

FROM THE PRESIDENT
Prof. Dr. Madhusudan Bhattacharyya

Dear Friends,

It's Autumn, there is charm in the air. Festive days are not far *behind*. People are gearing up for the occasion. Durga Puja, Muharams, Kalipuja (the Festival of light). Brothers' Day, Jagatdhatri Puja, X-mas, New year's Day, Netaji's birthday, Republic Day, Saraswati (The Goddess of Learning) Puja etc. — all these festivals are celebrated in October through January next year when the weather is mostly pleasant. I wish you the best for each and every celebration.

We also must not forget that a sizeable section of our population is deprived of taking part in merrymaking, principally due to abject poverty; do we have a role to play?

Below, please find the eleventh instalment from our friend Illiterate Engineer.

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Eleventh Installment

After a pretty long respite, I try to pen down an insignificant fact which may somehow suit the Illiterate Engineer's column. It is very hard to overcome the inertia of indolence. I chew the past, feel that the past projects bundles of occurrences strongly intertwined; it is hardly possible to untie the knots and bring out one individual incident. Even it so, chronological sequence is scantily honoured.

Soduda, the third year chemical engineering class, Section A is very difficult to manage, says Monoranjan, a young teacher of Mech. Engg. Dept.

It is so, but why?

Two pretty girls in the class are the centres of attraction of the boys.

I quip, Of the teachers also!?

Smartly dressed Monoranjan gives a shy smile. Soduda, you are taking their first class shortly; You judge yourself.

Monoranjan is right. The class is on Machine Design and Drawing of 4-hour-duration. I enter

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the class, the students stand up two girls excluding. one is sitting on the high drawing table swinging her legs while the other still sitting on a stool; the former is readying for getting down while the latter stands up reluctantly. I call the rolls generally on the first class along with their names. (In subsequent classes roll-call seems to me a pure wastage of time; normally I collect a chit from one of the students showing the rolls of the absentees).

Present Sir.

Shuvra, have you some problem in standing? How will you draw then? I will see what can be done for you.

The boys chuckle.

Anita, it seems you are fond of sitting on high places. Please be so while in job. Ok?

My habit in practical classes is to persuade the students to complete the assignments in the scheduled classes so that they need not work additional hours at home on this count. I go to each and every student of the class, see what they do, explain if they are wronged and encourage them for neat completion of jobs in the class itself.

I ask Shuvra to bring her drawing board beside Anita's. I look at the drawings they have made. Anita, how happy you are with your design report and drawing? The same question I put to Shuvra. They stand in silence. In later life when you work you may have to write down the project report. The tidiness, brevity and display of your report will speak for you to your superiors. I am very sorry, both of you have done the job shabbily. I am firm that you have not applied your mind, otherwise you would have done a lot better. I am afraid that both of you have to repeat. You know that students for any difficulty are welcome to me any time.

You won't mind, I believe, if I would like to see you in the class nicely dressed so as not to distract the attention of your classmates. You are quite grown up to get what I mean. Tears roll down their cheeks. I add, Remember, you are already three-fourth engineers and you have to tackle various situations in your service life in very near future. Here, you have come to learn, so use this opportunity to the best. Here the atmosphere is friendly which may be the other way round in your workplace.

At the end of the year, they fared much better in the subject. They also used to come at the university soberly clad and mingle with the classmates freely.

In the first class of the new students I always write down my full name in capital letters on the board. Why? I don't like to be an acronym, SS, as placed on the time table. Occasionally I have asked students of a class, Who is the teacher of your class? Very often than not they don't go beyond SM/SC/SR.

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What's his full name?

No reply.

This indifference on the part of students is lamentable. This indicates that the bond between the teacher and the taught is lacking as I feel.

Look my young friends, I am also a student here as I learn and unlearn many a things from you. I envy your position since I can appreciate now how nice our student-days were. Friends, I am not much ahead of the subject. I teach you; I am having a leading power factor while your's is a lagging one. Feel free to ask questions to me. I welcome it. What can be worse? I am unable to satisfy you with my reply; if so tell me that frankly. I don't know answers to millions of questions; so my percentage ignorance will hardly be affected if I fail to answer a couple of questions more. But rest assured, I will bring you the correct replies consulting my superiors. Learning never ends in one's life.

Young friends, I have got a small idiosyncrasy; come to the class sharp on time, don't crosstalk. If you need to talk, talk to me so long I am in the class. I desire you to be regular in the class and come prepared with the lessons given. At the beginning of every class I always invite questions from you from the portions so far taught.

The students look at each other bewildered.

Lastly I, in fine, dwell about course-content to arouse interest of the students in the subject. I make it clear at the first class that you can expect examination questions from what is taught in each and every class.

Yes, speaking.

Sujit, Sir.

Of Hydraulics? What's news?

To-morrow is our departmental reunion. How are you Sir?

At this age the machinery is not that vibrant; it's ok, no complaint.

We all are expecting you to-morrow. Sir, many when approached for the reunion wanted to know whether you would be attending the occasion.

Sujit, I look forward for this day also; but it's a quite chilly winter.

Sir, you don't have to come early. We will send you a car. What time Sir?

Say 10.30/11.00 in the morning.

Can you make it 9.30 Sir? We desire much to have you amongst us while paying homage to Dr. Triguna Sen and Professor Gopal Sen.

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Ok, I will be ready by 9.30.

I wake up at the wee hour at 4, I roll on bed for one hour and a half. I am too excited to meet my professors, very many former students and a host of young and dreaming present students.

Whenever I enter into the university campus, my wonderful student-days of four years make me nostalgic much more than my 38/39 years of teaching life. I become an octogenarian youth. What a magic in the University–air!

My wife says, Where is the car?

May be a jam in the Bypass.

Will you have dinner at home?

I chuckle, What, a piece of hand made roti, a bowl of vegetable and portion of *chhaanaa* (poner), you call it dinner!

Chicken, fish, egg from to-day, she adds coldly.

Why miss the joke! No dinner, *chhaanaa* this evening only.

Your chariot has come.

Ok, I will be back home by five in the afternoon.

When you go out, family gets out of your mind altogether, she complains.

I approvingly smile over her statement lest multiple proofs are forwarded by her to bring her point home.

Sujit rings.

In the bypass now; will be with you by another 30/35 minutes, Sujit.

I am back to my student-days. We are at Bakultala (under Baluk trees) at the tiffin recess in groups of 10/12 each devouring whatever we have in the tiffin box, mostly handmade roti and some vegetables, rarely *parataa* or *luchi* in place. We have taken our fills at home by 9.00 am at the latest and rushed to the college by 10.00, the class starts at 10.10 am. We feel fits of hunger by the tiffin time. Hunger, the best sauce, makes of our tiffin so delicious.

Sir, shall I turn left, asks the cab-driver.

Yes please.

No no, not this gate, next gate. Yes turn left and again left.

Sujit sees me getting down. Sir, have a cup of steaming coffee first.

I meet two of my professors, Prof. Rajat Kr. Chakrabarti and Prof. Girija Bhusan Pal. I am

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being blessed by them from my student days. I touch their feet. There come so many of our students, past and present, they do the same to three of us. Very happy and joyful moments. So much of sweet moments this planet still retains for us, the octogenarian teachers!

So much of rainbow hues in our horizon! Oh God, I feel at these moments of life so fortunate that I switched over to this profession of teaching and research from industry.

We pay our homage to the memorials of Dr. Triguna Sen, the founder of Jadavpur University and Professor Gopal Ch. Sen (who was assassinated the afternoon he retired from service as Vice Chancellor.

I can still see, I am along with two other colleagues, sitting before Prof. Sen two/three days prior to the D-day and having lighter moments when he says, I don't like to live even a day after retirement. Why shall I when I don't work any more? Did the Almighty God listen to him!

My wife who seldom comes to my all purpose room, says, Why tears on your cheek?

My eyes ache a little, it's nothing.

Better use an eyedrop.

It'll be all right if I keep my eyes closed for a few minutes.

She leaves the room.

I am still obsessed with the past. Actually time past is a complex series of events; time present is very short; it opens instant door to time past; time future comes quickly to time present to bury itself into the snowballing past.

I read somewhere, Doing Nothing sometimes is better than doing something. The statement I can hardly digest since Doing Nothing is simply impossible for any life forms, especially the human beings.

Karmo hote abosor moroner doot/Satyo jeno shonaak taa jatai adbhut.

(Absolute leisure is messenger of death / It's true however it appears hardeth).

Mind flashes back to 1963/64.

Sir, you have sent for me.

Well, be seated, I will clear this file, Prof. Gopal Ch. Sen, a rustic gentle man with moustache well trimmed, clad in spotless white *Khadi* (Handloom) *dhoti* and *punjabi*, says. He pushes the calling bell.

He gives a slip to Atul, a bearer.

Prof. G. B. Pal comes in.

Prof. Sen starts, This morning Karmakar, an alumnus, came to me. He is a director of a

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leading machine tool manufacturer.

We are listening to him only.

Then he says, He is in trouble. Can you help him? Sodu, you can.

I look blank, so is Prof Pal. We don't put any question as we are sure he will unwind.

Look, Karmakar's concern purchased a (Russia made) 48 speeds and feeds gap bed lathe (Specifications I don't recollect more than half a century past). They want to manufacture similar type of lathe. They need the design and drawings. This is not a difficult job for you. I have told Karmakar to send the lathe they have purchased to our workshop. You have to indianize the design and simplify the components you feel best. Karmakar asked me about the charge. Don't bother, you pay rupees five thousand only.

I quip, Sir have you given him word?

Oh yes, why?

Sir, this job is a major one, will take time.

Yes, that I have thought over. The examinations of the third year students end by April. Then they will be free. You pick up 10/12 students from them; they will do the job under your supervision. They can earn something and at the same time learn also.

Prof. Pal nods. I say, The job will be done Sir.

Karmakar will bring me a cheque for three thousand rupees to-morrow. So, wish you best. Oh yes, I will tell Arun (Prof. Arun Kumar Gupta) to be with you also.

Prof. Pal and I come out of his chamber. Sodu, it is a prestige job.

Yeah. We have to recruit the boys just at the end of the examination; otherwise it may be difficult to get hold of them. Sir, you please request Prof. Sen to issue a notice to the third year student to assemble in Room M-1-1 for some urgent discussion just after their last examination is over.

First an assembly drawing of the lathe is to be drawn showing the overall dimensions. Number this drawing say 10000. Then separate subassemblies will be identified as 101, 102, 103 so on. Individual components will be numbered as 10101, 10102 etc. 10208 like this. Look at the beauty of this numeral system of numbering the drawings. Location of any drawing component is obvious. Thus 10823 means part 23 is a component of subassembly 08 which is a part of the overall assembly Drg. No. 10000. For larger objects, digits may be seven/eight or more.

Then we start our work dismantling the lathe sent to us. First the tailstock assembly is taken out followed by the headstock with the backgear arrangement, the gear box, the tool post, the apron, the post leadscrew, the feedrod, the motor system, etc. The students themselves form six

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groups, each group comprising two and make division of works for each group. We feel happy that the students are motivated; we are too glad to note the maturity of the three-fourth engineers.

Look, the job must be done neatly to its logical end, the drawings should suit manufacturing practice. Otherwise, the prestige of the department will be hard hit.

Enthusiasm of the students comes out in chorus, No problem Sir.

Good that you are in assertive attitude. The job may take 30 to 40 working days, six to seven hours a day with a tiffin recess of half an hour. We will make arrangement for your tiffin and tea and biscuits twice in between.

Sir, how many views should we make?

This was discussed in your first year drawing classes. Drawing is the language of engineers; draw the least number of views consistent with the clarity of the object. Dimensions should be put where they are most prominent and measurable on actual job. Do not put the same dimensions on more than one view.

Sir, how to check that all dimensions have been given.

Imagine you yourself are to produce the components in the workshop. The omissions, if any, will be apparent to you then.

Prof. Pal says, Sodu, the job content is more than what I thought.

Yes Sir, more than 400 components; so imagine the number of drawings. The surface finish and tolerance have to be given as applicable. Special notings might be needed regarding the finishing and processing; materials have to be specified conforming to IS xxxx, for the critical parts at least.

In about 10/12 days the students complete the main assembly and subassembly drawings. Then they start disassembling the subassemblies, cleaning the components for neat sketching. The students are bubbling with cosmic energy.

Prof Pal says, How to arrange refreshment and tea and biscuits for the students, fee charged is so paltry.

What's to be done Sir, Prof Sen is our teacher also; his love for students is phenomenal. Mr. Karmakar approached him and he wanted to bail him out. His commitment is also ours, Sir.

The students come latest by half past ten in the morning and work upto six in the evening everyday including Sundays. They have also taken the job as a challenge and so progress is very encouraging.

I introduce fits and tolerances as also the surface finish. I warn them, The accuracy of a job determines its cost to a great extent. The more the precision, the more the cost. No no, I don't want you to compromise accuracy; use that accuracy as needed for the appropriate functioning

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of any component. Never mind I will check the fits and tolerances as also the surface finish etc. on your drawings. Feel free to ask Prof Pal or me whenever you are in difficulty or in confusion.

Days pass, the ebullient students have made very good progress beyond our imagination.

We start handing over the drawings subassembly wise to the manufacturer. All the subassemblies have seen released; Mr. Karmakar reports to Prof. Sen highly about the quality of work; only the lathe bed poses difficulty in casting, Sir.

Prof. Sen conveys the message to us. Ok Sir, we will revisit the relevant drawing, I say.

Mr. Karmakar comes to Prof. Sen. I am on the spot also.

Mr. Karmakar, I add you should not have harassed our boys when two of them went to see you in office for collection of balance payment twice. They have taken offence.

Enraged and irritated Prof Sen rebukes Karmakar, What, you don't think about the dignity of our boys. Since you are likely to go higher up the rank on completion of the project, I made even a huge concession on the fee. I have cheated our boys for your sake and your behaviour to our students is so shabby! Karmakar, please leave me to do my work.

Karmakar left the spot head down; he personally brought down the balance of payment and handed over the same to Prof Pal the day after. He could not dare see Prof Sen even.

Karmakar's problem was solved. His company started manufacturing the lathe in a couple of months.

The university owns one such lathe, I know not whether the lathe was donated!

The lunch break is over. One exstudent of mine, now a professor asks me whether I am interested to have a look at the Laboratories in Mech. Engg Building. He takes me to the department on his car.

I am led to Machine Elements Lab.

Well, have the number of experiments increased, new set ups come up, the experiment-sheets recast? I put these questions as the lab which I started from the very scratch has given birth to so many cubicles (probably with computer magic inside) shrinking the lab floor space. I fail to see the friction welding machine designed, drawn and manufactured by the research students, the interlocked hydrostatic and hydrodynamic bearing set up, the structural fatigue testing machine to name a few. I am an antiquated mechanical engineer, computer literacy lacking.

My inner voice says, You don't have that IQ to appreciate the modern trends in research and development, so you are naturally likely to be abhorred by the new generation.

We have come a long way off the basic engineering. There is too much of craze for all the latest modern machines with computer linkages, like CNC, etc. Robotronics is the newest craze;

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these are very costly imported machines. Papers in series are churned out by fiddling the modern gadgets. We have developed expertise in convincing the experts sitting at the helm of the departments sanctioning money for researches. Here experts are mostly created by the powergroup.

Do we ever think, we are cheating on the tax payers!

I happen to remember to be in a meeting of experts visiting our university for accreditation. One of the experts pronounced, Is it at all necessary to include so many basic subjects such as mechanics at this computer age?

Yes, we should start construction of buildings from first floor upwards, I quipped.

The discussion stopped there.

The meeting over, on my way to the department, I saw Prof. Malhotra was waiting for the university car.

I went to him and said, Prof. Malhotra, why do you need a car to travel, just switch over the computer!

He was standing alone and I gave him company till the car arrived.

This illiterate engineer was associated in examining theses (Master & Ph. Ds) all over India. Most of the theses were hypothetical although a handful did a good job, hard core practicals followed by theoretical analyses.

One instance of a Ph. D. thesis I will never forget and that still haunts me. Thence forward when I found a thesis not acceptable, I would return the thesis with the comment that subject matter was not in my knowledge domain to the authority by registered post and I felt a sigh of relief.

One Ph. D. thesis on design of gear written by an Associate Professor of a renowned engineering institute reached me for adjudication. In my report I pointed out that the dimensional analyses embodied in the thesis needed correction. In the viva-voce, I noted that no correction was done. Dimensional analysis gives equations to dimensionless groups which were otherwise in this case. On questioning the candidate replied, If the value of E (Youngs Modulus) is unity then...

Scholars and teachers present at the viva, were very much delighted that I was rightly served.

I felt a deep pain at heart where I have come to conduct the dissertation. With a melancholy smile I said, Rajan, there is no material having its Young's Modulus as unity, think over coolly.

Rajan, you have probably got nervous. All right, please tell me how do you design a gear arm.

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He fumbled.....

And my position was vulnerably precarious.

Rajan, I was told earlier by the internal examiner, needed a Ph. D. for elevation to Professorship.

I became a sacrificial goat.

I have always wished to be meself, but the whole world has got a different plan. Oh God, shower thine divine mercy on hapless creatures like me.

The workshop mechanics demanded, We have to be given authority to evaluate the students in workshop class, so was the demand of the laboratory assistants; otherwise we won't cooperate with the teachers. This unjust demand was turned down by the Boards of Studies.

A workshop class of six periods at a stretch I am conducting, the allotted mechanics is with me. I know their demand, so I don't ask him to help the students in their work. After nearly two hours the machanics says, Sir it is tiffin recess.

No Kalida (incidentally, he has been in the workshop since my student days), the routine shows no break. The students are working, I never leave the class before the scheduled hours; so you are to be here with me.

Weeks pass on, Kalida stands beside me morose; one day he says, Sir its boring to stand idle.

How can I be of help to you in the matter? I can't ask you to violate your collective decision. It's you who can help yourself.

Sir, I never realized that our demand would put me in such a precarious situation; idling tells on my nerve Sir. Even I don't have opportunity to avail of the tiffin break.

Kalida, I am as helpless as you are. However, you can complain against me to the authority, if you so desire.

My conscience pricks Sir. I don't put any work and yet draw pay. Sir, I am tired of doll-standing this way, I will work as I used to.

I smile, Don't impute me anyway.

A morose Kalida turns into a jovial Kalida by the flick of the moment.

Action, reaction, action so friendly, so spontaneous, so refreshing!

I wish such things do happen to dispel so many misunderstandings we confront within life.

There happened another incident at the university when I had to take a stern decision. One typist in the department refused to type out my letter on the plea that those were all my personal

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letters.

I called the typist to know the fact. Amar said, I am a departmental typist Sir and type only official letters.

Ok, Amar, I would remember it.

I instructed the departmental office to get the letters typed by the other typist; in case he could not cope up, I would get some letters typed from the typist pool of the main office.

I took up the post of head of the department not over a week. I checked up the attendance register of the departmental non-teaching staff and put red lines against those still not come and sent it to the departmental office instead of keeping the register in my room. After an hour or so the Secretary (Treasurer!) (who happened to be in my department) of the all powerful union of the party in power, along with quite a few of them entered my room.

I flashed a smile and said, What's the matter?

Agitated Secretary said, Sir, so many of us are being made late comers to-day.

How? I inquire. Then I realized what they meant. Please try to come to office on time from to-morrow.

Sir, we came earlier, we were working at the Union Office.

Has the university relaxed your attendance timing for the Union work? Show me the circular, I will act accordingly.

Amar was having fine idle time in the department for a few days; he was boasting so to his colleagues. But he had to be present at the department from morning through afternoon. All his friends were working and he was simply an onlooker. Gradually he felt bored and frustrated and reported to the Registrar, Sir I stay at the department all through but no work is given to me.

Registrar, who had been informed by his men in the department what had transpired, said, Amar, what you are here for? Go to your Head.

The other departmental colleagues along with Amar came to me, Sir, Amar is too morose now-a-days. Even he approached the Registrar twice. Registrar refused to listen to him.

Ok, now I have to attend my class.

The same afternoon devastated Amar came to my chamber hesitantly.

What can I do for you Amar?

Sir, tearful Amar touched my feet, please forgive me for my misdeeds. He stood in silence head down.

Amar, we all work for the university, for the students. Forget this episode, start working from

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to-morrow. To-day go home merrily.

I like to end this installment with *optism* that I got a prompt reply to my query from a PSU.

A letter to the Chairman of DVC was written.....

“I came across a news item in The Ananda Bazar Patrika dated 30.12.2015 as given below.

DVC’s total thermal electricity generation capacity 6300 MW approximately..... Approximately 17 lac metric tons of coal is needed to run the units in full steam.

.....glad if you let me know.....”

$$\text{Calculated coal consumption} = \frac{17 \times 100000 \text{ tonne}}{6300 \times 365 \times 24 \text{ MWh}} = 0.031 \text{ tonne/MWh}$$

There is not a single thermal power station so efficient the world over, hence DVC was approached for the correct figures.

DVC’s figures (vide their letterAEI/206/Vol. 01/1655 dt. April 23. 2016)

Total thermal power generation : 6210 MW

Annual coal requirement : 32 million metric tonnes

Hence coal consumption (on the assumption of all the units in full steam, this is theoretical

though) = $\frac{32 \times 10^6}{6210 \times 24 \times 365} = 0.59 \text{ tonne/MWh}$ which is a realistic figure.

The readers would be amused to note the statistics by Kotak Institutional Equities which leads to calculated consumption of 3.38 tonnes of oil equivalent per MWh (vide JI. AEI, Vol 86 No. 1 & 2, 2016)

I thank DVC for supplying the data promptly. Is it an indication that our country is geering up to connect with the public who finance the public works? Young India is watching you for a big moment just round the corner of the country. Will you not rise up friends?

10.07.2016

Sd/- Sadananda Satpathy
Illiterate Engineer

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Once more my best wishes and greetings to you all. Please suggest how you feel the centenary celebration of your (our) Association due in 1918–19 be organised.

13.08.2016

Sincerely yours
Sd/- Madhusudan Bhattacharyya