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study! How have you dealt with them?

Paulo F. Ribeiro

Letters
to Junior

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ABU Editora is the publishing house of ABUB - Aliança Bíblica Universitária do Brasil - an international evangelical missionary movement whose aim is to evangelize and disciple university and high school students and professionals, in partnership with Christian churches and professionals. Its activities are carried out by the students and professionals themselves, through Bible studies, camps and training courses. ABUB is part of IFES - International Fellowship of Evangelical Students, an international organization that brings together more than 100 similar student movements around the world.

This issue was produced with the support of the Logos and Cosmos Initiative, an IFES initiative in Latin America and French-speaking Africa. A specific work team was set up to produce this publication.

Preface

Guides can help us navigate through life. The best guides are those who have more life experience than us and want the best for us. These guides may be parents, older family members, teachers, mentors, or the leaders of the different communities that we are involved in.

At a university, students and young researchers and teachers have to navigate through the complexities and challenges of university life. There are multiple dimensions in play: educational, political, social, philosophical, economic, and personal. As a Professor at an Australian university, I observed striking and profound changes in universities compared to when I was a student. Universities around the world are now run like businesses and driven by money, management, metrics, and marketing. This orientation has suppressed values such as curiosity, community, creativity, character, and coherence.

Members of university communities encounter stress, disillusionment, cynicism, uncertainty, and mental health problems. It is easier to face challenges when one can anticipate them, have a vocabulary to describe them, solidarity with others, and guides to navigate through them or around them. For individual flourishing and the common good it is important to maintain intellectual and moral integrity. Educa-

tion should not just be about acquiring knowledge and/or skills but also building personal character and virtue.

I am delighted that this book is being published. The author draws on decades of experience and has maintained his intellectual passion and integrity, despite many challenges. The book will be a wonderful guide to the junior. The letters are written with creativity, clarity, compassion and insight. They will stimulate significant questions and discussions. I wish I had encountered such a book when I was younger. I hope it will be a catalyst for much contemplation and action, both by young and old.

Ross McKenzie

Leader, Logos and Cosmos Initiative

Emeritus Professor of Physics, University of Queensland

Presentation

The ebook you are about to start reading is the fruit of many years of work, meditation and writing by Professor Paulo Ribeiro, a reference for many students, researchers and teachers in Brazil. After reading the texts that Paulo published here and there inspired by the teachings of C. S. Lewis, notions and ethics and his experience in Brazil and abroad, I proposed organizing this ebook as a collection of letters to a young researcher, our Junior researcher.

Many of us struggle to understand how to navigate university, whether it's due to a lack of healthy references nearby, being the first in our families to reach higher education or even due to the period of isolation during the pandemic. That's why we need to lean on the shoulders of giants and walk together in a loving and virtuous proposal of how to live academic life.

The idea is that at the end of reading each letter, motivated by the question left by the sender, we can take a moment to reflect on how we are experiencing university, our studies, our research and our relationships. You could write a diary of responses to each of the letters, or you could also organize a reading and conversation group about academic life based on the Letters to Junior - after all, the most significant changes are made in community.

This work has been carried out in the scope of the Logos and Cosmos Initiative of IFES in collaboration with the John Templeton Foundation. This program seeks to promote projects that integrate theological and scientific perspectives to address the challenges of our context.

Enjoy your reading.

Deborah Vieira

Catalyst of the Logos and Cosmos Initiative and editor

Introduction

This ebooklet is the fruit of reflections made during a professional career as an engineer, researcher and academic over a period of more than 45 years. In these reflections, I have tried in a concise way, to relate my experiences and analyze them from the perspective of humanist ethics and Christian perspective. However, since this booklet can be read by people with other religious or philosophical backgrounds, I am not making an apology for the Christian faith, but rather for the objectivity and universality of the principles of law and moral behavior. The aim is to encourage young students and academics to reflect on topics that they will eventually have to face in their student or professional life.

As for my personal experience, my original plan was to study medicine. But in high school, when studying biology, I soon realized that medicine wasn't for me. Then I changed my focus to engineering because it was the second hardest entrance exam - I wanted to prove that I was a smart kid - the stupidity of youth.

I passed the entrance exam for the basic cycle of technology, and the first-year classes were the same for all 600 students selected for all of the different branches of engineering and technology. At the end of the first year,

depending on the classification of the grades, the final choice came. My hopes of being selected for Electrical Engineering were very slim, given my performance in the entrance exams. I was the 310th out of 600. Normally, Electrical Engineering would be filled with the highest grades - and there were only 50 places available.

When I had to select my options before the start of the second semester, I was filling in the form when a young man I knew saw my first choice and said: "Electrical Engineering? You haven't got a chance." He was at the top of the list for the entrance exam. That hurt me deeply. And that warning became a living nightmare over the next few months. Every time I was tired of studying and about to fall asleep: "Electrical engineering? You don't stand a chance!" And I would open my eyes, drink some more strong coffee, and carry on for several hours until my body inevitably overcame my mind.

Finally, the final grades were published, the rankings announced, and I was in the top 15 of the 50 places reserved for Electrical Engineering. I was happy, but with many doubts as to whether I had made the right decision. I didn't see then, what I see so clearly today: the beauty and broad vision of science and technology with its restorative function in society as a part of the infrastructure that sustains life.

I learned an unavoidable lesson in this process: what really matters is not how you start, but how you end a phase of life. There are always opportunities to change direction, correct the path, work a little harder, even listening to words that may seem hasty and uncomfortable, but which end up working positively for our own good.

After graduating I had the chance to do a master's degree, but after a few weeks I rejected the offer and went to work

as an engineer. I completed a specialization course and later a doctorate in England at the University of Manchester. I then immigrated to the United States where I worked as a university professor, researcher, and engineer in the USA for 24 years. Then I was invited to teach in the Netherlands, where I stayed for another five years before returning to Brazil.

The challenges were great, continuous and of various. We always must be on our toes because the professional environment in industry or academia demands a great deal of care, dedication and responsibility.

This booklet consists of a set of letters organized into subsections covering topics related to the student life, intellectual life (including philosophy, technology and society), and life vision. At the end of each letter, there is a question for the reader, our "Junior" researcher, whose aim is further reflection on his own life experiences in the light of the ideas and provocations presented. Thus, don't rush to read the whole booklet in a short time. You can read one letter a day and write a journal of your own responses to my letters.

The author hopes that these short narratives can be of help to undergraduate and postgraduate students, researchers, academics and - why not - professors.

I am very grateful to all my colleagues, friends and advisors, who helped me with their wise council throughout my long career. People who, as Brazilian composer Caetano Velozo said: "love elected you to love." Marcio, Robinson, Frans, Marcos, James, Denis, John, David, Reijer, Rogers, Ron, Nolan and so many others who left their indelible marks on my professional life. And above all to my parents,

Williams and Jacira, who taught me gently to face life without fear. "Living people, shining, stars in the night." Finally, I dedicate this book to my wife Adriana, the love of my life, and daughters Ana, Priscila, Adrita, Ruth, and grandchildren Bela, Benny, Lily, Mia, Ezekiel, Eliel, Naomi, Valeska, and Alexandra, who have brought so much joy to life. All my love to them.

Itajubá - Brazil, January 2024.

PS: One of the things the reader of this ebook may notice is a fair number of references and citations from the British writer and University of Oxford and Cambridge professor, C.S. Lewis (considered the best-read man of his generation). The reason for that is my forty-two years of reading and studying this remarkable academic and his balanced view of life. This appreciation of Lewis started when I read *The Problem of Pain*, for the first time during my fortnight's stay at Westminster Hospital in London, after a major knee operation. The pain was real, but the intellectual gain has helped me to face the difficulties of life naturally and see the world with hope and joy.

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The academic world:

a wonderful and dangerous place

Dear Junior,

The corridors of universities are a curious place. Masses of students and professors who have devoted portions of their lives to the academic world circulate freely. Some of us are drawn to that air of knowledge and research. I certainly was attracted to that atmosphere from day one.

As a student I had many wonderful instructors and very clever colleagues and friends who brought much delight to the learning process. But I also encountered a few very unexpected and disturbing figures among academics. Some were clever professors but unfit as members of an academic community.

But I readily admit that within the academia I found extraordinary men and women whose modesty, courtesy, fair-mindedness, patience in contention and readiness to see an antagonist's point of view were admirable. I am fortunate to have known them and have been blessed by their friendship and wisdom.

However, we must also admit that we have a high percentage, as any group, of oppressors, paranoiacs, weaklings, and showoffs. As C. S. Lewis would say in his essay *Lilies that faster* "The rudeness that turns every argument into a quarrel

is really no rarer among us than among the sub-literate; the restless inferiority-complex ("stern to inflict" but not "stubborn to endure") which bleeds at a touch but scratches like a wildcat is almost as common among us as among adolescents."

Thus, it seems very clear that just academic education or any kind of culture will not produce any of those qualities which will enable people to associate with one another graciously, loyally, understandingly, and with permanent delight. Let us watch out for our own behavior.

Therefore, enjoy academia - the greatest place to grow intellectually - but watch out for some possible uncharacteristic behaviors and do not let them discourage you from enjoying university life to the fullest.

And you, Junior, how have you been responding to the rude people you meet on your academic journey?

Cheers.

University culture:

what's wrong with it?

Dear Junior,

I would like to share some thoughts with you.. In the last several years universities and research institutions have gradually changed from communities which value education, competence, and quality to a culture of rewarding publicity and fund raising. In many cases, university academics have become account managers and not inspiring scholars.

Now, this is not to say that the university system has ever been free from the usual politics of any human institution which is in part based on rewarding individual achievement. There have been too many cases of individuals who have exceeded in their academic performance but were denied promotion and recognition due to personal, cultural, racial, gender, religious, or political reasons.

Although subtle cultural and political discrimination continues to take place, the system now seems much more democratic. It is all based on numbers and economical expediency. The number of publications and amount of funding obtained are the main components of the magic formula. What is wrong with that?

The problem is that this model promotes a culture that leads

universities to be less and less a place of learning, of wonder, of discovery and of teaching wisdom to a business enterprise. Then the survival instinct kicks in and we are all sucked into the process: we abandon the love of knowledge in favor of power and publicity.

And the path seems very clear if you want to get to the top:

1. Move away from the love of researching and teaching
2. to the lust of telling others about it, and the ability to get more funding,
3. until you are no longer interested in your subject itself but only in promoting yourself as an expert on it.

And it will not stop there! If we are not careful, we will sink lower and become interested in our own personalities and then in nothing but our own reputations. That is what the system encourages: our already flawed human tendency of self-aggrandizement.

But we should not despair or be discouraged! Look around to others who have kept the initial love of knowledge pure and continued nurturing the university as a place to learn and create for the common good - and choose a teacher you appreciate to be your advisor. This will not only help your development but will also inspire you to experience university in a healthy way that isn't driven by money or fame.

The academic bean counters, and fake scholars will soon be gone, and their relevance forgotten, but the time you invested on a broad education and the communal work with those colleagues who see their academic profession as a sacerdotal calling will last much longer.

I think the way to the top, if you are an ambitious academic, should be the path of integrity. And be aware that the higher you go, the air becomes more rarefied - and you

may find yourself unable to breath - and dead at the summit. Only when one gives up this desire to reach the top for the wrong reasons, will he start to truly enjoy the pleasure of academic life.

Can you think of any teachers who inspire you to work for the common good? What are the main traits of the personality?

Cheers.

A fictional afterlife dialogue

Dear Junior,

Do you like fiction? Let me know what you think of this short fictional story I wrote it inspired by C.S. Lewis' book The Great Divorce. It is a dialogue that takes place in a paradisiacal country where Billy Joego, a research scientist from a hellish and gloomy province, comes for a short visit to see his former associate, Jim Vander Broke. They both had been famous scientists on earth.

-Wow - said the scientist from the province, glancing around some of the constructions and technologies displayed in the paradisiacal country.

-Wow what? - asked his former colleague.

-I mean, well, all this. I should like to work on these new technologies and expand their applications.

-I shouldn't bother about that if I were you.

-Isn't one going to be allowed to work on scientific projects here?

-Looking comes first.

-But I've had my look. I have seen just what I would like to do. I could quickly become a major player in this country, a principal investigator, chief researcher or director of new projects...

-You have not changed much, have you? When you worked on research projects on earth, at least in your earlier days, it was because you glimpsed a world where our limitations could be overcome by the appropriate use of technology. The success of your project was measured by its ability to assist other people with their needs and to help them to think about greater possibilities. But here you are having the thing itself. It is from here that the message came. There is no good in expanding these technologies here, for we see it already - all that it can be.

-Then there's never going to be any point in doing research in this country?

-I wouldn't say that. When you've grown into a person there'll be some things which you'll see better than anyone else. But at the present, your business is to see.

There was a little pause.

-That will be delightful - said the researcher from the province, presently in a rather dull voice. - How soon do you think I could lead one of the teams working with new applications of these technologies? I doubt if you can find a more qualified candidate - he added.

Jim burst into laughter.

-Don't you see? You'll never be able to work on these projects in the way you're thinking about them? - he said.

-You are forgetting how it all began. You loved research as a means to demonstrate the beauty and usefulness of electricity and electronics.

-Oh, that was ages ago, - said the provincial researcher. - One grows out of that. Of course, you have not seen my latest works in field research and new publications. One becomes more and more interested in research for its own sake.

-One does, indeed. I also have had to recover from that. It was all a snare. Powerful simulation tools, paper writing, and international conference presentations are all necessary down there on earth, but they are also dangerous stimulants. Every researcher is drawn away from the love of doing research as part of our professional calling, to the love of telling others about it promoting our own expertise, or the financial compensation, till they cannot be interested in researching itself but only in what they say about it or how they can harness it to promote themselves. For it does not stop at being interested in research, you know. They sink lower and become interested in their own personalities, and then in nothing but their own reputations.

-I don't think I am much troubled in that way - said Billy stiffly.

-That's excellent - said Jim. - Not many of us had quite got over it when we first arrived here. But if there is any inflammation left it will be cured when you come to the fountain.

-What fountain is that?

-It is up there in the mountain, - said the country researcher. - Very cold and clear, between the two green hills. A little like Unconsciousness. When you have drunk it you forget forever all proprietorship in your own works. You enjoy them just as if they were someone else's: without pride and without modesty.

-Let's change the subject. What about interesting people to meet here?

-Everyone will be interesting.

-I was thinking about renowned people. Shall we meet Michael Faraday, Hanna Arendt, Nise da Silveira, Edward Said, James Maxwell, Marie Curie, Milton Ribeiro, Paulo Freire etc.?

-Sooner or later - if they are here.

-But don't you know?

-Well, of course not. I've only been here a few years. All the chances are against my having run across them - there are a good many of us, you know. Don't you remember that our professional society used to have hundreds of thousands of associates when we were active members?

-But surely in the case of distinguished researchers, fellows, and noble laureates you would hear about them?

-But they are not distinguished; no more than anyone else.

-Do you mean there are no famous researchers here?

-They are all famous. They are all known, remembered, recognized by the only Mind that can give a perfect judgment.

-Oh, of course, in that sense. One must be content with one's reputation among posterity - said Billy.

-My friend, - said Jim. - Don't you know that you and I are already completely forgotten on the Earth?

-What is that? - exclaimed Billy. - Do you mean those Neo-Virtual Researchers have won after all?

-Lord loves you, yes! - Said Jim, shining with laughter. -

You could not get \$25 per hour for your consulting fees even in Europe or America. We are dead out of fashion.

-I must be off at once, - said Billy. - Let me go! Damn it all, one has one's duty to the future. I must go back to my friends in the province. I must write a new book, start an advanced technical committee, become the editor of a new scientific journal, or a director of a new institute. I must restore my reputation and have plenty of publicity. Let me go. This is beyond a joke.

And without listening to the paradisiacal country researcher's reply and appeal for him to stay, the researcher from the hellish province disappeared in the dark.

What did you think of this story, Junior? Have you ever thought about how in an afterlife you would look back at everything you've done on earth?

Cheers.

What's an ideal lecture or presentation?

Dear Junior,

I am happy to know that you are concerned with the preparations of your seminars; it was something I enjoyed doing as a student and today, as a professor, I encourage my students to do the same. It's a good opportunity to learn how to share what we learn. I hope the following comments may help you think about the range of aspects that a presentation, or even a lecture may involve. I think it can help you while you're preparing to present a seminar, the results of your research and also to help you understand the work your professors face every week.

An ideal lecture involves clear organization, engaging opening, clear communication, visual aids, relevance, adaptability to the audience, time management (you don't want to bore your audience), passion and enthusiasm. Remember, what works well for one audience or subject may not work as effectively for another (for example, you won't prepare a seminar to your colleagues the same way you will present your project proposal to an examination committee).

I recall making a presentation at the University of Texas, in Houston, about a superconducting magnetic energy storage system which went very well. I had to speed up the presentation as we

were running out of time. That probably contributed so much to my enthusiasm that at the end I was invited to make the same presentation at the Houston Advanced Research Center, also in Texas. I was given twice the time I had for the first presentation, but the result was terrible. The whole thing fell flat, and the energy and spiritedness of the first disappeared completely.

Prof. Lewis (a magnificent lecturer according to his students) had various principles about lecturing. I once saw a documentary program on the BBC that interviewed some of Lewis's closest friends from Oxford, and one of them said something like this: "I remember him saying once a lecture should always start about ten minutes late and should always end ten minutes early. And if possible, there should be a complete change of subject in the middle of the lecture as well. But he lectured from notes not from a script, and he lectured with exemplary lucidity. I mean it was always so beautifully, clearly laid out and delivered."

I have great difficulty repeating a lecture with the same enthusiasm. I love to share my work, but it needs to be hot - out of the oven as I usually spend a lot of time thinking about what I need to say before the event.

An effective lecture also requires engaging in personal storytelling, some humor, much interaction, use of analogies and metaphors, multidisciplinary approach, personal connection with the topic, respect for diverse perspectives, rigorous intellectual engagement, as well as other things we can talk about another time. The good lecturer also needs to be a rigorous thinker, have commitment to intellectual depth and exploration, and challenge the audience to think critically.

I will never forget listening to a top philosopher in the

USA, Nicholas Wolterstorff, recounting how he decided to study philosophy. His parents had sent him to college, but he really wanted to stay at the farm in Minnesota. Since he did not have an option, he went all the way to Michigan. There, he says, the first lecture was given by a philosophy professor who had a good time mentioning the books they needed to read. The professor was very knowledgeable, clearly not very organized, but spoke with such enthusiasm about philosophy that by the end of the lecture the young farm boy had made a life-time decision and said to himself: "That is all I want to be: a philosopher." And he became a great one.

Thus, when preparing your next presentation, think about some of these points. But above all, know well the content to be presented, be organized, give wings to your creativity, and express it with great enthusiasm.

Do you see that the whole thing is very complex and involves organization, clarity, and enthusiasm? When you're preparing a presentation, remember how challenging it is for your teacher to prepare your lessons too. This will help you look at your teachers' work with more love and mercy and may even make you marvel at their dedication.

What about you, Junior? What kind of class do you like best? And what did these teachers do to make you like the approach used?

Cheers.

How creativity and innovation work in research?

Dear Junior,

Since I am working mostly with postgraduate students, I am constantly thinking how I can help them to be more creative and innovative. Creativity is inherent to all human beings, but sometimes we are trained by the educational system to be un-creative and need to go through an un-learning process.

Many times, university courses have become sophisticated high school education classes and that makes the whole process useless for a creative life. We need to go back to the primary school approach - of trying things out - unafraid. Learning for the sake of learning is the trigger for the creative process - even though it's difficult when you must study, thinking on how much it will help you financially in the future.

Typically, researchers, through innovation, uncover, select, combine, re-combine, analyze, synthesize, and modify creative ideas and concepts - some of which already exist. And the more familiar we are with the concepts and theories, the more interesting the new product will become.

I will never forget the advice my academic supervisor at the University of Manchester gave me, after I had been experimenting

with many different circuit topologies for modeling aggregate load compositions. He seemed to be happy but made me temporarily disappointed when at the end of our meeting after lighting his pipe again he said: "Keep playing around!" It was like, continue to be creative... The more you try, the clearer things will become."

Creativity is the initial phase of the imaginative process, focused on generating ideas and insights, while innovation is the subsequent phase, centered around implementing those creative ideas to bring about visible and valuable change. Both creativity and innovation are essential for progress, growth, and problem-solving in various fields, such as business, science, art, and technology.

The process seems to have three natural steps:

1. Become very familiar with the subject.
2. Relax, imagine, play around and be receptive to other ideas.
3. Then consider a better way which has not been proposed before.

The key to creativity is receptivity - a kind of openness to other ideas and tolerance to chaos. Not that creative people like confusion for its own sake, but because they enjoy the challenge of solving problems.

Some general suggestions:

- Don't be afraid of being wrong or being called an eccentric.
- Be curious, playful and enthusiastic.
- Don't wait and let your supervisor tell you everything you need to do.
- Be spontaneous and unguarded and retain the freshness and openness of childhood.
- Be aware that your creative attitude might be penalized by a narrow-minded supervisor.
- Be innovative in order to make things better and not just more efficient, lest we fall into the technocrat trap.

- Do not worry about success - work hard at your current assignment and what people call creativity and innovation will come unsought.

Finally, find a place, time and condition in which you can let your mind wander freely and explore all the possibilities of your current research assignment (sometimes that place won't be the big and famous research centers, keep an open mind) - and enjoy this great profession and wonderful world, which is hardly a product of blind and uncreative forces.

Thinking about what you're studying right now... is there any room for you to be more creative?

Cheers.

Why this obsession with innovation?

Dear Junior,

Have you noticed that "innovation" has become a sort of buzz word for universities and business enterprises? Maybe it's more of a technological thing, but I'm sure that to some extent it also appears in other areas. As stated in the previous text, I think Academia needs more creativity and innovation, but I have been particularly uncomfortable with such utilization, as it reflects more a marketing strategy than actual innovative ideas and concepts.

Often a researcher develops something without knowing how it can be used. That's why we need to learn how to think critically. Upon reflecting on this issue, I have compiled a list of comments which I hope may help some young researchers to be more careful with this terminology.

1. If we want to create an intelligent and sustainable society (smart cities, for example) perhaps it is time to come to terms with the reality of the obsession with "innovation" and stop neglecting the other components of this development.

2. There is a prevailing idea, particularly among those working with new technologies, that innovation is inherently

superior to maintenance or simply incremental improvement of life-sustaining tools and infrastructures. The word "smart" has become a symbol of innovation for anything.

3. Innovation has the power to change our lives for the better, making things more convenient and economical, and some of the devices we have seen emerging as a result of innovation, such as the internet and smartphones, seem to confirm this. I can imagine that there lies within this demand for innovation just a hint of the universal need for new beginnings.

4. Perhaps one of the biggest attractions for innovation in a capitalist, commercial society is the possibility of its creators becoming rich. And since we tend to equate money with real value, we think of innovators as inherently more valuable to our society than other people.

5. There are dangers in prioritizing innovation. We educate generations of researchers believing that one of the best strategies for a career is to invent something new, create an idea, an innovative application, or start a new business. However, this can be destructive, considering the high failure rate of startups. As if that were not enough, we also have generations of people who despise jobs that do not require creativity or innovation.

6. Our obsession with innovation leads us to devalue maintenance and conservation, which are necessary to keep our world running. It is much more attractive to invest money in a new technology startup than to invest in repairing roads or basic sanitation.

7. Of course, there are many reasons why our infrastructure is so bad, but our prioritization of innovation, instead of improving and maintaining existing infrastructure, plays a significant role in this.

8. Our relentless demand for innovation also encourages the development of economic phenomena that do not always work in our favor. For example, consider planned obsolescence, the idea that technology companies specifically design their products to expire or become less valuable with the emergence of a newer version.

9. We can argue that this can happen anyway; after all, companies are expected to behave in ways that maximize their own interests and sell new products. However, it is our continuing demand for new products that allows this vicious cycle to continue undiminished and feed back into the problem (not to mention the environmental problems this causes).

10. We see countless "inventions" that are inferior copies of existing technologies or combinations of unnecessary technologies. Many are innovating just for the sake of innovation, instead of truly essential technologies. Sometimes the marketing department injects changes in the terminology and *BOOM!* A new technology seems to be born, but it is just an old concept.

11. No matter where you fall on the political spectrum, you are likely to recognize that there is a problematic issue of social inequality that is only getting worse. A boss of a large company often earns more in a single day than a worker earns in a year. A person who invents an application that allows people to buy and sell services can earn millions, while people who buy and sell on the platform fight to survive.

12. I am not against innovation, I am a scientist, but I believe it is time to rethink this enticement towards innovation, without identifying which areas really need advanced improvement: prioritizing projects that keep us invested in the assets we already own.

13. Finally, regarding the nature of our task as developers of new technologies and knowledge, we need to be careful to avoid the fatal pride that normally accompanies our specialized calls. I am a little uncomfortable when we claim to be a special class of "creators and inventors". Humility is required. As author. C.S. Lewis put it in one of his letters: "'Creation' as applied to human authorship seems to me to be an entirely misleading term. We rearrange elements [...] There is not a vestige of real creativity in us. Try to imagine a new primary color, a fourth dimension, or even a monster which does not consist of bits of existing animals stuck together". And that seems to make sense, because as it is said in Ecclesiastes 1:9 (NIV): "What has been will be again, what has been done will be done again; there is nothing new under the sun."

What are people talking about innovations in your field, Junior? And what do you think about that?

Cheers.

I am a scientist, but I hate scientism

Dear Junior,

Let me say first that I love science. But I hate the exaggerated trust in the efficacy of the scientific methods. And it is in this context that the term scientism arises. Scientism is a philosophical worldview that places unwarranted belief on the techniques and findings of the natural sciences as the single authoritative means of acquiring knowledge of reality.

Promoters of scientism argue that science can provide complete and comprehensive answers to all questions, even those conventionally considered philosophical or metaphysical. Enthusiasts of scientism fail to see that science is dependent on wisdom for the direction of meaning. Too often we lose faith in our own rationality by surrendering the distinctions between means and ends, people and things, value and fact, mind and matter, subjects and objects, truth and falsehood, consistency, and contradiction, whenever scientific language is used. We are intimidated and stifled by jargons. Long words should not be allowed to hide elementary rational contradictions.

Science is derived from the rational method of philosophy and is dependent on it for estimates as to the meaning and

value of what is proposed, observed, or disclosed. Objectivity itself is a judgement of value. Truth, meaning, purpose, goodness, importance, none of them are scientific facts; they are, says Lewis: "wholly immaterial relations" - a sort of a "sweet poison of false infinite". Those who stand outside all judgements of value cannot have any ground for choosing one of their own impulses over another, except the emotional strength of that impulse. In other words, one cannot choose between impulses if they cannot judge them.

Let me bring one point that could be seen as sacred or religious, but I like to think more in terms of the dialectic nature of human lives - as we need to keep a humble attitude when doing science: we need to be aware of our own finiteness and not use technology as an ultimate solution to eternalize (sustain) life - the lie of "the sweet poison of the false infinite" - which C.S. Lewis explained in as "the wild dream that [the] planet [...] can be forced to sustain forever the sort of life which is contained in the loins for our own species - a dream begotten by the hatred of death upon the fear of true immortality".

It is well to note that at least two other terms carry meanings related to the word scientism. The first is "logical positivism," a system of thought that became popular in the 1920s. The second is "reductionism," a more recently accepted word that is becoming rather common, particularly among philosophers of science such as Carl Mitcham. In such a purely reductionist worldview, human accountability does not exist. Although popular in three different eras, the three terms - scientism, logical positivism, and reductionism - are sufficiently closely related that distinctions may be subtle.

Harvard astronomer Owen Gingerich writes in *God's Universe*

that "scientism is a dogmatic philosophy that can develop from [scientific observation], saying that since this is the only way we can find out about nature, that is all there is."

Neither science nor technology is likely to prosper long in a culture that defies objectivity of truth, meaning, purpose and goodness. Prof. Aeschliman (*The Restitution of Man: C.S. Lewis and the Case Against Scientism*, Michael D. Aeschliman) said: "Science is a good servant but a bad master, a good method for investigating and manipulating the material world, but no method at all for deciding what to do with the knowledge and power acquired thereby."

Let us not allow scientism to win the battle against science. Let us not permit scientism bring the end of *Homo sapiens* - indeed the abolition of man.

Have you ever thought about how there is no such thing as neutral science and that we need other areas of knowledge or even morality or faith to reflect on how to do and what to do with science? I look forward to receiving your reply to my last letter.

Cheers.

Complexity, simplification, and reductionism

Dear Junior,

In the academy we are forced many times to simplify a model of a complex system to analyze an area of interest. Since we deal with a reduced reality and cannot consider all aspects of a system, we are forced to use abstractions and simplifications. Reductionism on the other hand attempts to explain an entire system in terms of its individual parts and their interactions, and this usually results in disfiguring the system.

I remember well the first time I needed to come up with simplified equivalents of a 230 kV transmission system at different points to study the propagation of harmonics in a certain contained region (yes, I know what I'm saying may sound Greek, but bear with me). Soon I realized that the equivalents were fine for lower harmonics, but not for certain higher frequencies, and that affected the results within the system under study. I remember being disappointed with this result, but quickly my advisor encouraged me saying: "Now you know that one single model does not function for all frequencies".

It is important to understand that simplification and reductionism are not the same things. Reductionism eliminates

features of a system, denying its reality, while simplification can show critical issues and leave less significant ones out. A simplification only becomes reductionist if it then denies the reality of that which it has left out.

The appeal of methodological reductionism is simplification. For example, the temperature of a gas is reduced to nothing beyond kinetic energy. But there is also the opposite of simplification - which I call "complexism", which is the tendency of making things more complex than they really are. This complexism (a sort of analytical snobbery) creates unnecessary sophistication which finally denies the reality of the system altogether.

Finally, I remember that I quoted Blaise Pascal's advice at the beginning of my Ph.D. Thesis: "These things are so delicate and numerous that it takes great delicacy, intuition, and mathematical precision to perceive and judge them correctly and accurately. Most of the time it is not possible to define them analytically, because the necessary principles are not ready to be presented and it would be an endless task to be undertaken. The thing must also be seen at once, at a glance, intuitively, and not as a result of progressive reasoning, at least up to a point."

Have you also noticed any points of reductionism or complexism in your field of study? How have you dealt with them?

Cheers.

Whataboutism or bulverism: *a lethal disease*

Dear Junior,

Recently, one of my friends mentioned the term "whataboutism" as a plague in our current approach to discuss anything about politics. The term whataboutism goes back to 1978, when applied to the propaganda techniques used by the Soviet Union during the Cold War. When the West criticized the Soviet Union over human rights abuses, the Soviet Union would point out crimes committed by Western nations.

Some might think this is a recent phenomenon. But back in 1944, Prof. C.S. Lewis created the term "bulverism" to describe the state of public discourse. "Bulverism" is a malady which is alive and well. A short summary of an essay introducing the term from an 1941 essay (later expanded and published in 1944 in *The Socratic Digest* under the title "Bulverism."). Lewis goes on to say:

"But things have changed, and the approach now is to show that a man is wrong before you start explaining why he is wrong. The modern method is to assume without discussion that he is wrong and then distract his attention from this by busily explaining how he became to be so silly. I call it 'bulverism.' Someday I am going to write the biography of its

its imaginary inventor, Ezekiel Bulver, whose destiny was determined at the age of five when he heard his mother say to his father – who had been maintaining that two sides of a triangle were together greater than the third – 'Oh, you say that because you are a man.'"

Lewis continues by saying that E. Bulver assures us "there flashed across my opening mind the great truth that refutation is no necessary part of argument. Assume your opponent is wrong, and then explain his error, and the world will be at your feet. Attempt to prove that he is wrong or try to find out whether he is wrong or right, and the national dynamism of our age will thrust you to the wall". Thus, be "whataboutism" or "bulverism".

This societal disease must be combated at all levels of human activities, including science and the academic world.

Have you entered into discussions using this type of approach? Be careful, Junior, do not let yourself be influenced by these sorts of irrational fashions, as they go where all fashions go.

Cheers.

Learning and civility

Dear Junior,

In my last letter to you, I talked about some bad ways of entering into a conversation. Over the years I've reflected on the amount of time we waste in fruitless discussions, in which sometimes we don't enter to reach a consensus that is good for everyone, but simply to win and feed our own ego.

The Socratic method is a form of debate between individuals with opposing viewpoints based on asking and answering questions to stimulate critical thinking and to illuminate ideas. The Socratic approach is a method of hypothesis elimination, in that better hypotheses are found by steadily identifying and eliminating those that lead to contradictions and not attacking the opponent. That's why I thought I'd bring you a compilation of some advice for dialogue, and not for contending.

A Socratic, rational debate or conversation is at the heart of the academic enterprise. Rationality helps define our humanity. However, the predominant approach in society is to think that refutation is not a necessary part of argument. The prevailing principle is to assume that your opponent is wrong, and then show how silly he is for being wrong. That is when confusion begins.

Although in many contexts debate is well accepted, regarded and exercised, people usually do not engage in a healthy dialogue - they talk past each other and forget that it is not about winning the last argument, but it is the pursuit of truth that counts. Sometimes we modify each other's thoughts over many years. Yet, what sometimes looks like a dogfight - is in reality the developing work of a community of the mind and of deep affection.

Someone has said that "opposition is true friendship" and friends should be able to say anything to each other without fearing resentment. The problem is that real friends do not come by easily. We must argue for truth, not for victory - for truth, not for comfort. That way, the use of rational opposition via the Socratic Method and dialectical criticism is the normative academic and civilized approach.

Why are Socratic discussions so important? C.S. Lewis says in his work on the Socratic Club "Because in any large and talkative community, such as a university, there is always the danger that those who think alike should gravitate together into groups where they will encounter opposition only in the form of rumor that 'the outsiders say thus and thus'. Each group hears not the best, but the worst, of what the other groups can say. That is the reality of many academic environments."

That's why, Junior, I am sharing with you some advice and quotes from C.S Lewis on debating:

- "Avoid unqualified statements. It is not useful saying that a point is "irrelevant." Be specific and tell the failures of the argument.", as would say Lewis in *Experiment in Criticism*.
- "Avoid the use of offending words. When we know what is wrong

with an argument, we need not to attack the the character or motivation of the opponent.", would say Lewis in his work *Study in words*.

- "Be on guard when criticizing. Remember that our function as a critic is to get out of the way and let logic speak; not to discharge hatred, but to expose the grounds for it; not to vilify faults but to diagnose and exhibit the failures of the argument.", also from *Study in Words*.
- As academics, we need to apply (with sensitivity) the rational opposition process via the Socratic Method and dialectical criticism - for the development of our intellectual muscles - rather than using a condescending approach. Thus, provoking, startling, even confusing them with unexpected questions, leading them to think for themselves etc., should be all part of this inexhaustible, tough, and joyful exercise of learning.
- As a student or young researcher, I want to encourage you to counteract the culture of flattery by which we all have been softened by so much that often we can no longer bear criticism and end up taking things personally too quickly. Go beyond simplistic assignments and avoid pursuing irrelevant indeterminacies, researching inconsequential topics -and thinking of that, engage yourself in projects to stretch your imagination.
- As Lewis would point in *Surprised by Joy*, we need to Socratically combat chronological snobbery: "the uncritical acceptance of the intellectual climate common to our own age and the assumption that whatever has gone out of date is on that account discredited."
- We must also at all costs avoid the sense of academic/corporate superiority - in short, a humanistic elite under the influence of the notion that they know what is best for us.

- We need the help of others. Lewis says in *Experiment in Criticism*, that "The man who is contented to be only himself; and therefore, less a self; is in prison. My own eyes are not enough for me, I will see through those of others. Reality, even seen through the eyes of many, is not enough. I will see what others have invented. Even the eyes of all humanity are not enough. I regret that the brutes cannot write books. Very gladly would I learn what face things present to a mouse or a bee; more gladly still would I perceive the olfactory world charged with all the information and emotion it carries for a dog."

To finish with Lewis, when closing a heated debate with Prof. Tillyard, Lewis writes in *The Personal Heresy: a controversy*:

"And with this, my case is ended. As I glanced through the letter again, I noticed that I had not been able, in the heat of the argument, to express as clearly or continuously as I could have wished my sense that I am engaged with 'an older and better soldier.' But I have little fear that you will misunderstand me. [...] And even where you may think me something too impertinent you will not suspect me of malice. I am, my dear Sir, with the greatest respect, Your obedient servant."

And remember, Junior, scholars can be gentlemen and gentlewomen, with a feeling intellect and not just a rational mind. Which applies empathy, sympathy and love. And in which the words of the Psalmist may resonate with our feeble attempts:

"May the words of my mouth [the kindness of the expressions] and the meditation [inner sentiment] of my heart be pleasing in your sight, Lord, my Rock and my Redeemer."
(Psalms 19:14 NVI).

Junior, how do you react to the comments made in this letter? Are you sure and strong enough to face the challenges of the academic world?

Cheers.

The challenges of learning

Dear Junior,

I had been teaching Electromagnetics for several years already, and always tried to do something different to bring more excitement to the learning process. This time I decided to do something risky. I prepared a nice introductory lecture going from the history of electromagnetics to new applications. At the end, I told the students that this was to be my last lecture. The students looked puzzled. I explained that from now on all the lectures would be given by them. I divided the chapters and sections among the class and each student had to prepare a presentation. Of course, they would have to present it first to me. And only after much discussion with the student I would liberate him or her to present it.

After three weeks of student lectures, I decided to evaluate the process. I asked the class how they enjoyed the experiment. The reactions were great. From "difficult, but enjoyable", to "I have never learned so much by myself". But then came the reply of one student who was not looking very happy, and said: "I hate this method, I pay the college for you to teach me, not my colleagues."

I was disturbed for a few seconds, recomposed myself, and replied

"Do you really want to know my objective? I have no intention of teaching you personally. My purpose is that you learn this subject, and the method is my choice, not yours."

A year and a half later, during graduation, the parents of the student wanted to thank me for helping their son. I was confused, but they quickly referred to that incident and said that was a turning point for their son and his attitude towards learning - so much that now he wants to go to graduate school. I was relieved.

We need to understand that as university students we are essentially a different person from a high school pupil. We are not a patient; nor is our instructor an operator who is doing something to us. We are, or ought to be, already beginning to follow learning for its own sake and with a certain amount of autonomy. Thus, among colleagues, students and young researchers can also be able to help each other and build knowledge together - as in the class I organized through seminars.

Have you tried studying with your classmates, Junior? In a process where each one chooses a topic to teach the other? I think that's a great thing for you to try this semester. What do you think?

Cheers.

Advice on receiving rejection letters

Dear Junior,

I know you are eager to have your ideas published and that is an excellent desire for a serious junior scientist like yourself. That is why I am sending you the following suggestions to help you with the writing process and how to receive rejection letters, cuts or corrections to your texts and not be discouraged by them.

1. Writing is a very important part of being a scientist. I got started helping with a gossip newsletter for our high school. It did not go very well. But that helped me with writing later on letters to the editor of local newspapers. So, if you're stuck on academic writing, try writing other types of text.

2. Writing your own words on paper is a very different thing than seeing them appear in print. And it is very easy to be misunderstood.

3. Receiving a rejection letter, cuts in or significant corrections can be a devastating thing to a young or even mature writer. Some letters are polite and others disrespectful and insulting. I myself have received insulting letters from reviewers that prefer to be offensive

than to say more specifically about what is wrong with the work. That says more about them than about us.

4. It is very hard to separate a sense of rejection of oneself personally from simply a rejection of one's work (perhaps only British people have such an inclination). But we have to take a deep breath and remember that to be corrected (or even rejected) by itself does not define our identity and that it is a great remedy against arrogance - all of us need to learn from humility.

5. Writing, re-writing and asking friends to review your work, over and over, is the best antidote for minimizing unnecessary criticisms.

6. Presenting your ideas in lectures and speeches can also help you to better describe your insights to the audience (sometimes we're so immersed in the subject that we don't realize when we're talking in an excessively complicated way).

7. Do not be discouraged by reviewers - they can be very helpful and may help you to substantially improve your paper.

8. Alternatively, we need discernment to, in some cases, do like Edmund Spencer, the English poet, did in 1569 to some of his critics: "He never quarreled with them; and he never took the slightest notice of their advice."

9. Keep writing, re-writing, reviewing, making your ideas clearer - it is a rewarding experience which can bring great satisfaction.

10. Sometimes we need to recognize that our difficulty is not in the content or analysis itself that we want to bring to the text, but rather in writing with grammar, spelling, textual construction or even with the text project. Don't

hesitate to look for classes, materials on the internet or other means to improve.

And for you, Junior? What would be your reaction upon receiving a rejection letter?

Cheers.

The dangers of self-proclaimed experts

Dear Junior,

In the past one would need to work on a particular topic for many years before the professional community would raise voluntarily the status of an individual to the level of an expert. Nowadays, many topics are still fresh, and many are already self-proclaiming their expertise on the new subjects.

This self-proclamation highlights the desire to acquire expertise quickly and outperform others in a competitive manner. While it is understandable to have a drive for mastery and achievement, it's important to recognize that true expertise often requires time, effort, and dedication. Becoming an expert in any field usually involves a combination of education, practical experience, and continuous learning.

Self-proclaimed experts can be found in various domains, no field is immune. They may rely on charismatic communication, self-promotion, or marketing tactics to gain followers (or customers). In some cases, they may spread misinformation or provide inaccurate advice, which can be harmful to those who rely on their guidance.

If you desire to become an expert, consider these key points:

- 1.** Identify the specific field or topic you want to excel in. It's crucial to choose something that genuinely interests you and aligns with your technical background and strengths.
- 2.** Establish specific, measurable, achievable, relevant, and time-bound goals to guide your learning journey.
- 3.** Depending on the field, acquiring formal education may be needed to provide a solid foundation of knowledge.
- 4.** Knowledge gained through practical application is invaluable in becoming an expert.
- 5.** Seek out mentors who are already experts in your field of interest.

Becoming an expert is a long-term commitment. It requires perseverance, patience, and a willingness to overcome obstacles and setbacks along the way. Blowing your own expertise horn will not send the signal very far and will eventually make you discredited among your peers.

Finally, attempting to become an expert overnight can lead to the following dangers: superficial knowledge, inaccurate or incomplete information, lack of experience and practical skills, overconfidence and arrogance, misleading others, and the potential of harming others.

I hope, Junior, you just concentrate on doing the best you can do in your professional area, and the recognition of an expert will come unsought. Do you already know which area you'd like to focus on? All right, if you don't know yet, take advantage of the conferences and watch as much as you can of different work presentations. Some of them might inspire you.

Cheers.

The wonders of learning

Dear Junior,

Let me tell you a funny real teaching moment story.

I was already a university lecturer for a couple of years and on my third semester teaching Energy Conversion I was finding myself very comfortable and excited in explaining the concepts. However, there was one topic which made me feel very uneasy: autotransformers.

I had memorized all the explanations and the deriving equations and workout examples, but there was something missing - that understanding of physical knowledge that makes one thrilled about it.

And the day came when I had to teach it for the third time. I was nervous and promised myself to go over the whole topic very slowly and reflect on every word and meaning. Then the Eureka moment arrived. I finally understood the whole thing. I got so energized that I started explaining things in different ways; the joy of learning, knowing, understanding, and teaching becomes almost an ecstasy.

Before the end of the class, one older student stood up and said: Prof., I have had several classes on autotransformers,

and only today I finally understand the whole thing. How much I wanted to reply to him, "Me too". But my immaturity and pride did not allow me to say it. Teaching is a wonderful privilege - and an exercise in humility.

As you can see, when you teach someone something, you learn it differently. My advice to you is to organize study groups where you can teach each other. It's a great way to learn!

Junior, do you remember anything like this in your studying or research experience?

Cheers.

Advice on university life

Dear Junior,

I have been thinking about the last things you shared with me about your life after enrolling at university and I have some suggestions for making your university life not just bearable, but enjoyable and consequential:

- 1.** Surrender to the learning atmosphere of this magical time in your life (it will become invaluable for the next 50 years).
- 2.** Develop a zest for rubbing your nose in the mere essence of each subject (think of learning as an inexhaustible and joyful game). It will develop your intellectual muscles.
- 3.** Appreciate the most unattractive topic, inarticulate colleague, or boring instructor (we live in community - and they can all teach us a great deal, for example, how to be less conceited).
- 4.** Question and challenge professors, students, and administrators alike (have you no incredulity, no skepticism, left?).
- 5.** Do it for the love of it - not for grade reward - (those

who value rewards will never be truly rewarded).

6. Dream new dreams and challenges and do not be discouraged by the obstacles (the only students who achieve much are those who want knowledge so badly that they seek it while the conditions are still unfavorable. Favorable conditions never come).

7. Take the initiative and ownership of the learning process - you are too old to be spoon-fed, it is time for you to begin to follow learning for its own sake). The function of the professor is to help you to construct knowledge and build your own experiences as background for the development of your personal taste; not to tell only why certain books and authors are good but to help you to become a good reader, an independent thinker, and a critical mind.

8. Don't ask which programs will give the best education or prepare you for the best jobs when you graduate - ask yourself: what do I really want to know and learn? Take advice but don't let others determine your calling. (Of course, especially students from low-income families need to consider the profitability of the job that a course can offer, but we still need to have pleasure and vocation in the career we have chosen, right?)

9. Forget about self-improvement and absorb yourself in getting to know some part of reality as it is in itself (nothing the university or instructors have to offer will do you any good unless your attitude towards learning has changed).

But what about you, Junior? If you had to write the tenth piece of advice on this list, what would it be?

Cheers.

Research and teamwork

Dear Junior,

One of the real pleasures of university life is doing research, development, and writing with a team approach. This idea, however, is not a new one. It goes back to medieval times. As C. S. Lewis explained to us in his book *Studies in Medieval and Renaissance Literature*:

"They are so unoriginal that they hardly ever attempt to write anything unless someone has written it before. They are so rebelliously and insistently original that they can hardly reproduce a page of any older work without transforming it by their own intensely visual and emotional imagination, turning the abstract into the concrete, quickening the static into turbulent movement, flooding whatever was colorless with scarlet and gold. They can no more leave their originals intact than we can leave our own earlier drafts intact when we fair copy them. We always tinker and (as we hope) improve. But in the Middle Ages, you did that as cheerfully to other people's work as to your own. And the tinkering very often really improved them."

Although the current university culture promotes individualism, with rare exceptions, the consequence of isolation is ordinariness. Alternatively, the emphasis on

innovation and the pressure to publish has created an unhealthy environment and a false sense of competence like the overconfident conviction of an adolescent that his own village is the hub of the world.

Unfortunately, the university system is far from being free from such negative influences, and examples of this counter-productive behavior abound. And often, when students are assigned to a group activity, they fail to make the most of the opportunity. On this subject, you can read an example from art that Lewis gives us:

"Those who insist on individualism may be reminded that we tolerate it quite easily in another art. A cathedral often contains Saxon, Norman, Early English, and Perpendicular work. The effect of the whole may be deeply satisfying. Yet, we have no one artist to thank for it. None of the successive architects foresaw or intended it. It may be difficult to call a cathedral as we now have it a 'work of art.' It is the work of men, though not of a man."

Is it possible that this culture of cooperation and teamwork may one day become more prevalent within the university system?

In my career I have been very fortunate to work and interact with a number of brilliant research colleagues, and we have had much fun building upon previous concepts, developing new techniques, posing new questions, and proposing new applications - and always learning with each other!

For some time already I have been working with the time-varying decomposition of electrical signals in the context of smart electric grids and finding it fascinating how we are always only making some small contributions (a few demolitions here and some minor constructions there). Doing

this requires us requires us to be humble and to work hard.

Team effort (as a good football/soccer team) always works better. It might be a good idea to take a day to write down the names of those colleagues you enjoy working with and send them a thank you note. And if you haven't had any good experiences working as a team yet, how about inviting other colleagues to give it another try?

Cheers.

Sleeping with the devil: *university research failures*

Dear Junior,

Regarding your question on how to conduct research at the university faculty, I have encouraged and supervised undergraduate and graduate students to conduct research for many years and think it is a great opportunity for learning. But one needs to be careful.

First, you need to learn the fundamentals well and find your own areas of interest - what you really want to know - and to become enthusiastic about it.

Secondly, you need to get some familiarity and develop maturity on some basic principles and, in some cases, experiments. If professors start to assign complex research topics based on their interests and research grants, they may be influencing the student's future knowledge based on their existing tastes, narrow specializations and even a little bit of ignorance (and I say that as a professor!) - so that's why it is so important to have some autonomy and look for new subjects you might be interested in by other means.

When you come out of this process, you may not be able to progress so well on your own, besides, if you do so, the quality of your research may be much compromised. I have had

had the challenge to tell master and PhD students that their results were meaningless due to the lack of maturity with the subject. It was not easy, but I hope they can grow from that.

I would like my engineering students to take several power and energy classes, but that is impossible sometimes. That is why I try to combine the learning of some principles in the context of design and feasibility research projects. One can call it integrated learning and sometimes even research-based learning, but I would feel uncomfortable if suddenly, and by the force of research contracts, they are forced to compromise the quality of the learning in order to produce technical reports.

In exchange for money from research and development, projects institutions are tempted to sleep with the devil and compromise the mission of a university at all levels (graduate and undergraduate), and you as young students and researchers also need to take a critical look at this - we can't just be dazzled when there's a new room or a new laboratory in our institute named after a company, we also have to think about the implications of this.

Large universities, because of their stronger graduate programs, can afford to do that - the beds are big enough. But can smaller institutions become mini-MITs, Stanfords or USPs and turn into a mill for carrying on technological research with political biases? Much supervision will be required to produce the expected innovation.

Avoiding failure in university research programs requires a combination of careful planning, effective execution, adaptability, and intellectual integrity. Why not take a walk around the university and see where the funding for the research centers comes from? What consequences - good or bad - could this have, Junior?

Cheers.

Ph.D student during the day and high school student at night: *learning English as a second language*

Dear Junior,

Learning a new language is fundamental for academic life. For certain fields fluency in English, French, German, Greek and Latin are a must, but for others, having a second or third language are essential, especially the English language! The building at the Technological University of Eindhoven, in the Netherlands, have a very visible sign with the words: "The working language here is English".

My children did not have any trouble learning English because they learned it when they were very young. But it was different for me. Although I learned a bit of English and French in middle and high school, I was in Brazil and had little chance to practice. At the university I was forced to learn to read English as most of the good books at that moment had no translation. Later a post-graduate course in the USA helped me to become a bit more fluent.

But it was during my PhD in Manchester, UK, that I was pushed into really learn proper English. So, I quickly joined an English as a Second Language class at the university. The challenge was that we had people from all over the world with a great variety of languages, accents and intonations which made harder to catch the British English pronunciation.

One day an older instructor, seeing my struggle and desire to get the proper accent, recommended something very unexpected. He advised me to enroll in evening classes for O Levels. So, I did. I joined 14-16-year-old English kids to learn their language. For a while I was a PhD student during the day and a High School student at night.

It was hard because I already had two children and besides spending the day at the university I had to come home and get ready for the evening class. My wife carried most of the family burden for which I am eternally grateful. But the effort paid off and soon I was feeling much more comfortable and understanding even jokes from the intense British sense of humor. In the famous *Screwtape Letters*, written by C.S. Lewis, the following comment brings some funny light into this aspect of British life:

"The English take their 'sense of humor' so seriously that a deficiency in this sense is almost the only deficiency at which they feel shame. Humor is for them the all-consoling and (mark this) the all-excusing, grace of life."

Anyhow, I also had to learn the local Mancunian accent - it was quite fun discussing football as a Manchester City supporter with a Manchester United computer technician supporter. Full participation in a local church also helped me to improve my theological vocabulary. I was likewise very fortunate to find and fall in love with one of the best British writers, Prof. C.S. Lewis of Oxford. His enlightening writings have been for me a source of pleasure and inspiration for the last 40 years. Reading outside my area of work also helped me to broaden my proficiency of the English language. The BBC program "Yes, Minister" completed my academic-political education. I still watch them today to remind me of the cynical fundamentals of all politics.

Finally, my advice is: get totally immersed in all aspects of life, and the mess of the English, or other, language will eventually be incorporated to your communication skills and help you present your research results more clearly and convincingly. And never forget, as Professor Lewis would say in his book *Studies in Words*: "Language exists to communicate whatever it can communicate. Some things it communicates so badly that we never attempt to communicate them by words if any other medium is available."

What about you, Junior? What tools have you used to learn another language?

Cheers.

Advice for leaders

(and non-leaders too)

Dear Junior,

Thanks for letting me know you are thinking of taking over as your course's student representative. Be prepared for the challenges. I compiled for my students a list of the characteristics of a good leader to help them with life ahead. I hope it may help you too.

- 1.** A good leader is one who values clear thinking and the ongoing process of self-education.
- 2.** A good leader puts high value on building meaningful friendships with those who can help them beyond their own limitations.
- 3.** A good leader values the insights of wise people who have gone before them.
- 4.** A good leader allows creativity to help them see old truths in a new way.
- 5.** A good leader knows that pain has much to teach us and that times of struggle are usually pregnant with insights for life.
- 6.** A good leader recognizes the dangers of pride and power of a humble spirit.

7. A good leader knows the power of well-chosen words to influence the mind and move the heart.

8. A good leader refuses to lead their life based on the changeable state of his emotions.

9. A good leader understands the value of humor.

10. A good leader recognizes their own sinful nature and the human propensity of self-deception.

Junior, are there any of these points that you feel you need to improve? Don't hesitate to find someone more experienced to talk to. I confess I have failed myself many times these recommendations - so do not be discouraged if you fail sometimes.

Cheers.

No subject is an island

Dear Junior,

Have you participated recently of academic events? After two years missing the largest electrical engineering conference, I am having a fantastic time. Since 1988, when I started attending, I have never seen so much excitement and enthusiasm expressed by the young and even not so young generations. I am sure there are very exciting conferences in your field too!

As I attended different panels, technical sessions, working group meetings, and looked at many poster papers I was overwhelmed by the increasing complexity of the grid, new technologies, challenges, and creative solutions. Then I kept thinking of how much the sector will need a clear philosophical framework to be able to address all these issues in a holistic way.

Not coincidentally, the first question I got from my friend Charles during the reception was: "when you retire are you going to become a full-time philosopher?" We all laughed because they knew I like philosophy, but then I thought of Charles's question as I saw the problems being tackled by both newer and older peers.

The relationship between complexity and the need of philosophy is a topic of ongoing debate among philosophers and should also

be among engineers. Technology advances make the world more intricate and multifaceted. Philosophy provides a framework for critical thinking, conceptual analysis, and logical reasoning. It enables us to question assumptions, value different perspectives, and contend with complex social dilemmas.

Moreover, philosophy (especially the philosophy of technology) helps us explore the underlying principles and values of engineering design, guide actions and decision-making. It allows us to probe into questions about the nature of reality, the limits of technological developments. These philosophical inquiries become crucial as complexity introduces new challenges and uncertainties.

Furthermore, philosophy encourages interdisciplinary thinking and bridges the gap between different fields of study. Complex problems often require a holistic approach, drawing on insights from various disciplines. And as complexity increases, philosophy and dialectics of technology becomes more necessary because it equips us with critical thinking skills, facilitates the analysis of fundamental concepts, and helps us navigate the power engineering world of electric grids: this life-sustaining infrastructure. The same benefits are given to researchers in the humanities who delve into other areas of knowledge, such as the exact or biological sciences; or to researchers in the biological sciences who explore the fields and challenges of the humanities and exact sciences; and so on.

If I see my friend Charles again, I will add: "We all need to be philosophers, Charles, even before we retire."

What about you, Junior? Is there any other area of knowledge that you could add to your studies? Philosophy itself, or poetry perhaps?

Cheers.

Finding the real value: *research, publications and academic metrics*

Dear Junior,

The value of research is multi-layered and extends across various domains including knowledge expansion, innovation and technology, problem solving, economic development, health advances, education, social impact, global collaboration, critical thinking, and not just academic metrics.

The h-index and citations are metrics used in academia to quantify the impact and influence of a researcher's work. Although they are useful to measure the productivity, and significance of scholarly contributions they have limitations and can be manipulated by unethical publications practices, such as excessive self-citation.

On the other hand, citations serve as a form of peer review. When other researchers cite a work, it is considered an acknowledgment of the significance (or not), and impact of that work within the scholarly community. Citation metrics, while widely used to assess the impact of scholarly work, are subject to various distortions. Understanding these distortions is crucial for interpreting citation metrics accurately. Typical distortions associated with citation count are self-citations and citation cartels.

Lately, these indices have become so irrelevant, as thousands of authors are writing hundreds of papers per year. Inflation of paper publications has become the cancer of the academic world. This phenomenon is often associated with factors such as publish-or-perish culture, career advancement pressures, impact factor and metrics, predatory journals and even the advances in artificial intelligence. (If you don't know what predatory journals are, they are basically publications that exploit the academic publishing system for profit, typically engaging in unethical practices, such as having low or nonexistent quality control, lack of transparency about editorial processes, and using aggressive solicitation - even using illegally obtained emails. Be careful with them. If you are not receiving their emails, wait a couple of months.)

The reality is that the value of research cannot be measured only by publication metrics. Recently, I had an administrator try to lecture me on the importance of these metrics and the need to publish in "highly qualified" journals. I was not bothered by his attempted discourse as I have a high h-index and citation number. What I found disconcerting was the bean-counting approach. Academics continue to fail to look beyond the numbers.

I did not have a chance to tell that person that I have a paper with over 1,000 citations which is not even counted as relevant by the Brazilian "bean-counters" as it was published at an international conference. They only count "the qualified papers" from periodicals, journals and transactions.

Great scientists like Fourier, Heaviside, and others, would have no chance to publish their research nowadays. I know great researchers that are not even listed on these academic metrics, and therefore inaccessible and not considered as "qualified researchers".

Great researchers are more interested in their work than in the

receptivity of their publications. As Prof. Lewis in his book *The Weight of Glory* said: "No one who values originality will ever be original. But try to tell the truth as you see it, try to do any bit of work as well as it can be done for the work's sake [without thinking of h-index, citations, JCR etc.], and what people call originality will come unsought."

What about you, Junior? Have you published anything or are you thinking of publishing? How has your experience been so far?

Cheers.

Was that a wonderland for education?

Dear Junior,

Many years ago, I was visiting a small top engineering school in Southern California as part of an Accreditation Board for Engineering and Technology team visit. In the process we met with professors, students, administration, and looked at their records.

The meeting with the students was particularly enlightening as I learned about the other university offers, they had, and rejected to come to that small institution. I was shocked when they mentioned MIT, Stanford, Berkeley, Harvard. What would make a student decline an offer from one of those institutions?

After more conversation it became clear to me that it was the small school environment and the educational-learning approach and programs that had attracted those gifted students. It was based on problem solving and collaborative learning strategies that provided opportunities for students to work together to improve their understanding of concepts in the academic core.

Then I met one of their professors of electrical circuits and asked her how she conducted classes. She pointed to the

teaching space that was divided in tables for 6 people, where they worked together on projects previously assigned. Then I asked about lectures. She said she did not lecture. She showed me the textbook and said she tells the students to read it. "They learn to concepts in the context of the design problems presented to them, I help them when they have questions." - she said. I was delighted and could hardly believe what I thought was a dream for learning engineering actually existed.

Finally, I was invited to attend a meeting of a team of students working on a junior-senior project sponsored by the industry with a professor supervisor. They were working on a project to speed up the manufacturing of circuit boards. They were using some type of spectral analysis for image recognition for the soldering machine. The results were encouraging, and I was very impressed. But the final surprise came when I asked them if they had thought of a time-frequency decomposition, like wavelets? Five of them said no, but one said: "Wait a minute!", opened his backpack and produced an article on the subject which he had not finished reading. I could hardly believe my eyes. The supervisor said the right way: see if you could implement this method to improve the speed of the system.

Now, I am not talking about PhD candidates, but undergraduate junior and senior students. What impressed me also was the excitement of the students, and their delight in learning and exceeding in excellence.

Yes, for a moment I thought I was dreaming of a wonderland for engineering education. I hope you can dream up something like this in your field of research. Yes, when one tries to change styles, thinking responsibly about how the students may benefit from the new approaches much can be achieved, and true education takes place.

Well, I imagine you sometimes get frustrated because the class can be boring... Even because many teachers are not willing to experiment new methodologies because they're up to their necks in the publish or perish culture, or the students themselves are very resistant to change. But on your side, how have you engaged in class? How dedicated and proactive have you been with your assignments?

Cheers.

Turning points

Dear Junior,

A few days ago, I was reading the book *Uncertainty: A Guide to Dealing with Uncertainty* by M. Granger Morgan, and immediately thought of my unplanned 48 year-career as an engineer and university professor. I was surprised with how much simple events and even casual conversations changed the direction of my career path so dramatically. I know life is full of uncertainties, but how the whole thing unfolds is quite amazing.

The direction of spontaneous decisions can be highly unpredictable and influenced by various factors. Chaos theory suggests that even small changes in initial conditions can lead to significant differences in outcomes over time. This concept is often referred to as the "butterfly effect," where a small change in one part of a chaotic system can result in large-scale effects elsewhere.

I remember that a side-comment made by one of my colleagues at my first job prompted my boss to assign me as a liaison engineer for an industrial railway electrification project (as a student I had done an internship in a diesel-electric locomotive repair unit). Another time a short conversation after I presented a paper at a conference in Budapest led me

to move from Iowa to California.

When it comes to unplanned decisions within a chaotic process, the inherent unpredictability of the system makes it difficult to determine its direction. The outcome of such decisions may depend on numerous factors, including the current state of things, external influences, and the interactions between different elements within the process, such as a casual conversation. And this is no different in academic life.

While it may be difficult to predict the exact direction of unplanned decisions, certain patterns or trends may emerge over time. These patterns could arise from feedback loops, attractors, or other nonlinear dynamics within the system. I am glad that certain patterns emerged in this chaotic process and that my unplanned decisions kept my career within the bounds of a reasonable and a fully enjoyable life.

However, whenever possible, it is important to reflect and evaluate the pros and cons of the decisions. Furthermore, career path changes, including academic careers, should never aim at short-cuts in search of quick success, but in pursuit of challenges to become better professionals and scientists.

Junior, when things do not work as expected remember this advice of Charles Kettering: "Failures, repeated failures, are fingerposts on the road to achievement. One fails forward toward success. The only time you don't fail is the last time you try something, and it works."

Can you identify how things came about in your life? Complete the exercise of remembering important situations or people at turning points in your life. It's a great chance to exercise gratitude.

Cheers.

The joys of sharing

Dear Junior,

The other day someone asked me "Why are you writing so much?" and I confess that I still do not know completely how to answer. Perhaps it is a way to externalize my preoccupations, joys, sorrows, and reporting what is going around us, or perhaps as a way to avoid being fed up with life.

At Oxford, there was a small group of professors who met regularly over tea and beer in an Oxford pub to discuss their scholarly and literary projects - or almost anything else. Among them were: J.R.R. Tolkien, C. Williams, O. Barfield, C.S. Lewis, and others. The group was named The Inklings. A very appropriate name for the function of the group. Inkling means a slight idea that something is true or likely to happen, although it is not certain. The discussions which covered life, in general, helped also to shape the final form of their works.

The discussions were friendly but heated in the impersonal English style (the passion of the argument is attached to the position never to a person). "Opposition is true friendship" was one of the ways Barfield carried his discordances with Lewis and others. Lewis even said in his book *Surprised by joy* that:

"Actually (though it never seems so at the time) you modify one another's thought; and out of this perpetual dogfight a community of mind and a deep affection emerge. But I think he changed me a good deal more than I him."

In life, it is also important to have friends who are brave enough to even say when they don't agree with us and that our ideas are a little harebrained - even though this may be a nuisance at the time, it is a provocation that can make us fly even higher, as happened with the Inklings.

Do you have a group of friends like that, Junior? How do they tease or comfort you? If you don't have one, it's time to ask for this blessing and get your hands dirty: perhaps a group like this just needs an invitation from you to get started.

Cheers.

What's a true scholar?

Dear Junior

Have you ever thought about what it means to be an academic? A scholar is an individual who is deeply involved in academic quests, intellectual activities, and the exploration of knowledge. Scholars are naturally associated with university education and research institutions, but the term can also apply to individuals who are devoted to advancing knowledge in any literary or academic area. A true scholar is genuinely unpretentious.

In thinking about the characteristics of a true scholar I came across two distinct perspectives: a Pragmatic and a Disinterested one. See below a list of the characteristics that I compiled. Can you see a fundamental difference?

Pragmatic	Disinterested
Productivity	Holistic approach to education
Teaching experience	Critical thinking
Publication record	Love of learning
Grant acquisition	Effective communication
Collaborations	Integrity and ethics
Multiple topics	Interdisciplinary work
Smart projects	Imagination and creativity
Leadership	Engagement with societal issues
Emphasis on innovation	Emphasis on integration

The Pragmatic perspective emphasizes productivity, publicity, grant money etc. The Disinterested perspective underscores the love of knowledge, imagination and creativity and integration etc. Don't be tricked by the term "disinterested", it does not mean a bad thing here, it is a concept that means "I do for the love of it, not for the reward that it may bring".

A true scholar is one whose vocation is academic inquiry and not popularity; and shares his discoveries un-assumingly and humbly in the forums of his discipline. Such inquiry adopts the effective use of communication tools shaped by the perspectives and values.

A true scholar is one whose goal is to convince his readers to

become a willing inhabitant within an imagined intellectual universe, submitting to its narratives and laws, and listening to its innumerable voices and leaving behind one's own predilections, dogmas, and biases.

The scholar must keep the impulse pure and disinterested. "That is the great difficulty. As the temptation may come to love knowledge - our knowing - more than the thing known: to delight not in the exercise of our talents but in the fact that they are ours, or even in the reputation they bring us. Every success in the scholar's life increases this danger. If it becomes irresistible, he must give up his scholarly work. The time for plucking the right eye has arrived.", as would say Lewis in his sermon *Learning in wartime*.

Finally, a true scholar reminds us of our need to resist the intellectual climate of our own age, and thus lift us out of our provincialism. About that, in the book *The weight of glory*, also written by Lewis, we read that:

"A man who has lived in many places is not likely to be deceived by the local errors of his native village; the scholar has lived in many times and is therefore in some degree immune from the great cataract of nonsense that pours from the press and the microphone of his own age."

Junior, do you see that becoming a scholar is an issue of the heart, and not just of academic reputation?

Cheers.

Is there an ideal condition for anything?

Reflections on study, learn, research and discover

Dear Junior,

I don't know about you, but that is a question I ask myself all the time, as procrastination is one of my recurring sins. But once I overcome that stable and dangerous state, the excitement converts the latent energy into useful and exciting work. Now why is that? C. S. Lewis says in *Learning in a Wartime* that "human culture has always had to exist under the shadow of something extremely more important than itself. If mankind had postponed the search for knowledge and beauty until they were secure the search would never have begun." In other words, we are mistaken when we compare daily problems with an ideal life. Life has never been normal. Reasonable reasons have never been missing for pushing off all merely intellectual activities until we have solved all our problems."

Humanity wants knowledge now and will not wait for the suitable moment that never comes. The insects have chosen a different line: they have sought first the material security of the hive. But, as Lewis would affirm in the same text, "Men are different. They propound mathematical theorems in beleaguered cities, conduct metaphysical arguments in condemned cells, make jokes on scaffold, discuss the last new poem while advancing to the walls of Quebec, and comb their

hair at Thermopylae. This is not panache; it is our nature."

But do not let your nerves and emotions lead you into thinking your difficulties today are more atypical than it really is. A mental exercise may serve as defense against a common enemy: frustration - and the best defense is a recognition that this current problem has not really raised up a new enemy but only aggravated an old one.

There are always plenty of rivals to our work. Lewis says "We are always falling in love or quarreling, looking for jobs or fearing losing them, getting ill and recovering, following public affairs. If we let ourselves, we shall always be waiting for some distraction or other to end before we can really get down to our work.

Finally, Junior, I would like to quote the end of an essay, "Our English Syllabus", where Lewis handles the syllabus of the course to the students by saying: "With these limitations, then, we hand you over our tract of reality. Do not be deceived by talk about the narrowness of the specialist. The opposite of the specialist, as you now see, is the student enslaved to someone else's selection. In the great rough countryside, which we throw open to you, you can choose your own path. Here's your gun, your spade, your fishing tackle; go and get yourself a dinner. Do not tell me that you would sooner have a nice composite menu of dishes from half the world drawn up for you. You are too old for that. It is time you learned to wrestle with nature for yourself. And whom will you trust to draw up the menu? How do you know that in that very river which I would exclude as poisonous the fish you especially want, the undiscovered fish, is waiting? And you would never find it if you let us select."

Thus, do not wait for the ideal condition, the perfect syllabus, the ideal instructor, or advisor. They will never come. Get on

with your job - and the more you enjoy reading, thinking, and writing the more they will become part of a unified life - neither job nor recreation, because they become one. But tell me, Junior, are there difficulties in your life that are forcing you to procrastinate and not carry on with your responsibilities?

Cheers.

Write or wrong?

Dear Junior,

I've still been thinking a lot about the process of writing our work and how we need to question this culture, but without losing heart about writing and sharing the good fruits of our work with the academic community.

The publish or perish environment of the academic world plus the unhealthy societal survivalist competition we all face have further encouraged a culture of soft plagiarism which is not always easily detected due to the sophistication of the perpetrators. These symptoms are added to our natural fallen tendency to seek relevance and prominence among our peers and are usually masqueraded by this so-called "search for originality." This type of originality we seek, encouraged by the university system, and which is regarded as a sign of wealth, is, in reality, a confession of immaturity.

When I completed my Ph.D. in the 80s at the University of Manchester, my supervisor was very happy with the fact that I published two conference papers over four years of research. This is unimaginable by current standards where students are forced to make any silly idea publishable and impressive, thanks to advanced word processing, and produce papers by the bundles.

These developments are the background and source for much of the rubbish we produce in the name of scholarship and scientific papers. I do not exclude myself from contributing to this mess.

But the problem becomes even more complex and disturbing when a soft form of plagiarism becomes part of the academic and research culture. When individuals are searching for new ideas, from wherever source they can get them, and purposely neglect or not acknowledge the possible sources, etc. all under the name confidentiality and proprietorship, the system becomes unstable.

Soft plagiarists become the sort of academic alchemists who must turn (base metal into gold) other people's ideas into their own. The sad thing, however, is that the academic system is not sensitive enough to detect it and we apparently succeed. Soon one will need to write over a hundred papers before one can be promoted to a senior member at an institute.

I have some suggestions on how to minimize this plague, but I will spare you all. I just hope we can all realize this and act upon it. After all, the number of papers we publish has very little relationship with their significance and contribution to the real academic, research, and professional world. Some of my old power systems professors published only a fraction of the papers I have produced - I wish any of my papers would carry a fraction of the wisdom imparted by my old profs' few papers.

We need to relearn and value the concept that numbers have little to do with quality, avoid replacing the true search for originality with a soft form of plagiarism and finally act more consistently and ethically.

Finally, paraphrasing C. S. Lewis: "What staggers me is how any

any man can prefer the galley-slave labor of transcription to the freeman's work of attempting an essay on his own." (Letter to Alastair Fowler, 10 December 1959).

Junior, have you been feeling this pressure to publish? Often institutes pressure us to write, but they don't offer any triggers for writing, and the loneliness of this process can hold us back even more from doing something of poor quality. Does your university have spaces or proposals that encourage writing? For example, brainstorming groups, academic writing workshops or something like that. What if you organized more collaborative writing spaces? Let me know what you think.

Cheers.

Is artificial intelligence replacing poetry?

Dear Junior,

Inspired by the following words from "Dead Poets Society":

"We don't read and write poetry because it's cute. We read and write poetry because we are members of the human race. And the human race is filled with passion. And medicine, law, business, engineering, these are noble pursuits and necessary to sustain life. But poetry, beauty, romance, love, these are what we stay alive for... That you are here - that life exists, that the powerful play goes on and you may contribute a verse. What will your verse be?"

I challenged my children and grandchildren asking them: "What will your verse be? - trying to encourage them to write poetry." Then today, I got my first, not just a verse, but the entire lyrics for a song. I started to get excited, as I read it, but quickly realized that there was something strange as the daughter who sent the poem has many gifts, but not of making poetry.

The message came even with a suggestion for music to go along with the lyric verses. Part of the verses are transcribed below:

Song Title: Hey Dad (sing along with Hey Jude)

Verse 1

Hey Dad, you're a crazy engineer,
With a brilliant mind, so crystal clear.
You love C.S. Lewis and his tales,
Imagination and wisdom never fails.

Chorus:

Hey Dad, don't be afraid,
Take a break from coding, come out and play.
Wish you could play soccer, kick that ball,
Let loose, have fun, you deserve it all.

Verse 3

Hey Dad, you wrote too much on LinkedIn,
Sharing insights, connections, and everything within.
Your passion for learning, it shines so bright,
Inspiring others with your words of light.

Then, she told me that she used the AI Platform Magic School. I laughed and accepted her effort - please disregard the kindness of my daughter to me. After all even poetry may be partly replaced by AI in the future. Then, I remembered some words of Jack on poetry I found in *The personal heresy*: a controversy - and they gave me some consolation:

"All poetry will indeed suggest something more than the collision of blind forces; but the suggestion will, in every case alike, be false. And why should this false suggestion arise from the movements in the things we call brains rather than from any other movements? It is just as likely to arise from historical accidents of language, or from printers' errors. If the universe is not blind or mechanical, then equally the human individual can have no monopoly in producing poetry. For on this view all is designed, all is

significant. The poetry produced by impersonal causes is not illusory. The Muse may speak through any instrument she chooses."

Even Artificial Intelligence can speak poetry, but it will never substitute the magic element produced by the human soul.

How about you start reading poetry, Junior? I believe that to a certain extent poets are a kind of prophet of our times and can help us to see things that we don't see when we keep our noses for too much time in the waters of our subject. They have a unique sensitivity for reading the world and making us see it through their lens. Who knows, maybe soon you'll also start writing poetry too?

Cheers.

And the pile of books keeps growing

Dear Junior,

There are many different types of books, and we read them at different times and circumstances. When I was young, I concentrated on the educational types. The ones which I needed to read for school. Life was so challenging and exciting that I had little time for any other sort of book. My reading was essentially utilitarian. I needed to get something out of them for my immediate use: to get the grades. Then I discovered the book *The Man Who Counted: A Collection of Mathematical Adventures*, by Malba Tahan and my imagination was baptized for reading.

Later in college, a variety of topics ignited my mind. Physics and the history of science never failed to motivate me. Then psychology, philosophy and theology also were included. We need to read because life is so complex, and we ought to be aware of all kinds of perspectives. We need not accept everything from them. In reading great literature we apprehend from many yet remain ourselves.

Yet we cannot be content with ourselves. Our own eyes are not enough for us. Reality, even seen through the eyes of many, is not enough. We need to see what others have developed. Even the eyes of all humankind are not enough.

Prof. Lewis said in his book *An Experiment in Criticism*: "I regret that the brutes cannot write books. Very gladly would I learn what face things present to a mouse or a bee; more gladly still would I perceive the olfactory world charged with all the information and emotion it carries for a dog." Can you imagine that, Junior?

He went on to say that "The literary experience heals the wound, without undermining the privilege of individuality. There are mass emotions which heal the wound; but they destroy the privilege. In them our separate selves are pooled, and we sink back into sub-individuality. But in reading great literature I become a thousand men and yet remain myself."

Above all keep reading - in an unfabricated, genuine, spontaneous, compulsive, disinterested, and humble way. As Lewis says in *Lilies that fester*, "Those who have cared for any book may come to care, someday, for good books. The organs of appreciation exist in them. They are not impotent.". In other words, we need to create a reading culture for ourselves that, with time, will give us discernment of what is good or not - or even a conscience that is able to tell us "You will thank me later for having read that" and "Hmmm, even if it's not directly useful for earning grades now or for the research I'm doing, this book can indirectly help me to raise my awareness of other things that will affect my whole life and work".

We cannot stop reading books, they are food for the soul, but their full power will be experienced only when, in reading and using good books, we fully receive them. Read, Junior, because words matter.

And yes, I'm sure you have a pile of books growing next to your study table or bed (or a folder of books and digital

articles on your computer that is only growing). How about choosing one of them to start reading? I am eager to hear from you what you are reading and your thoughts on this book. It's important to keep some kind of record of your reading, remember that.

Cheers.

How to use our time

Dear Junior,

I know we are all eager to produce creative ideas for our academic research. But let us not allow the anxiety to jeopardize the clarity of our thoughts. The comments below are intended to encourage relaxation, and patience for waiting for the right time to capture the new ideas when they come. Some of my best research thoughts developed very rapidly and at odd times, others took years to materialize.

Time management is a critical skill, especially when it comes to research. It involves setting clear goals, defining research objectives, prioritizing tasks, creating a schedule, utilizing technology tools such as Google Calendar, setting deadlines and even using some tools, such as the Kanban method or the Eisenhower matrix. In any case, it's also important to take some time to reflect and understand your strengths and limitations when it comes to time. For example, reflect on which aspects of your habits are sabotaging you, and also at what times you are most mentally active, or whether it is important for you to take short breaks every 30 minutes or a slightly longer break after a longer period of focus.

However, none of these steps will guarantee that creative

ideas will come forth right away. Managing the apparently unmanageable time of creativity can indeed be a challenge, as innovative inspiration often strikes at surprising moments. Remember Archimedes, according to the legend, he made the Eureka exclamation when he discovered a principle of buoyancy while taking a bath.

It is very important to recognize that creativity doesn't always obey a rigorous schedule. Capture ideas immediately when they come, with pencil and paper, voice recorder etc. Incorporate mindfulness practices like meditation, relaxation techniques such as a garden or beach walk, reading literature and philosophy books etc. Allowing yourself to explore various perspectives, divergent thinking, and stimulation from others.

Do not forget that patience is indeed a vital quality when it comes to researching for new ideas as it often involves exploring various avenues, testing assumptions, and discovering unexpected connections. This process can be time-consuming as it needs thorough investigation and analysis.

Many research questions are complex and multifaceted, requiring careful reflection and deliberation to unravel. Speeding through the process can lead to oversights or incomplete understanding.

Never forget the iterative nature of discovery. It's essential to allow for this iterative cycle to unfold naturally, rather than expecting immediate results. Some of the most significant discoveries have been the result of years of persistent research and experimentation. Hurrying to generate new ideas can lead to superficial or incomplete results. Taking the time to plunge deeply into a topic allows for more broad understanding and the development of higher-quality ideas.

By embracing patience and allowing the research process to unfold naturally, researchers can cultivate a deeper understanding of their subject matter and uncover genuinely innovative ideas. Integrating these approaches and perspectives will facilitate managing the unpredictable timing of our creativity.

How have you navigated your days, Junior? If you're feeling like you need more hours in your day, maybe it's time to take a short break to research time management tools.

Cheers.

Railways as glimpses of paradise

Dear Junior,

As a young boy I remember the gentle wind blowing against my face as the steam locomotive slowly fought gravity - the "sweet air" that "whispers of the country from whence it blows." That feeling has never disappeared from my mind. Every year my mother would take me to visit my great-grandparents in the interior of Brazil. The visit involved a 10-hour steam locomotive trip (plus additional hours of bus and horseback travel). It was an enchanted journey. Railroads were also important for my family since my father worked for the Brazilian railroad company and therefore, I had to be thankful, for it provided for our sustenance.

When the time came for the engineering-in-training during the last two years of my Electric Engineering education, guess what? I did it at a diesel-electric locomotive repair facility. And as a professional, one of my first projects was to work as liaison-engineer for the planning and systems study of the impact of a large industrial railway (Carajás - São Luiz) on the transmission system of the company I was working with. Although the railway was completed, but never electrified due to the high costs, I learned a great deal with that assignment.

But, more importantly, even before I was conscious of life, I needed to love railways - I was predestined to do it. My father's father was a locomotive engineer. I did not meet him as he was killed in a railway accident - head-on crash of locomotives due to a signal error. He paid the ultimate price.

Recently, my wife and I went on a short steam-locomotive ride. Suddenly, when the peaceful wind started to blow on my face, all the memories of a six-year-old boy came back like a jolt of bliss. My heart accelerated and I had a hard time holding back tears of joy. I can only hope that, as in Narnia, we will be able to sit down and remember the previous stories and look forward to the new chapters - that are even better than the ones before.

Since this is my last letter to you, I'd like to leave you with a final recommendation. Of course, we can't always visit the places and spaces involved in our research, due to the costs of travel, but if you can, don't miss any opportunities. If you can't, look for other alternatives. The big universities and research institutions may not be the best place for you. Above all keep your intellectual life active reading also outside of your area of expertise. Philosophy, fiction, poetry, history, literary criticism, etc., may provide great inspirations for your own work, Junior! I'll be excited to hear about all your experiences and journeys through the university corridors. Please, keep me posted.

Cheers.



About the author

Paulo F. Ribeiro received his Ph.D. from the University of Manchester (UK) in 1985. He was a researcher at NASA Glenn Research Center, Electric Power Research Institute (EPRI), Erskine Fellow at the University of Canterbury (New Zealand) and taught Electrical Engineering at Dordt University, Calvin University, Virginia Tech, Florida State University (all in the USA) and Technical University of Eindhoven (in the Netherlands). He is currently a full professor of Electrical Engineering at the Federal University of Itajubá, Brazil. He also spent 12 years of his career as a Transmission Systems Planning Engineer. Prof. Ribeiro has written and edited seven books in Electrical Engineering and authored and co-authored more than 350 peer-reviewed papers. He is also an IEEE Life Fellow.

Together with his wife, he was and has been involved in the student Christian movement in Brazil, UK, USA, and the Netherlands. He has four daughters, nine grandchildren and lives in Narnia.

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