort leading still more to fail.

Also mathematics hides its origin. The ancient Greek Pythagoreans used the word as a common name for their four knowledge areas, music and stars and shapes and numbers, that constitutes ancient and medieval basic training, quadrivium, as recommended by the Greek philosopher Plato.

With music and astronomy out, today mathematics is just a common name for the two remaining areas, geometry, which in Greek means earth-measuring; and algebra, which in Arabic means to reunite numbers, and again hidden by the school, claiming instead that algebra means to search for patterns.

Algebra followed when the Renaissance replaced Roman numbers as CCXXXIV with the Arabic number 234 = 2 ten-tens and 3 tens and 4 ones = 2*10*10 + 3*10 + 4*1 showing algebra’s four ways to unite numbers. Addition unites unlike numbers such as 3 + 4. Multiplication unites like plus-numbers such as 3 + 3 + 3 + 3 = 3*4; power unites like multipliers such as 3*3*3*3 = 3^4; and the three number-blocks 200, 30 and 4 are united by next-to addition, also called times-plus calculation, or integration, the Latin word for uniting.

And blocks is exactly what children bring to school. Asking a three-year child "how old will you next time?" the answer is four with four fingers shown. But displaying four fingers held together two and two will prompt an immediate protest: "No, it's not four, that is two twos!"

So children come to school with two-dimensional block-numbers all carrying a unit, corresponding to Lego-blocks that stack as 1, 2, 3 or more 4ere. By combining geometry and algebra in their shapes and buds, blocks are highly suitable as a basis for connecting the starting point, children's block-numbers, with the final goal: algebra’s uniting block-numbers illustrated by geometrical shapes.

However, the school is ignoring this and instead it teaches one-dimensional line-numbers located on a number line with each their name; and where the system will only be visible in the late twenties, where many children count over by saying 'ten-and-twenty' instead of 'thirty'. This then allows the school to pass a dyscalculia-diagnose and to institutionalize a corresponding dyscalculia-treatment supported by a growing dyscalculia-research with an associated dyscalculia-industry.

Evilness occurs when the school itself installs dyscalculia in the child by teaching line-numbers instead of block-numbers, thus teaching today's two-dimensional Arabic numbers, used by communities and kids, as if they were one-dimensional ancient Roman numbers.

Both number systems count by bundling.

Roman numbers use linear bundling: in a row of sticks, 5 1s are bundled to a V, 2 V'er to an X, 5 X's to a L, 2 Ls to a C, and so on. So a Roman number remains a one-dimensional string of letters as I, V, X, L, C etc.

Arabic numbers use rectangular bundling: in a row of sticks, twelve 1s are bundled to 1 ten-bundle and 2 unbundled, written as 12. Bundles then stack to a block of e.g. 4 10s, until ten bundles of 10s create a new block with the unit ten-ten or hundred, which then again stack in a block until ten of them create the unit ten-ten-ten or one thousand, etc.

So, where Roman numbers never have units, Arabic numbers always have, just as in children's own number system.

Nevertheless, the school teaches only in numbers without units. Likewise, the school does not distinguish between 2 * 3 = 6 and 2+3 = 5. The former is always true since 2 3s can be recounted to 6 ones. The latter is true only if the omitted units are the same: 2 days + 3 days is 5 days, but 2 weeks + 3 days is 17 days, and 2 days + 3 weeks is 23 days. Mathema-tics without units should be called 'mathema-tism', something that is true inside, but seldom outside a classroom. This would allow seeing if its diagnoses are created by teaching mathematics as mathematism.

Its evilness begins when mathematics neglects children's own Arabic number system and impose on them a Roman number system. It continues by forcing children to add before counting; and by forcing upon children the four operations in the order addition, subttraction, multiplication and division, where the last is presented so difficult that it triggers new dyscalculia diagnoses.

It is in fact the opposite order that is the natural. We count by bundling, so 7 sticks are counted in 3s by removing 3s many times, which is division predicted by a calculator as '7/3 = 2. something'. Then the 2 3s are stacked, which is multiplication. Removing the stack to look for unbundled is subtraction, predicted by a calculator as '7 – 2*3 = 1'. So, the calculator prediction holds true: 7 = 2.1 3s. Which shows that a natural number is a decimal number with a unit where the decimal point separates bundles form the unbundled. In contrast to the school that writes 5.6 tens as 56, i.e. without a unit and with a misplaced decimal point, and even calls such a number a natural number. An effective way to create even more diagnoses.

So counting includes the three operations division, multiplication and subtraction, and in that order.

After counting, it is natural to learn re-counting, back-counting and double-counting to change unit, or to create or remove an overload occurring when removing or adding. Thus, 7 can be recounted in the same unit 3s with or without an overload as 1.4 3s or 2.1 3s.

Recounting in a new unit means asking e.g. ‘how many 4s is 2 3s?'. We get the answer by a manual recounting, or by asking the calculator for a prediction: 2*3/4 = 1. something and 2*3 – 1*4 = 2, so 2 3s = 1.2 4ere.

Recounting the tens is done by pure multiplication: 3 8ere = 3*8 = 24 = 2.4 tens.

Back-counting from tens leads to solving equations. The question '5 tens is how many 4ere?' becomes the equation 50 = 4*x. The solution is obtained by recounting 50 in 4s, x = 50/4. So an equation is just another word for a back-counting, which means using the opposite operation, i.e. moving a number to the opposite side with the opposite sign. A natural approach easy to understand.

But, again silenced by the school, instead postponing equations to later grade levels. Here equations are presented as examples of open statements expressing equivalence between two numbers-names, and which teachers learn to solve using an abstract neutralization method.

Double-counting in different colors leads directly to the most important numbers, 'per-numbers', used to change units: If 3 reds corresponds to 4 blue then 5 reds correspond to how many blue? Or later: If 3 kg cost 4 $ then what is the cost of 5 kg? To answer we use the per-number 4$/3kg to recount the kilo-number 5 in 3s, 5/3, so many times we must pay 4$.

Changing unit is one of the two core areas of mathematics. However, the school does not recognize words as re-counting, back-counting, double- counting, or per-numbers. Instead, it uses the word 'proportionality', and again postpones it to later grades and makes it so difficult that new diagnoses are issued.

Why must children not learn the different ways of counting already in pre-school, where they count by themselves, time after time? Why does the school hide the great advantages in counting before adding? After all, totals must be counted before they can be added?

In addition, addition is not well defined: Should two blocks be added on-top or next-to each other, also called integration, the Latin word for uniting?

On-top addition means recounting to a common unit. But the school insists on using a so-called carry-method, which creates new diagnoses.

At the same time, the school only works with totals counted in tens. It is therefore unnecessary to change unit and to do next-to addition, the second main area of mathematics, and therefore more important than on-top addition; and that can be learned as early as pre-school by posing Lego-blocks next to each other and ask '3 2s plus 5 4s total how many 6s?' Nevertheless, school postpones it to the last school year with the claim that only the very best can learn next-to addition.

Reversing next-to addition is called differentiation. It asks e.g. '3 2s plus how many 4s gives 7 6s?'. Here we first remove the 3 2s with a minus before we recount the rest in 4s by division. So in reversed next-to addition subtraction comes before division. Of course, for in next-to addition, multiplication comes before addition.

But, the school does not recognize the words next-to addition or reversed next-to addition, nor does it recognize the word times/plus calculation or minus/division calculation. Instead, it introduces the Latin words integral and differential calculus and postpone both to the upper-secondary level where they are presented in reversed order, i.e. reversed next-to addition before next-to addition. Which makes both hard to understand with a high failure rate as a consequence.

A sly way to sabotage any high school reform. The parliament would like everyone to learn forward and reversed next-to addition, but both teachers and their teachers, the university professors, protest loudly: It cannot be done!

Of course it can, you just need to teach what is in the world, blocks to be united or split, and in that order, i.e. integration before differentiation. It is that simple to make calculus accessible to all.

So if the school allowed children and young people to meet its root Many as it naturally occurs in the world, i.e. as block-numbers that are counted, re-counted, back-counted, and double-counted, to be added on-top or next-to and forward or reversed, then everyone would learn everything in mathematics.

However, then no longer can mathematics be used for exclusion, which is precisely the school's main task, according to the sociologist Bourdieu. We think we got rid of the nobility with its privileges, but instead of a blood-nobility we got a knowledge-nobility protecting its monopoly on today's most important capital form, knowledge capital, by using the school to exercise what he calls symbolic violence.

The word-language cannot be used for exclusion since it is learnt before school. In contrast to the number-language that school can make so hard that is will be accessible to the nobility's own children alone. In other words, the same technique as the mandarin class used when they made the Chinese alphabet so difficult that only their children could pass the state's official exams.

But why do teachers accept to teach evil mathematics? Because of the banality of evil as described by Arendt in her book about Eichmann in Jerusalem. Here Arendt points to the lurking evil stored in blindly following orders in institutions originally created to ensure that good thing happens.

To keep your job, you must obey orders, 'conform or die'. Institutions do not compete as does the private labor market where 'compete or die' ensures control by the users' needs.

Together with skeptical post-modern thinking, also Arendt finds inspiration in the last century's great philosopher, Heidegger, who points out that to realize your existential potential you must have an authentic relationship with the surrounding things. To ensure this, we continually must ask if a thing's true existence is shown or hidden by institutionalized essence claims.

So, as an institution, mathematics education should continually ask whether it mediates an authentic image of its subject, the physical fact Many. Or, whether the institution is caught in what the sociologist Baumann calls a 'goal displacement', where the initial goal is transformed into a subordinate instrument to a new target: the institution's self-preservation.

Mathematics education could be a framework for children's and young people's authentic meetings with its physical root, Many. Instead, it has become an attempt to cure self-created diagnoses.

To deal with Many is simple and banal, so why drown the banality of mathematics in evilness?

Sensory perception, experience and common sense are the worst enemies of evil mathematics. So practice existence before essence, also in mathematics education. Which instead should comply with the international PISA-intention: To equip a population with knowledge and skills for the realization of their individual potentials.

Consequently, please drop the evil mathematics. Allow the child to develop its existing number language through guided learning meetings with its root, Many. Remove the evil textbooks on line-numbers and addition before counting. Use blocks and playing cards to illustrate block-numbers and activities such as counting, re-counting, back-counting and double-counting followed by forward and reversed on-top and next-to addition; and swap differential and integral calculus in high school, so all young people learn next-to addition both forth and back.

Again, Luther is right: Contact can be established individually without an institutionalized intermediary.