

To NWO / NRO and the Programmaraad Fundamenteel Onderzoek (PROO)  
part of the Netherlands Organisation for Scientific Research (NWO)  
cc NRO stuurgroep and executive board NVvW and chairperson KWG

Concerning: Fundamental research (PROO) and mathematics education research (MER)  
April 15 2016

Dear director dr. Kaldewaij, PROO-council chair prof. Wubbels and other members of the PROO-council,

Allow me to introduce myself as an econometrician (Groningen 1982) and teacher of mathematics (Leiden 2008). My research since 2008 on mathematics education (MER) is of fundamental nature, fitting PROO. When you haven't heard about my research yet, then this is not because of lack of quality of this research. Results can be found on my website, in Dutch at <http://thomascool.eu/Papers/AardigeGetallen/Index.html> and in English at <http://thomascool.eu/Papers/Math/Index.html>. From this, some issues can be highlighted, distinguished in numbered sections.

(1)

Mathematics education (ME) is crucial for education in general. The "two cultures" metaphor by C.P. Snow suggests a strong difference between alpha and beta worlds, but everyone would want that also alpha students can reason logically, have command of fundamental calculation, know some statistics, and such.

The core point is that mathematics has **special position** in the development of rational thought and psychological self-image. This core point supports the notion of Bildung. Knowledge, skill and attitude w.r.t. mathematics are important for personal development and confidence of students.

Some curricula reduce mathematics to topics of space and number, and often there is reduction to test scores, with phenomena like "teaching to the test" and "you get what you test". The proper notions w.r.t. above special position namely are difficult to implement and test. This rather implies that it is important to keep on emphasizing the special position, lest people forget. Admittedly mankind has found different ways to learn to think other than via the methods of what has become institutionalised as "mathematics" and I find the book "*Theory of Knowledge*" by Richard van de Lagemaat an excellent introduction for the international baccalaureat. Also there, however, mathematics is important.

It seems to me that no-one would want that education research would suffer from a **mis-state** w.r.t. scientific findings (Dutch "misstand", English common translation "abuse"). Let me request that you read the following review of the mis-state w.r.t. mathematics education (ME) and such research (MER).

<http://thomascool.eu/Papers/AardigeGetallen/2016-04-10-kern-misstanden.pdf>

(2)

There is a crucial distinction between research in mathematics (RM, abstraction) and mathematics education research (MER, empirics). Mathematicians have handled and still handle this wrongly for some 5000 years.

Mathematicians are trained for abstraction. Someone trained for abstraction will find it hard to deal with empirics. A supplementary training for becoming teacher of mathematics or researcher in MER apparently cannot undo what has been trained for originally. When mathematicians start teaching, they meet with real life students, and there will be cognitive dissonance. Mathematicians solve that cognitive dissonance by sticking to some tradition. **But that tradition has not been designed with an empirical attitude w.r.t. didactics.** By consequence there is a crucial difference between mathematics (what the government wants to see in education) and so-called "mathematics" (what is currently on offer). This may even cause tears in the classroom when students think that it is their own incompetence that causes that they can hardly follow the crookedness of so-called "mathematics".

- An example is the notation of "two and a half" or  $2 + \frac{1}{2}$ . This is denoted traditionally as  $2\frac{1}{2}$  or "two times a half". When this anti-didactic notation is called to the attention of mathematicians, mathematics teachers or researchers in MER (**M-MT-MER**) then suprisingly there don't ring alarm bells. Mathematicians apparently don't mind anti-didactics, and they rather call students dumb (lowering their self-image) rather than acknowledging both error and the need for correction.
- There is a long list of such issues, see my book "*Elegance with Substance*" (2009, 2015), pdf online. <http://thomascool.eu/Papers/Math/Index.html>
- Another example is the disaster in Holland in the last decade w.r.t. the "arithmetic test" (Dutch "rekentoets"). The M-MT-MER community should feel ashamed of what is happening here. In 2016 we still have a scientifically and morally irresponsible **experiment on children**. <http://www.wiskundebrief.nl/721.htm#5>

To refer to the "Two cultures" metaphore again: for English readers used to the distinction between science (beta) and the humanities (alpha), it is useful to mention that econometrics can be considered gamma, while see this discussion on Gerald Goldin (2003).

<https://boycottholland.wordpress.com/2015/10/02/pierre-van-hiele-and-gerald-goldin-2>

(3)

Since 2008 I have presented results on these issues under (1) and (2). My results have been scientifically sound and the presentations have been decent and respectful of the M-MT-MER community.

To my astonishment and dismay, persons in the M-MT-MER community have reacted with burking, censorship, misrepresentation, slander, "ad hominem" fallacies ("playing the man instead of the ball") and other maltreatment.

In 2012, I observed that the Dutch association of mathematics teachers ("Nederlandse Vereniging van Wiskundeleraren", NVvW) is a **very sick association**.

<http://thomascool.eu/Papers/AardigeGetallen/2012-06-Gedoe-bij-Euclides.html>

In Autumn 2015 there was a new board of the NVvW, and I have tried again to communicate. This appeared to be very difficult again.

<http://thomascool.eu/Papers/AardigeGetallen/2016-03-11-NVvW-is-een-ernstig-zieke-vereniging.pdf>

(4)

There is the well-known argument of path-dependency, in this case that education should also prepare for some tradition. This argument is frequently quite valid. However, my point w.r.t. (1) and (2) is that we are discussion foundations here. We are discussing the self-image of students (and future citizens). With 5000 years of structural mis-production of "tradition", and with the current system of continued misproduction, there is not only the desirability but

also the need for **re-engineering mathematics education**, including re-orientation of its research (MER).

The mis-state w.r.t. ME and MER is relevant internationally. Also the International Mathematical Union (IMU) with its educational section ICME are problematic. The M-MT-MER community is stuck in a mode of thinking, and one does not want to acknowledge that oneself is the major cause of problems in ME and MER.

<https://boycottholland.wordpress.com/2016/03/22/looking-beyond-the-ccss-m>

(5)

The road towards improvement apparently is difficult.

On April 19 2016 closes another round for subsidies for fundamental research in education (PROO), the kind of research that I do in MER (in the realm of (1) – (4)). For PROO research you demand a Ph.D. degree and a position at an academic institution. Dit is an inadequate criterion. My research is excellent, but I do not satisfy this inadequate criterion, and I would incorrectly not qualify as if there would be some deficiency while my research is at the core of your mission.

"Subsidie voor fundamenteel onderzoek kan worden aangevraagd door gepromoveerde onderzoekers met een aanstelling aan een Nederlandse (para)universitaire instelling of onderzoeksinstituut."

<https://www.nro.nl/subsidies/subsidies-fundamenteel/>

PM 1. At this page, you even require *tenure*. Admittedly, testing on such meta-criteria makes it easy to test, but it discriminates against teachers without Ph.D. who still have qualities for research.

<http://www.nwo.nl/financiering/onze-financieringsinstrumenten/nro/programmaraad-voor-fundamenteel-onderzoek---samenhangende-onderzoeksprojecten/programmaraad-voor-fundamenteel-onderzoek---samenhangende-onderzoeksprojecten.html>

PM 2. Potentially you might refer me to other possibilities for subsidies for teachers, but my focus now is on PROO.

PM 3. I have asked two professors in didactics of mathematics whether it would be possible to present a thesis based upon my work, and in both cases this was rejected with obvious abuse. Neither of these professors specified what would be wrong with my analysis.

(6)

Subsequently, I surmise that academics who qualify for PROO subsidies have been overlooking my work since 2008. Given the nature of my research, it is a rational expectation that who uses it in research would also contact me, and there have been no such contacts. It is something for which one can ask information of PROO researchers after 2008.

<https://www.nro.nl/fundamenteel-wetenschappelijk-onderzoek>

<http://thomascool.eu/Papers/Math/Index.html>

Mathematics professor Joost Hulshof is critical w.r.t. "realistic mathematics education" (RME) and allocating NRO subsidies to it. I wonder what the reply by NRO has been. But Hulshof is part of the problem, and he does not present a public discussion of my work while he knows that it is relevant and that it has been abused by others so that I would welcome protection.

<http://www.beteronderwijsnederland.nl/content/nwo-nro>

(7)

Academics might argue that my research is difficult to find. However, I have informed various researchers including mathematician Paul Drijvers (Freudenthal Institute) about its existence. E.g. my email of 2016-03-09 to Drijvers reviewing some older issues hasn't received an answer yet, which email has been included in Appendix B of my report about NVvW. I suppose that researchers in the M-MT-MER community should require an answer.

<http://thomascool.eu/Papers/AardigeGetallen/2016-03-11-NVvW-is-een-ernstig-zieke-vereniging.pdf>

A key problem is that researchers in MER create a climate such that they might act as if they can hide behind artificial walls. MER doesn't have a (preprint) archive as research mathematics (RM) has (arxiv.org). Let me quote Ph.D. student Raymond Johnson (a follower of RME by Hans Freudenthal (1905-1990)) who quotes Robert Talbert:

<http://blog.mathed.net/2014/08/on-major-problems-and-grand-challenges.html>

"Robert's last recommendation is to have a preprint server for math education research. As he notes, this is a road we've tried to go down before and we didn't get very far. I don't think the problem has nearly as much to do with policy or categories of the arXiv as it does with the lack of a "preprint culture" in mathematics education. What I learned in those previous preprint discussions, and in my observations as a developing scholar, is that math educators regularly and happily share work in progress - *with a select group of people*. In math ed, there doesn't seem to be widespread faith in anything like Linus' Law, the open source software dictum that says, "With enough eyeballs, all bugs are shallow." I think the math wars led to a lot of distrust, and some of it is very rational. It's safer to only share preliminary work with a few scholars who share similar methods and theoretical frameworks, and then refine the work after peer review before publication in a journal whose readership is likely to understand the work. Maybe it shouldn't be this way, but to move forward we're going to have to confront some of these beliefs."

(8)

The reference to "math wars" is an understatement. Other disciplines have their issues too, see *Historikerstreit*. It however is no excuse that such happens elsewhere too. Each such case needs to be defused by the scientific attitude. My own emphasis is on science. Mathematicians and ideologues have only opinion and (deluded) logic to restrain themselves. Scientists however rely on empirics for arbitrage.

- We have seen it in Holland w.r.t. education in arithmetic and its test ("rekentoets"), with the math war between "realistic mathematics education" (RME) (Freudenthal Institute) and the "traditional mathematics education" (TME) (Jan van de Craats (born circa 1944), and the foundation "Stichting Goed Rekenonderwijs" (SGR)).
- I myself am eclectic, and have discovered to my dismay that one may become a target for both sides (e.g. when both RME and TME are burking my work).

I presume that it would be informative for science and policy makers to discover how such math wars arise, how they function (e.g. in vested positions), and what are the best ways to prevent and defuse them. One is reminded of the dictum that war is only the continuation of policy with other means: such that the only distinction may be the means.

My advice is the foundation of a **Simon Stevin Institute** (SSI) that accepts the principles of **Forum Theory** by A.D. de Groot.

<https://boycottholland.wordpress.com/2015/10/31/the-power-void-in-mathematics-education>

<https://boycottholland.wordpress.com/2015/11/24/a-general-theory-of-knowledge>

<https://www.know.nl/nl/actueel/publicaties/het-forumwaarmed-merk-van-wetenschap>

Research money for MER would be managed by SSI and not by NRO, given the special role of MER, see (1). This isn't based upon the difference between horizontal allocation (with education as the general denominator) versus vertical allocation (with discipline as the denominator). The creation of SSI is based upon the recognition under (1) that mathematics is by definition the field that supports students in learning how to handle the human ability for abstraction (while "mathematics" is a distortion e.g. in neglect of empirics).

NB. It is not impossible that ideologues of RME and TME have developed an idiom by now, by which they might say that they are agreed in some fashion. Jan van de Craats posed that the TME textbook "Reken Zeker" included "the best aspects of RME", without specifying which. On the side of Freudenthal Institute it has been stated that RME also aims that students master the traditional algorithms, whence the discussion only concerns implementation, for which research funding is needed, and for which one nowadays also appoints young researchers with some background in statistics. My experience is that these foxes have lost their hairs but not their ideological bend. Proof of this is: (i) one doesn't specify what one is agreed upon, (ii) one still burkes my research on the core problem of 5000 years, (iii) one does not collaborate in the suggestion of creating the scientifically proper research environment, the SSI, (iv) points below, like (14).

(9)

I have noted the Programma NRO 2016-2019. I copy to the executive board of the Dutch association of mathematics teachers ("Nederlandse Vereniging van Wiskundeleraren", NVvW) and the chairmain of the Royal Dutch society of (research) mathematicians ("Wiskundig Genootschap", KWG), and for them I include the link. Let me also quote part of your cover with the faces of children for who NRO research is done (and not for the image and wallets of ideologues).

<https://www.nro.nl/wp-content/uploads/2016/03/NRO-onderzoeksprogramma-2016-1019.pdf>



As said: when you haven't heard about my research yet, then this is not because of lack of quality of this research.

You may check in the Programma NRO 2016-2019 page 8 **who should have informed you about my work**, where it is relevant for education in general and RME. You can check the desinformation. For example, the "Onderwijscoöperatie" includes "Beter Onderwijs Nederland" (BON). Mathematicians at BON misrepresent and slander my work, and the board of BON refuses to investigate and correct the situation.

<http://thomascool.eu/Thomas/Nederlands/Wetenschap/Brieven/2009-02-19-BON-Gedoe.pdf>

(10)

It is a possibility that you invite me to **discuss this letter**. Obviously, you would also invite representatives of M-MT-MER like NVvW and KWG and CITO and psychometricians Kees van Putten and Marian Hickendorff to give their view and answer to the criticism. I would welcome a recording, and making this available to the general public. An example of such a recording and the relevance of general access is the interview with former ALLEA and KNAW president Pieter Drenth, with his smile when psychology students find mathematics difficult.

<https://boycottholland.wordpress.com/2015/11/26/allea-defines-research-integrity-too-narrow>

(11)

An important possibility is that you invite researchers of education in **disciplines that use mathematics**, like physics to history (see **Appendix A**), to look at MER and my criticism.

In 2008-2016 my research apparently got bogged down by the abuse in the M-MT-MER community, and it would be rather the other disciplines that would provide rescue.

- Mathematics in primary and secondary education is such that researchers in disciplines that use mathematics would well understand it. Their next step would be to look into MER, starting with my book "*Elegance with Substance*" (2009, 2015). Such researchers would be able to see the distinction in notation between  $2 + \frac{1}{2}$  and  $2\frac{1}{2}$ , and see that  $2\frac{1}{2}$  has the form of  $2a$  or  $2 \text{ km}$ , whence they would understand that traditional "mathematics" is antididactical. Such researchers might likelier be alarmed while M-MT-MER are not.
- Researchers in education in physics would likely appreciate my new algebraic approach for the derivative, relevant for modeling of speed and acceleration, that provides an answer to the criticism by bishop Berkeley w.r.t. infinitesimals.
- Such researchers from other disciplines would be at a distance of the math wars, and would likelier be able to recognize misrepresentation and other abuse, and they would be more inclined to demand that the M-MT-MER community puts a stop to this.
- Please observe that I already asked **psychometricians** (who do CITO testing) to look at the issue, but those refuse to look into MER, whence they do not know what they are testing, whence their testing results tend to be invalid, see my report mentioned in (1).

(12)

In supplement to (6): It is an option that you re-evaluate the research subsidised by NWO / NRO since 2008, and check whether **research findings are of lesser quality** because of neglect of my research. An example is this thesis in 2015.

<http://www.nwo.nl/actueel/nieuws/2015/magw/rekenonderwijs-is-op-lange-termijn-meer-bepalend-voor-rekenprestaties-dan-aanleg.html>

This thesis namely neglects that I proposed a pronunciation of numbers that fits the positional number system. In English we should have two-ten-one rather than twenty-one. A crucial innovation for Dutch is the use of **tig** for ten (for German **zig** for ten).

<http://thomascool.eu/Papers/AardigeGetallen/Index.html>

Indeed, the very sick association NVvW has a very sick journal *Euclides*, that refused to review my book "*Een kind wil aardige en geen gemene getallen*" (2012), whence researchers in the M-MT-MER community might claim that they never heard about it.

<http://thomascool.eu/Papers/AardigeGetallen/2012-06-Gedoe-bij-Euclides.html>

Research in number sense by children can often be invalid. It must be regretted that the researchers of these two Ph.D. theses did not respond to my weblog article, of which I informed them after I heard about their theses. Perhaps my findings are too late for them but they could have written a correction that would be important for subsequent others.

<https://boycottholland.wordpress.com/2015/08/29/research-on-number-sense-tends-to-be-invalid>

<http://www.nwo.nl/actueel/nieuws/2014/magw/http---www.nro.nl-aanzienlijke-samenhang-tussen-werkgeheugen-en-rekenvaardigheden.html>

PM. NRO subsidised research by Paul Drijvers (Freudenthal Institute). I haven't studied it, and only wonder about the name "think-activity" since thinking and doing tend to be regarded as different, even while activity shows up in the brain. Pierre van Hiele (1957) distinguished levels of insight, and I strongly doubt that neuro-psychological research on sensori-motoric "embodied cognition" properly handles these levels. The "think-activity" for a pupil who is instructed to write  $2 + \frac{1}{2}$  as  $2\frac{1}{2}$  might be to learn mixed fractions as an exception on a general rule for multiplication while cutting up pizzas: but it is better not to have this.

<https://www.leraar24.nl/dossier/6100#tab=0>

(13)

For my own research I have considered submitting this paper to the open access journal "*Frontiers in Psychology*", but naturally the issue of finance arises. Should I pay myself only to compensate for the abuse by the M-MT-MER community who have lavish NRO-funding ?

<http://thomascool.eu/Papers/NiceNumbers/2015-09-02-Numbers-Need-for-a-standard.pdf>

(14)

I insist that you declare, as scientists should, that the **Freudenthal Institute in Utrecht is an ideological and not a scientific institute** and cannot be part of a university. In NRO committees and its subsidies there should be no involvement by so-called "professors" and "Ph.D. theses" and "researchers" employed at this institute, or with ideological ties. It is possible that there are (young) researchers who have accepted a position there, in good faith that the position would involve scientific research. Utrecht university has a task in separating wrong-doers from victims. It remains an international shame for science that this institute still is attached to an university. For:

(i) The KNAW-report of 2009 about the education in arithmetic in primary education concluded that RME had been introduced without research and empirical evidence. The report thus should have concluded that it must be compared to astrology and homeopathy.

(ii) You can check that no-one of the "experts" at Freudenthal Institute has pointed to the errors within this KNAW-report, which errors I mention in the report on abuse, see (1). The KNAW-report is rosier about RME than is scientifically correct.

(iii) You can check that no-one at this Freudenthal Institute protests on scientific grounds against the current scientifically and morally irresponsible **experiment on children**, see (2). There is some ideological protest but not based in science.

(iv) You can check that no researcher at Freudenthal Institute has referred to my work since 2008, while burking is irresponsible. I already mentioned the name of Paul Drijvers as an example, whom I informed about my work.

(v) You can check that the RME ideologues continue with propaganda under the flag of science. It seems to be a strategy to focus on technology and "**21<sup>st</sup> century skills**" (Onderwijs2032) as an excuse to re-introduce RME after it lost its credibility on arithmetic. See w.r.t. Koeno Gravemeijer: <http://www.wiskundebrief.nl/724.htm#6> The text in Programma NRO 2016-2019 on pages 14 - 16 is confused, and might already suffer from such RME popaganda. Technology doesn't reduce but expands employment opportunities.

PM. Holland is a small country. We can only hope that NRO handles connections with Utrecht University properly.

**NRO-chairperson prof. Wubbels** started as teacher of physics for 5 years and thereafter has been attached to **Utrecht University**, and was e.g. in 1994 director of IVLOS, its institute for training teachers, now renamed into the "Centrum voor Onderwijs en Leren" (COL).

<http://www.uu.nl/medewerkers/TWubbels>

**NRO-director Kaldewaij** started for 3 years as teacher of Dutch, moved to the **Utrecht University**, with a total linguistic science experience of 6 years, taught linguistics at college level in Utrecht for 12 years, and moved to a management position. In 1998-2002 he was director of the teacher training center IVLOS. In 2007-2009, in the heyday of the math war between RME and TME, Kaldewaij was Head of secondary education at the Inspectorate.

<https://www.linkedin.com/in/jellekaldewaij>

IVLOS / COL and its staff of trainers of teachers of physics to biology have not been able to debunk the Freudenthal Institute for some decades now. The website of IVLOS / COL on 2016-04-14 features a picture of Paul Drijvers of Freudenthal Institute in front of a whiteboard.

<http://www.uu.nl/onderwijs/centrum-voor-onderwijs-en-leren>



In het Centrum voor Onderwijs en Leren werken alle onderdelen van de universiteit samen die gericht zijn op professionalisering van docenten, ontwikkeling van lesmaterialen en onderzoek van leerprocessen voor hoger onderwijs, voortgezet onderwijs en primair onderwijs.

(15)

I discovered in 2014 that Hans Freudenthal (1905-1990) committed intellectual theft of the work by his Ph. D. student Pierre van Hiele (1909-2010).

<http://www.wiskundebrief.nl/718.htm#7>

It is remarkable that the M-MT-MER community did not discover this itself before 2014. No "expert" apparently was able to merely read critically.

Please observe also the abuse *when telling about the discovery* of the fraud. Below example concerns Henk van der Kooij, recently retired from Freudenthal Institute. Problems are not only that Van der Kooij abuses me and my work but also that the editors published this abuse and also that the issue wasn't repaired after my protest.

<https://boycottholland.wordpress.com/2014/07/06/hans-freudenthal-s-fraud>



<http://thomascool.eu/Papers/AardigeGetallen/2016-03-11-Henk-vd-Kooij-Freudenthal-VanHiele.pdf>

<http://thomascool.eu/Papers/BHRM/Index.html>

(16)

On June 20 there will be a **conference** with the objective to link MER with the practice of teaching mathematics: "De praktijk van het wiskundeonderwijs in de klas en die van de onderwijsonderzoeker, dat zijn vaak gescheiden werelden."

<https://www.nro.nl/20-juni-onderwijs-meets-onderzoek>

This conference is co-organised by the pseudo-scientific Freudenthal Institute and the very sick association NVvW and SLO that doesn't mind these partners. Teachers who attend will receive a "certificate of training". What precisely are the attendees being trained in ?

Let me mention that I haven't been asked (yet) to give a presentation there about the scientifically warranted state of affairs ((1) – (4)). A rational expectation is that there will be much desinformation in this conference. It must be regretted that there will be many good-willing attendees who will be misled by the abuse of my work. Obviously, they may only recognise the abuse when they study my work, but they will not study it when they have not heard about it (or have only heard some gossip about some protest, with "where there is smoke there is fire").

The conference will be opened by **NRO-director Kaldewaij**, and it is not inconceivable that he is abused to give the event a scientific flavour. I would think it incorrect when Kaldewaij would support 8 years of abuse of my work since 2008 in the M-MT-MER community by also burking my analysis and not formulating a protest about what is happening. Hopefully Kaldewaij will consider to study my analysis and check what he can transfer to the conference.

One of the keynote speakers of this conference is Paul Drijvers, ideologue of the Freudenthal Institute. See (14) above. Drijvers's thesis was on computer algebra, and then see (14)(v).

The other keynote speaker is dr. Alison Clark-Wilson (Engeland), who has done research in the use of technology for teaching and learning. Will she be critical of (14)(v) ?

"My interests concern school mathematics education in general but my particular research interests are focussed on the design and use of mathematical digital technologies, the related professional development experiences for teachers and the impact of such technologies on mathematical thinking.

These themes are related to the wider issues concerning the 'scaling-up' of educational innovations for school mathematics that involve digital technologies."

<https://iris.ucl.ac.uk/iris/browse/profile?upi=ACLAR76>

It is important that educational researchers recognise the core role of the mathematics community in both progress and also stagnation. See "*Elegance with Substance*" (2009, 2015), chapter IX "**Beating the software jungle**" (page 75). Research on computer algebra started in the early 1960s. We still do not have easy software and keyboards for mathematics (e.g. symbols) for use in everyday application (like in education). Economic theory explains such stagnation as lack of market ordering. For example the car industry only accepted car safety belts when the government imposed regulation. Governments should step in with regulation for math education too, like the creation of the Simon Stevin Institute in Holland.

We can only hope that the conference organisers have informed dr. Clark-Wilson about the abuse in Holland, also w.r.t. her research interest.

<https://boycottholland.wordpress.com/2015/12/08/computer-algebra-is-a-revolution-but-21st-century-skills-q>

(17)

I am reticent w.r.t. the potential impact of my research. Empirical results must be tested and corroborated, and because of the fundamental nature of my research there are no quantitative findings yet. Relevant is my proposal of the "**definition & reality methodology**", i.e. such that some conclusions are possible merely by adequate deduction upon definitions used in empirical research.

<https://boycottholland.wordpress.com/2015/11/24/a-general-theory-of-knowledge>

A teacher and researcher also develops some expertise from actual practice. My **educated guess** is that it might be possible to save one year of teaching mathematics, or extend the curriculum, in both primary and secondary education, thus with a total of two years. There will also be enrichment for the other disciplines that use mathematics. Overall there will be improved self-images and confidence of pupils and future citizens. Again, I am a modest researcher and I emphasize that these are only guesstimates based upon the topics discussed in my books. I for example presume that it is possible to start with logic and set theory in primary school, so that notions of proof can enter consciousness much more precise at an earlier stage. Gradual changes would be possible in the next two decades, with research done within the proper environment of a Simon Stevin Institute.

PM. W.r.t. Programma NRO 2016-2019 Chapter 6 notably 6.2 page 48 I am supportive of structural differentiation in primary education. The living environment of the young child requires to keep school close to home. The school building can have different curricula however, suited to different levels and learning styles, like in secondary education.

<http://thomascool.eu/Papers/Math/2016-03-16-Henk-Boonstra-on-Elementary-School.html>

(18)

I kindly request that you consider these findings and the documentation on my website.

I tend to regard NWO / NRO as victim of the abuse of my work in 2008-2016 in the M-MT-MER community as well. You might suffer cognitive dissonance, that you cannot accept that you with your record of achievement would be such victims. There is no other answer than to sit on your hands, start an enquiry and study the evidence.

It is not unlikely that researchers need to be retrained on this burked material of 2008-2016 before they can usefully take up research again (including e.g. what psychologists have included in their programme, like number sense). See also **Appendix B** on limitations.

I hope that you understand that I have met with 8 years of abuse and unwarranted resistance against my work. This letter might be somewhat curt, since I must mention quite a lot in few pages – but still already some. I do not want to belittle the positive responses, like the positive book reviews and a presentation at a NVvW research day. I realise that I am forced here to be strict and clear on main issues, which might create the impression as if there would not be nuances. I myself enjoy the nuances too but I hope that you grow aware that you might feel glad that you are saved from reading another hundred pages or more (that is, in this letter).

I kindly request PROO-secretary De Haas to forward this letter to the PROO council members of whom I haven't found an email address on the internet.

I will include this letter on my website.

Sincerely yours,

Thomas Cool / Thomas Colignatus  
Econometrician (Groningen 1982) and teacher of mathematics (Leiden 2008)  
Scheveningen  
<http://thomascool.eu>

## **Appendix A. On the socialising role of education (chapter 4)**

The Programma NRO 2016-2019 Chapter 4 deals with the socialising role of education.

(1)

Page 32 mentions knowledge about democracy and democratic processes.

"Dergelijke competenties kennen drie componenten: een kenniscomponent, bijvoorbeeld kennis over democratie en democratische processen; een vaardigheidscomponent, specifiek vaardigheden om te kunnen deelnemen aan het sociale verkeer; en een normatieve component, dat wil zeggen gevoel voor wat 'normaal' is, of hoe de dingen horen te gaan." (page 32)

Mathematicians with their training on abstraction have been messing up not only mathematics education but also the theory of democracy and subsequent perceptions of democracy.

See "*Elegance with Substance*" and:

<http://thomascool.eu/Papers/VTFD/Index.html>

<http://thomascool.eu/Thomas/Nederlands/Wetenschap/Artikelen/2013-02-14-PasOpMetWiskundeOverVerkiezingen.html>

<https://vragen.wetenschapsagenda.nl/vraag/hoe-valt-een-wetenschappelijk-kwalijke-fout-op-kennislinknl-tav-democratie-te-corrigeren>

<https://boycottholland.wordpress.com/2016/03/02/h-c-m-de-swart-breaches-integrity-of-science>

<http://thomascool.eu/Papers/Math/2016-03-15-Some-experiences-with-HdS-RB-FvdDS-JvdC.html>

(2)

There is the issue of handling differences in opinion, like ideology or religion, like potentially the math wars.

"Hiernaast kunnen burgerschapscompetenties worden onderscheiden die bijdragen aan maatschappelijke samenhang: een vruchtbare omgang met verschillen, het leveren van bijdragen aan het algemeen belang en de bereidheid en het vermogen tot democratisch handelen." (page 32)

Students better learn to handle abstractions like God and Communism, so that they do not run astray from Common Sense (potentially another abstraction). The following statement in the Programma NRO 2016-2019 is very curious, since it also would accept that students are immersed in religion and potentially all in the same religion too to increase social cohesion.

"Anderzijds kunnen andere organisaties in de buurt zoals religieuze instellingen, welzijnsorganisaties en verenigingen hun doelstellingen verbinden aan die van de school en bijvoorbeeld gezamenlijk streven naar een grotere sociale cohesie of een gezonde leefomgeving (Turkenburg, 2008)." (page 33)

Let me point to my proposal for a multidisciplinary educational project that is targetted at handling these issues, and that helps identify how (mathematical) abstraction can lead one astray: "*The simple mathematics of Jesus*" (2012).

<http://thomascool.eu/Papers/SMOJ/Index.html>

## **Appendix B. System of education and its management**

Programma NRO 2016-2019 Chapter 7 deals with the system of education and its management.

(1)

A key point is that researchers tend to research. While some findings may be rather obvious and be blocked by blindness or miscomprehension by policy makers, like Parliament itself, researchers aren't policymakers, and tend to continue doing research on what is already rather obvious.

For example, some researchers might adopt the idea of the Simon Stevin Institute, and start discussing aspects and doing questionnaires in the field and so on.

Instead, researchers have some responsibility in informing policy makers where the real problem lies: in blindness or lack of interest by policy makers themselves.

The Programma 2016-2019 mentions a current development towards deregulation (away from exposure to blame) but the real problem is the lack of market ordering to start with.

<https://boycottholland.wordpress.com/2015/10/31/the-power-void-in-mathematics-education>

My advice is that Parliament investigates mathematics education and its research, and my suggestion is that other researchers of education support that advice.

<http://www.ipetitions.com/petition/tk-onderzoek-wiskundeonderwijs/>

(2)

Chapter 7 p 57-58 has as statement on unemployment.

"Wat betreft de beroepsgerichtheid, laten de resultaten zien dat een groot aandeel van het beroepsonderwijs en een sterke betrokkenheid van het beroepsveld gunstig zijn voor de overgang van school naar werk en vermindering van de jeugdwerkloosheid. Wat betreft de inrichting van het beroepsonderwijs blijkt dat studenten uit smalle – beroepsgerichte – opleidingen in eerste instantie betere arbeidsmarktperspectieven hebben dan studenten met een algemene opleiding (ROA, 2014). Hanushek en collega's beargumenteren daarentegen dat smal opleiden misschien kan zorgen voor een snelle transitie naar de arbeidsmarkt, maar dat smal opgeleiden later een grotere kans hebben op werkloosheid. Juist omdat ze een specifieke set aan vaardigheden hebben, zijn ze te weinig flexibel (Hanushek, Woessman, & Zhang, 2011)."

It is important to be aware of causes of current unemployment. Education has only limited effect. Education researchers should not get lost in the wrong approach. The key problem lies in the system of taxation and social security. Since 1990, the directorate of the Dutch Central Planning Bureau (one of the NRO contacts mentioned on page 8 of the Programma) commits censorship of science w.r.t. my analysis on unemployment. My advice is that scientists protest against censorship, and that the world boycotts Holland till this issue of censorship of science is resolved.

<https://boycottholland.wordpress.com/about>

[http://www.ipetitions.com/petition/PE\\_werk\\_CPB](http://www.ipetitions.com/petition/PE_werk_CPB)