

# STRUGGLING WITH CONFIDENCE: REFLECTIONS OF A REFORMED OVERACHIEVER

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## ABSTRACT

Like many girls who end up in STEM, I breezed through school, racking up good grades, thinking that this was training me to be a scientist. Until I found out two years into grad studies that I was prepared for only half the job, and that was the *easy* half. How could this be?! After years of achievement tests and report cards telling me I was learning the right skills, the right facts. But those marks were deceptive. Maybe I excelled at *some* of the necessary skills, but the rest obviously hadn't been tested at all, much less been exercised and refined in preparation for my chosen career. They were taken as a given. Rather, success in school relied on skills *I* took for granted: discipline, focus, attention to detail, organization, methodical habits, good behaviour, social skills, giving what was expected. Girl-stuff. It was too easy.

What were those missing skills? Risk-taking, decision-making, exploration, aggressiveness, innovation, a touch of rebelliousness, ease with confrontation, with challenges, with sticking up for yourself: the qualities that define a sense of *self* and a sense of *self-worth*. Boy-stuff. With risk-taking necessarily come skinned knees, wrong turns, misdirected effort, failures—just ask any scientist! So the relentless series of good marks was worse than deceptive. Confidence built on easy success will crumble in the face of failure; ability without confidence is paralyzed.

This is about changing traditions. It begins with the realization that science requires both the 'girl-stuff' and the 'boy-stuff', and that in fact the difference between them may just be the order in which they are learned, rather than something scripted absolutely by biology. My post-education re-education has meant learning NOT to lean toward my strengths. To try out legs which wobble, often publicly! After each tumble comes the getting up, the trying again. And thinking, not in terms of failure, but in terms of ups and downs in the struggle for knowledge. It's about learning how to struggle with confidence. While we wait for those changes that we cannot make ourselves, I offer just a few ideas to consider. And I hope for those young people who may have a similar experience to mine that their parents will put their foot down: 'It's time to stop doing your homework. Now go outside and get your clothes dirty.'

## INTRODUCTION

I left graduate school with my PhD in hand and my self-esteem in shreds. It would be convenient and smugly comfortable to point the finger at others, to blame someone else for making it an incredibly traumatic experience. But that doesn't fit with the truth: that I had kind, supportive, encouraging advisors and committee members who very much wanted me to succeed. It is only now, almost 10 years later, that I understand some of what happened and why. This insight came with my recent return to University—an attempt to fill what I saw simplistically as the 'gap' in my education: a lack of math. I was on the right track in a way—studying math has shown me clearly what the problem was, and it wasn't that I needed more practice at solving integrals.

Before I explain, I have to say that a great sense of relief has come from realizing there was no conspiracy to keep me down because of my gender. My mentors in grad school were baffled by my difficulties, when my academic record clearly indicated competence, and they agonized with me. They knew I needed *something*, but didn't know what to do for me. And I didn't know what to ask for. I know what to ask for now, and I think some of my colleagues and math profs would like to run the other way when they see me coming, because they know they're in for an earful about why and how they should do things differently. But that's how we will change things.

## THE TRADITION

My personal revelation is best summed up in an analogy. As an experimentalist, I have spent almost 20 years getting my hands (and boots, and clothes...) dirty. In all that time, I've never shown up at a lab, mine, field site, or even a work-wear retail store and found a pair of coveralls that fit me. And why should I? It's only recently that a measurable number of women have chosen careers for which coveralls are typically needed. We weren't included while the prototype was evolving, we aren't a significant enough mass yet to make drastic adjustments profitable, and we haven't demanded it. So it is taken for granted that those needing coveralls will have a relatively straight figure, height in proportion to girth, the business is done out the front, and for the most part that formula works. Because women come in many shapes and sizes, there are obviously some who can get into those coveralls without doing much alteration. There always will be. But for many of us they don't fit right and they never will.

Now consider an educational system which evolved over the centuries to train a very specific target group, to the exclusion of the rest of the population. It is only recently that the doors were opened, really opened. There will obviously be at least a few newcomers for whom this old system will work well. But for many of us, it just doesn't fit and it never will. Our needs are different, walking in the door. We are no better or worse, not weaker or stronger, only different. Taking a system which is tailored for a few, and applying it—albeit uniformly—to the rest of us is not the same as being *fair*. It is simply hiding bias behind a pretense of impartiality. It's like saying: you'll be trained for the job—if you fit the coveralls.

Getting good marks was easy for me, I learned the techniques very young. I liked the feedback, I liked the feeling of exceeding expectations. In a very circular way, school trained me to be good at things I would be rewarded for being good at. I learned how to please. I learned how to *learn*. New concepts came easily, and this was reflected in my grades. One could argue that the school system *avored* people like me. But in reality it gave us a really good work-out of our strengths, leaving our weaknesses completely untouched. Applying and recombining these new concepts was more difficult for me, and was never practiced or even expected until graduate school, when suddenly I was supposed to be good at it. My particular trauma was the collapse of this misconception that being good at *learning* things would lead automatically to being good at *doing* things. For me, there was a gaping chasm between the two. *So why didn't anyone tell me?* Why give me top marks—right up through graduate level courses—with the implicit message that there was nothing big I still needed to work on? Maybe nobody realized that these missing elements—risk taking, innovation, exploration, etc., where the learning gets *used*—are qualities which are acquired and must be exercised, as surely as those elements which *were* exercised in the classroom—discipline, attention span, drilling and memorization, analytical thinking, i.e. the mechanics of the learning process *itself*.

## THE CHALLENGE: REWRITING THE TRADITION

Until recently, this education model probably worked. If a system was tailored to a group and then applied to that group, it's what you'd expect. And when it didn't work, it was easy to blame the individual for just not having what it takes. But when you apply that model to the excluded half of the population and then conclude most of them don't have what it takes, something is really wrong. So when will women in science speak up and demand *true* fairness in the training, which means recognizing the implicit bias and addressing it? Well, I've started. And I am very encouraged by the response. Many of my profs and colleagues—even the proverbial Caucasian, middle-class, middle-aged good-old-boys—recognize there is a problem and, like my advisors in grad school, they truly want their students to succeed. They want to know how to help. And now I have something constructive to tell them.

So I talk to professors, I talk to students, I talk to fellow scientists, I talk to housewives, mothers, and other women in more traditional careers. I talk about what was missing for me in my training, and ask what was missing for them. And I have found my experience was unique in some ways and universal in many others. In particular, it amazes me how many *male* colleagues struggled with exactly what I did, and are now willing to talk about it. So perhaps that old system wasn't tailored so well after all.

It has become a mission for me to tell young people—including the guys!—what no-one in the school system ever told me. It is my hope to talk next to educators, particularly those who reach our children so young and could therefore do so much. There are important things being missed. If we work together, it will take only a little creativity—rather than major curriculum adjustments—to change the message we send and to adjust the balance of skills we teach and demand from students. In the meantime, the immediate need is to reach young women who are already on the path toward being scientists, and probably don't know they are fast approaching a cliff. To make it past that edge with self-esteem intact, they will need to be strong in ways which they don't yet know, and may not yet be. I want them to have the confidence I didn't have at their age—confidence in their ability to *do* and not only in their ability to *learn*. With that they will be able to cope with what is coming. This is what I tell them:

## SO YOU WANT TO BE A SCIENTIST?

*Top 10 Things I Wish Someone Had Told Me...*

### What does it take?

- being curious, inquisitive
- rational
- with a strong factual base

### What else?

**risk taker** ↔ cautious, thoughtful  
**adventurous, restless** ↔ patient  
**competitive** ↔ cooperative  
**rebellious** ↔ respectful of 'authority'  
**deductive** ↔ intuitive  
**innovative** ↔ methodical  
**comfortable with confusion** ↔ need a 'right answer'  
**self-affirming, self-checking** ↔ need external validation, certification  
**independent** ↔ team player, social  
**self-directing** ↔ obedient  
**generalize from theory** ↔ experiential  
**argumentative** ↔ pensive  
**arrogant** ↔ modest  
**single-minded** ↔ multitasking  
**stubborn** ↔ flexible  
**can deal with the unexpected** ↔ can work within defined limits  
**focus on problem** ↔ conscientious (focus on image, outcome)  
**assertive** ↔ passive

These characteristics seem contradictory, and often ARE. You need different strengths under different conditions, and will need to know which to apply when. Traditional classroom education tends to over-exercise the qualities on the right-hand side and—for the sake of maintaining order!—discourage (if not actively *punish*) many of the bolder qualities on left. You may not know you need these other strengths until you call on them and they aren't there. So, here is what you **AREN'T** learning in school...

## #1 MOST IMPORTANT THING: Learn to be comfortable failing...

(*NOT your classes, though!!*) Failing *at* a task is quite different from *being* a failure, and someone who is addicted to approval (i.e. good grades!) does not always make this distinction. In science we often learn the most interesting things from what DOESN'T work as planned. Half of what you do won't work at all. Get used to taking risks: you can't make an omelet without breaking a few eggs! With risk comes the possibility of not succeeding as planned, get used to that too. Ironically, to stick with doing exactly what is expected of you and doing it well *feels*

good, but gets you used to conditions which are uncommon in independent research: there is a right answer, someone knows it, they will spoon-feed you the skills needed to reach it, and give you problems designed to be right at that level of functioning, for a quick-fix high. Lack of experience coping with small failures can set you up for much bigger failures down the road—the kind of failures that leave your self-esteem in shreds...

### Try this...

- ✓ Spend part of your time doing **really hard things** (e.g. do problems from the END of the problem sections in texts.) As one mathematician put it: you have to get used to floundering!
- ✓ Start with challenges in private, and give yourself a break. If you are doing something truly hard you SHOULDN'T be good at it right away. Stick with it.
- ✓ If you find it EASY, you aren't being CHALLENGED—make it hard enough to pinch but not so hard it crushes!
- ✓ Choose hobbies which stretch you and require long term commitment e.g. musical instrument, debating, sports.
- ✓ Take a clue from athletes—'no pain, no gain'; 'feel the burn!' This is a work-out for your head.

## 2. ...BUT NEVER ACCEPT DEFEAT

The ultimate paradox: it is the tension that comes with confusion which keeps us moving toward understanding. So, you must dislike confusion but at the same time learn to be comfortable with it.

### Try this...

- ✓ The healthiest attitude is not to demand the unreasonable of yourself, but at the same time never be satisfied.
- ✓ 'Well, that didn't work' NOT: 'Oh I can't do this.'
- ✓ 'What else can I try?'

## 3. LEARN TO BE COMFORTABLE FLAILING!

You will be put on the spot at least half a dozen times over the course of your grad work and once you start interviewing for jobs. This has all the appeal of a bunch of nice doggies turning into a snarling, bloodthirsty pack of wolves who cull you from your safe happy herd of classmates and then go for your throat. There are two bright spots in this. First: if you are the type who likes working in teams, believes in the power of a collaborative, cooperative, nurturing work environment which doesn't allow massive egos and competitive crap, there IS a place for you in the world of science. You don't have to stop being who you are, but you DO need to make it past these hurdles. Second: you CAN strengthen the 'fight' rather than 'flight' response...it's a matter of practice. An added benefit of such practice is that learning to apply (quickly and under stress!) the raw facts and recipes you've memorized up till now is one of the best ways to turn them from fodder to understanding. It's like training at high altitude—if you can function mentally under these most stressful conditions, then the ordinary challenge of an important lab experiment or an exam will be a piece of cake. There is too much practice at things for which you can prepare in advance. There is almost no practice at having to go at something cold and alone. You will quickly discover what you're made of when you're forced to do this! So get used to thinking while you're flustered and eventually you won't get flustered so easily.

### Try this...

- ✓ The best exercise: **Drill sessions** with one or more classmates—take turns at the board with the others asking questions. Make these brutal, take no prisoners and pull no punches! Include a constant review of the basics, previous material. This will do more for you than any other suggestion given here. **IF YOU DO NOTHING ELSE, DO THIS!**
- ✓ Ask questions at seminars and in class, get used to *thinking* in public.
- ✓ Give oral presentations, take public speaking classes.
- ✓ Play team sports—for learning to cope with pressure and dealing with the unexpected.
- ✓ Volunteer as a tutor—students can ask you anything, there is no way to prepare in advance for every question.

## 4. TAKE THE REINS

Most of the training you've had up to now has been in isolated capsules, given to you in class and taken back at exams. The hierarchical structure of education can lead to the attitude that if it's important, someone will demand it of you, and if it isn't being demanded, it isn't important. This attitude will come back to bite you in the backside!! What you are being told and taught now is only part of what you'll need for success, and unfortunately it's the easy

part. Ultimately YOU will be responsible for directing, checking and correcting yourself, and you must develop confidence in your judgment. Do not let good grades lull you into a false sense of security.

You will eventually be expected to judge the work of others—as a reviewer for papers and grant proposals, as a committee member for student exams or for hiring, as an instructor judging the work of students. This is a chair you may not be comfortable in yet, so start developing a critical eye now.

As a scientist, you will have peers—collaborators or reviewers—who will understand and comment on parts of your work. But never again will you have the thorough direction, review, and error-checking—i.e. the security—that you've gotten used to from your teachers and advisors. It is a very different feeling NOT TO KNOW whether you are right or wrong, or even if there IS a 'right' answer at all. You must do your best, try for better, learn to trust yourself, and to accept the consequences with self-confidence if you make a mistake (see #1).

### **Try this...**

- ✓ **Drill sessions** will exercise your ability to evaluate others' arguments (when you are the questioner) and give you experience as 'the authority'. Coming up with good questions and figuring out the solutions is harder than you think! **IF YOU DO NOTHING ELSE, DO THIS!**
- ✓ Don't compare assignments with friends before turning them in—do your best and take the consequences.
- ✓ Try to find errors in your incorrect solutions, don't use the TA to do it for you.
- ✓ Be a TA or tutor if possible.
- ✓ Don't wait for profs to tell you what is important—not everything that is important will be tested, and not everything that is tested is important...
- ✓ Review the basics **CONSTANTLY**, even if it's not asked of you. You may not need it this term, but you **WILL** need it again. Don't wait to be told—by then it will be too late.

## **5. FIND MENTORS**

Preferably not ones who will sit in judgment of you (advisors, committee members, etc.) as you are less likely to open up fully, and therefore less likely to admit and face weaknesses. Most have passed through a difficult—if not outright painful!—adjustment from passive student to active student (i.e. scientist). They just don't mention it. Part of the reason goes back to #1, that it's very difficult to admit you're less than perfect—even if it means you never strengthen skills that need it. So a neutral perspective from someone supportive whom you trust and respect can make all the difference in the world.

### **Try this...**

- ✓ Post-docs, research associates, and professors emeriti (retired)
- ✓ Profs from other departments
- ✓ Scientists in industry, consulting
- ✓ **NOT YOUR PEERS!** (They can definitely be a strong source of support, but often just gripe. What you need is the perspective from someone on the **OTHER** side of the fence!)
- ✓ Men can be great mentors too! Most would be pleased to fill this role. They have a useful perspective to offer—they may know better the standards that this system will hold you to—and you will need to deal with them eventually...

## **6. GET TO KNOW YOUR PROFS**

Start now! They're only human. But because they've held this position of authority for so much of your life, there is sometimes the tendency to invest them with superhuman powers. And they don't willingly dispel that image. If it seems as though they're really smart and know everything, chances are they've been teaching the same class for a dog's age and have had to answer any question you could ever come up with. Part of deflating this myth is getting to know them! Feelings of intimidation will start to fade when you realize they are **JUST LIKE YOU** (only older and, most likely, a different gender...) and they **DON'T KNOW EVERYTHING** (but don't hold your breath waiting for them to tell you that...)

### **Try this...**

- ✓ Use their office hours.
- ✓ Talk to them about class, their research, your interests. But keep it academic, not social! The idea is to start on that transition towards *intellectual colleague*, not little girl/groupie!
- ✓ Solve problems on the spot in front of them (e.g. the hard problems you'll be doing—see #1!) even if you don't think you need help. Brain-lock can happen even when you know what you're doing.

- ✓ To stretch the ‘athletics’ analogy—think of them as your coaches, whose job is to push you in the direction **YOU’VE** chosen, perhaps a little harder than you’d like! But chances are, they want the best for you and are not just out to make you suffer.
- ✓ Hit a different one every week and don’t be intimidated out of your time—for that half an hour they work for YOU.

## 7. BE PATIENT WITH YOURSELF

Up to now you have been handed problem sets carefully crafted to be solved in one evening, mainly for the convenience of being graded production-line style by TA’s. Totally artificial. And that will end abruptly. Even assignments that may have spanned many days usually did so because they were *long*, not *hard*. But in the realm of researcher, you’re tackling questions which may take weeks or months to figure out: ‘the life of a researcher is about being confused all the time’. The change will likely come in your grad classes or thesis research. Solutions may take you much much longer than before, and this can lead to panic in overachievers who are used to solving things quickly and dread the loss of that positive feedback. Feelings of failure may creep in, so see #1.

Resist the urge to get help at the first sign of difficulty—this bypasses the path-finding your brain needs to be exercising, deprives you of a healthy experience dealing with small-scale failures (see #1), and ultimately undermines your confidence in yourself (which is something you’ll need for exams, defenses, job interviews, life!) Getting the right answer on the homework is an insignificant benefit to compensate for the tremendous damage done by developing a sense of intellectual dependency on others.

### Try this...

- ✓ Resist the temptation to turn to your pals if you’re stuck. If necessary, ask your prof for just enough of a hint to get you un-stuck. It is not the right answer, but rather that *you* reach it on your own, that is important.
- ✓ Try sleeping on it. You’d be surprised how many times you’ll wake up with a fresh idea or new approach to try, sometimes even with the problem solved! Note: this requires you give yourself lots of time, so...
- ✓ Start assignments *the day you get them*. (Yeah, right.)
- ✓ OK, at least read through them, flag the hard problems and **start** pondering those!
- ✓ Excellent & fun exercises: chess games, cryptic crosswords, some computer games, long novels—anything which requires sustained concentration.
- ✓ Turn off the TV, it exercises a short attention span!

## 8. LISTEN TO YOURSELF

This goes hand-in-hand with ‘Taking the reins’. The time is approaching when the rules are not so clear anymore, and the direction is not laid out for you. This can be frightening to someone used to the predictability, structure, clear milestones and immediate feedback that characterized a classroom education. Many students start to worry about the-rest-of-their-lives, choosing the ‘right’ path so that the familiar external measures of achievement will continue. It requires confidence and an understanding of yourself NOT to bend with each breeze—there will be lots of pressure on you to live up to what may be an impossible ideal. But that is not necessarily what is best for you. Turn off the TV (again) and take quiet time to ponder your path.

### Try this...

- ✓ Don’t focus on the rest of your life, but consider what you like enough **THIS** year that you want to do more of it **NEXT** year.
- ✓ Eventually your path will solidify (a bit!) but don’t be surprised if it continues to evolve throughout your life.
- ✓ You must be flexible, and be prepared to change if needed—if the first configuration you try fails, then just try another (see #1 & #2!).

## 9. DO IT FOR THE PLEASURE OF IT

One of the most crippling aspects of the overachiever’s life is that the greatest pleasure comes from the *recognition* of having solved a problem, not from the *experience* of having solved the problem. As academic life becomes more competitive, and big fish in little ponds start moving to bigger and bigger ponds, it becomes harder and harder to be *the one* at the top of the class. If this has been the primary motivation for your academic success, you may find one of two things awaits you: a big vacuum, as you redefine your motivation and sense of self, or a life of agonizing stress as you struggle to stay at the top of the heap.

Your choice of subject will have a HUGE influence on whether or not you have the enthusiasm and fascination to stick with the long hours, hard work, and inevitable bumps, scrapes, and failures. If motivation doesn't come from the inside—that rush that comes from finding a solution or discovering something new—it will be a disheartening experience that can kill both confidence in yourself and love for science. Your schooling is not the end in itself; it is a period of training and compromise, that in the end is to prepare YOU to do what you love. So spend some time finding out what you love. It's not only OK, it's essential!

- ✓ “The joy of research must be found in the doing, as every other harvest is uncertain.”
- ✓ Some pills you will have to swallow, it's part of the training.
- ✓ But you MUST find out what you love (see #8!). NOT optional!

## 10. TAKE MATH (LOTS OF IT)

### Why?

- ✓ It's the language of science.
- ✓ For the mental training—rigor, logic & reasoning, problem solving, observation, describing patterns.
- ✓ It's excellent material for your **drill sessions**. **IF YOU DO NOTHING ELSE, DO THIS! (HAVE YOU GOTTEN THAT MESSAGE YET OR DO I HAVE TO REPEAT IT???)**
- ✓ It can eventually bring an unbelievably awesomely profound and satisfying picture of the universe. But ‘...there is the tendency to confuse the ability to factor polynomials with a genuine talent for math.’ As with any science, you need to stick with it to get past the routine and on to the profound!

### A WORD TO EDUCATORS

I end with a word to educators—parents, teachers, school administrators, professors, advisors, and mentors: *it is not that hard to change the message you send and to adjust the balance of skills you teach*. These few preliminary suggestions are unsophisticated, may be impractical, are not necessarily appropriate at all grade levels, and are intended mainly to raise the subject and start ideas flowing. But some of these could really make a difference...

**The messages to change: There is an authority and you (the student) are NOT it. There is a right answer and we have it.**

#### The new messages:

- ✓ A passive understanding of what is taught is different from an active understanding which you apply and use. Application of the knowledge is what begins to transform you into ‘the authority’ and gives you confidence, not just in your ability to *learn* concept but in your ability to *use* them.
- ✓ Defending yourself and confronting an authority figure are OK; even the ‘expert’ can be wrong.
- ✓ It is your ultimate responsibility to be self-correcting.
- ✓ You must play an active part in improving yourself. There will not always be someone else to point out exactly what you have done wrong. You may not even know if there IS a right answer, much less what it is or if you’ve found it.

#### Try this...

- ✓ Have students make up example test questions (with solutions!) based on what they have learned.
- ✓ Give students improperly worked problems, they must use their knowledge to locate and correct the mistakes.
- ✓ On every homework assignment, one correct answer is *marked* as wrong. Students must go through the assignment on their own, find those graded incorrectly, and respectfully confront the instructor. This is known, understood, and expected. Starts it as a game in grade 1 and it will eventually become second-nature!
- ✓ Don't always mark the specific mistakes on assignments. Force students to seek out the correct answers and track down their own errors.

**The messages to change: We will prepare you for everything and warn you in advance.**

#### The new messages:

- ✓ Not everything you encounter will be tailor-made to exercise at a comfortable level what has just been taught. Some things will be HARD and you will have to learn how to cope with confusion and frustration.

- ✓ Some tasks will be combinations of concepts that won't be explicitly pointed out to you. Just because you know how to work the ignition, brakes, accelerator and steering wheel of a car individually doesn't mean you have what it takes to drive it across the country by yourself. Integrating concepts is as critical as understanding the concepts in isolation.
- ✓ By definition, no one can prepare you to deal with the unexpected. The only way to get good at that is to be forced to do it.

**Try this...**

- ✓ Give pop quizzes right from the start! Nothing hard at first, just as practice at having to think quickly and face the unexpected.
- ✓ Regularly give one assignment question which is harder and *is flagged as such*, so students are prepared for a bit of frustration and challenge from that one. Try to address the attitude that struggling with something implies inadequacy, failure. The 'brightest' kids in particular (so-called on the basis of their test scores...) need to feel what it's like to tackle something which is truly beyond them. It may never have happened before.
- ✓ When handing out new assignments, give students some time to read through problems right then, or do it with them initially. This is to reinforce the idea that they should at least attempt the assignment early—get their brains chewing on the questions—since you will be giving them some hard problems which may require patience, sustained effort, and time for reflection.

**The message to change: We will judge you by 50-60 minute written examinations for which the topics are narrowly and clearly defined.**

**The new messages:**

- ✓ You will have to be able to think on your feet.
- ✓ You will need to function independently (in isolation).
- ✓ You will have to overcome different kinds of anxiety in order to focus on a problem. Public speaking anxiety is very different from written test anxiety!
- ✓ You will be expected to function under a range of conditions and not just those which are most convenient for instructors to grade.
- ✓ You will be expected to understand and use material which wasn't necessarily taught within the weeks since the last test.

**Try this...**

- ✓ Oral examinations or presentations in small classes.
- ✓ Ask students questions in class—really easy stuff. But start early (like grade school), call on *everyone*, and keep it up. Give them an opportunity—through lots of practice—to get over the anxiety of being wrong in front of others.
- ✓ On EVERY assignment: add a question taken from ANYWHERE in the prerequisites. You can't prepare students to interpret Shakespeare in 4<sup>th</sup> year by teaching them Nouns in 1<sup>st</sup> year, Verbs in 2<sup>nd</sup> year, Adjectives in 3<sup>rd</sup> year. Yet, this compartmentalization is often the approach taken with many subjects in science and math.
- ✓ ...but make these review questions OPTIONAL! At some point students must start taking responsibility for keeping on top of what they'll need; not everything that is necessary can be made a requirement. But profs take the role of guide, pointing out what *needs* to be done without forcing it.
- ✓ Encourage students to team up and study together in **drill sessions! IF YOU DO NOTHING ELSE, DO THIS!**

**To be continued...**

## **CONCLUSION**

I am very optimistic, for myself and others. The old system won't change quickly, but we can change ourselves and help each other. I am now struggling with things many 8-year old boys can already do. But it is a struggle undertaken with confidence and humour. It can be done, and it's never too early or too late to start.