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According to most studies,

DEATH

is the number TWO FEAR that PEOPLE have

and the

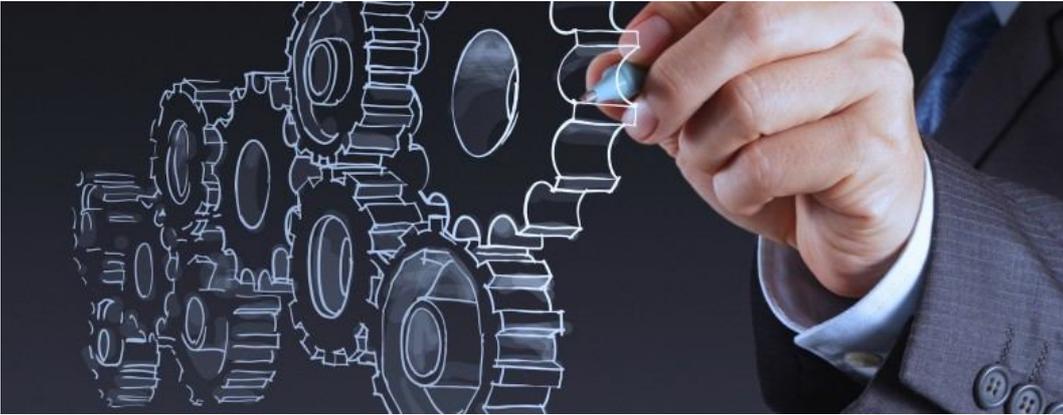
No. 1 is...

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Helikx ANDROID APP on Google Play

Who Is an Engineer? A Quick Perspective After One Year of a University Engineering Course



Article by Doug Seymour

In my personal statement sent to universities (which students worry about too much) to convince them I was a student worth interviewing, I waxed lyrical about engineering, convinced that I should at least know what it was if I was applying to read it.

For sure, I knew enough to know it was the right choice for me, but I really didn't know what it was, despite significant research.

In the first year of a general engineering course at a university like Cambridge you will get an introduction to structures (mainly truss statics and beam theory), materials, dynamics (including a course on vibrations), fluid mechanics, thermodynamics, electric circuits, digital electronics, electro-magnetics, about a quarter of the course will be maths, and there will be various labs. This probably seems like a daunting list, but you have 3 terms in which to do it, and it's all one step at a time. If you are capable of getting the results needed to get in, you are capable of doing the course.

Most engineering students I have met have taken Maths, Physics, Further Maths, and Chemistry at A-Level, but some take Electronics instead of Chemistry if they have

that option. The Further Maths is very helpful, as although it will be recapped in the course, you have a good head start if you have covered some of the material before.

Although many people have the title "Engineer", they do very different things. You will almost certainly not directly use most of the subjects you learn in the general part of an Engineering course in your working life; most likely you will focus on one area, but the general grounding is invaluable in giving you a variety of problem solving skills, in learning what areas interest you, and in knowing what other engineers are capable of doing so you can draw on their expertise in the future. Some courses apply in some way to most engineering careers though, for example materials.

You come to realise that there really are almost as many different engineering jobs as there are engineers; that your career may very well change as you learn; that you haven't learned yet the most interesting engineering that you might do.

Engineering is a great field. There are many permanent careers, and also a lot of opportunity to shape your own career, and to work for yourself in some way.

I am less sure now about what I

want to specialise in than when I applied! But I am more aware of the options. For example I had never considered electronics, but having been taught the first year, it no longer seems remote and unapproachable. For example I now know how computer memory modules can be made, starting

from the raw materials (in one sentence, memory can be made from bistables, which are made from logic gates, which can be made from field effect transistors, which are made from doped silicon). Fluids is also new and interesting. Structural engineering seems like a great area too; a great way to make lasting additions and improvements to the world.

It is quite interesting to look at the specialities that final-year engineers have chosen. In 2009, about a quarter chose mechanical engineering, about a quarter chose structural/civil, about a quarter chose from a variety of electrical/electronic options, about an eighth chose aerospace/thermal, and about an eighth chose energy & environment/life sciences.

In my experience so far, I find that engineers are less likely to be interested in ceremony and vying for social/academic position than natural scientists and mathematicians. Engineers are doers! There are many great academics in engineering, but also the best engineers are often those who are happiest to grapple with the real world rather than abstract academic concepts. Of course combining both is probably the best way to think about it.

public speaking

-- No. 1 Fear that most of the people have --

Effective **Speaking** and **Presentation** Skills Training for Students,
a **Never Before Programme** from Helikx @ Erode.

20, 21 & 22 June 2014 - 3 days

Only for +2 and College Students

Only 40 participants will be registered

For further details and Registration, contact:

Mr. Kumaraguru. G. @ 98427-21343, guru@helikx.com

Mr. Sekar. B. @ 8973702020, sekar@helikx.com



Narasu's Sarathy Institute of Technology (NSIT), Salem)

Career Guidance and Motivational Training conducted for the +2 students organized by NSIT, Salem. Three phases of programme conducted and around 200 students got benefitted from this programme. Different careers and areas of opportunities for the college students were discussed.

Aanandam Silks, Kumbakonam

Motivational Training programme conducted for the workers of Aanandam Silks. Two Programmes conducted, one at Ramnadapuram and another at Kumbakonam. Team work, Self realization Goal Setting and Self motivation were the modules discussed and nearly 100 workers got benefitted from the programme.

Other Programmes:

Career Guidance at Coimbatore organized by Libera Foundation.

Career Guidance and Motivation for +1 and +2 students organized by Sri Jaya Jothi Spinning Mills, Rajapalayam.

Career Guidance Programme on "Kalvi Vazhikaatti" for the +2 students organized by The Salem Times, Salem. Nearly 100 students participated in the programme.

Chairman's Column



Express Yourself

It is a great pleasure to meet to you all through our official **Newsletter Aadhar**.

With all your support we have successfully completed this year's **Behaviour And Skill Enhancement (BASE)** Camp for School Students. Connecting to this programme we are conducting the follow-up programme in the month of December 2014 for the students participated in this camp.

With the response we have received for this camp, we are conducting Phase -II of BASE camp between 25th and 30th December 2014.

And College students can utilize their

vacation usefully by participating in our "**Effective Public Speaking**" Programme for 3 days in the month of June 2014. We will reach you with the promotion shortly.

And we have started working on the module for Bridge Course for first year College students.

Looking forward for all your guidance and support for our new initiatives and projects.

Thank you once again.

G. Senthilkumar, Chairman, Helikx.

The Layers of Resistance



Mr. S. Balaji,
Director, Consultancy Vertical

(6) Not knowing what to do.

In addition to the new subdivision we can also see additional richness in the last 3 layers as well.

Six Layers – Smith

Chad Smith, in an appendix to Debra Smiths' *The Measurement Nightmare* wrote an

The layers of resistance are an integral and pivotal part of implementing any application; logistical, non-logistical, corporate or personal. There are in fact a number of different verbalizations by various authors and each of these seeks to make finer subdivisions than the original 5 layers. Let's work through these verbalizations to ensure that we are familiar with them all. Then we will attempt to synthesize a composite verbalization that is both compact and useful. Then, at the end of this page, we will present a table to map all of the verbalizations onto the appropriate Thinking Process tool.

Let's have look then.

Five Layers

The earliest public domain verbalization of the 5 layers of resistance appears to be in Goldratt's *My Saga* dating from 1996

- (1). However, the concept predates this by some several years.
- (1) Raising problems having one thing in common – it's out of our hands.
- (2) Arguing that the proposed solution cannot possibly yield the desired outcome.
- (3) Arguing that the proposed solu-

tion will lead to negative effects.

- (4) Raising obstacles that will prevent the implementation.
- (5) Raising doubts about the collaboration of others.

In this first published verbalization we see the basic framework; the problem, solution, reservations, obstacles, and leadership issues.

However, it wouldn't be too long before other people began to see additional subtlety and introduce additional layers.

Six Layers – Cohen

Lepore and Cohen published a 6 layer version of the layers of resistance in their *Decalogue* (2). Here the second layer – the solution – is broken into two; disagreement about the direction of the solution, and lack of faith about the completeness of the solution. Let's have a look.

- (1) Disagreement about the problem.
- (2) Disagreement about the direction of the solution.
- (3) Lack of faith in the completeness of the solution.
- (4) Fear of negative consequences generated by the solution.
- (5) Too many obstacles along the road that leads to the change.

additional verbalization of the 6 layers of resistance (3). Again the original second layer – the solution – has been broken into two.

- (1) Disagreement about the nature of the problem.
- (2) Disagreement about the direction of the solution.
- (3) Disagreement as to whether the solution will result in the desired effects that are necessary for the organization.
- (4) Disagreement that the solution has no disastrous side effects.
- (5) Disagreement that the solution is viable in the environment.
- (6) Unverbalized fear.

We saw how this particular verbalization had been rephrased in the language of agreement on the page that we came from – the page on agreement to change.

Nine Layers

Now we enter "internet territory." Efrat Goldratt is credited with developing 9 layers of resistance, but I only have a transcript of the event (4). Never-the-less let's include it until a more official source is located.

Contd... in Page # 5

Layers? Contd...

Here, the original first layer – the problem – is now broken down into 3 parts. The original second layer remains broken into two parts as above. The original fourth layer – obstacles – is now subdivided as well into; obstacles, and communicating/ implementing the intermediate objectives that overcome the obstacles.

- (1) There is no problem
- (2) I think the problem is different
- (3) The problem is not under my control
- (4) I have a different direction for a solution
- (5) The solution does not address the whole problem
- (6) Yes, but the solution has negative outcomes
- (7) Yes, but the solution can not be implemented
- (8) It is not exactly clear how to implement the solution
- (9) Undefined / fear

This is the most complete verbalization to date. Once you have seen each of these layers in action you won't forget the sequence.

A Composite 5 Layer

If we have a good 9 layer verbalization, why compress things back into 5 layers? Well, in part because the sequence; the problem, the solution, reservations, obstacles, and leadership is fundamental. It is also easier to understand and remember without prior experience. If we need more detail we can always come back to one of the more extended verbalizations presented here.

Firstly, I want to "borrow" Lepore and Cohen's second layer subdivision of "direction" and "completeness" of the solution and make them one composite layer. Secondly, I want to keep the third to fifth layers as sim-

ple as possible. Thirdly, I really want to make a fundamental distinction in the first layer. The distinction does exist in Efrat's 9 layer version, but it is not sufficiently explicit.

This distinction is based upon experience in one large factory – in fact the largest factory of its kind in the world – where there was an MRP system that finite scheduled one group of machines as a constraint. This was interpreted by the management as a quasi drum-buffer-rope solution and thus neither heaven nor hell was going to allow a true drum-buffer-rope modification to be implemented. What to do?

There was no disagreement (after about a week) on the extent of the problem – very long lead times and huge work in process. But clearly there was real disagreement about the nature of the cause, the nature of the problem. The constraint machines were considered to be identified and fully exploited already so they *couldn't* be the cause. Therefore the "nature" of the problem was identified as batching policy. Therefore the "direction" of the solution became a change in batching policy and we could show how this would substantially reduce many of the problems (but not all because we didn't address the real core issue).

Thus I find the previous verbalizations lacking in this distinction between the extent of the problem and the true nature and cause of the problem. Therefore I want to construct a composite first layer that addresses this. This is what I have come up with.

- (1) We don't agree about the **extent** or **nature** of the problem.
- (2) We don't agree about the **direction** or **completeness** of the solution.
- (3) We can see additional negative

outcomes.

- (4) We can see real obstacles.
- (5) We doubt the collaboration of others.

This is simple and compact without detracting from the richness of the more involved verbalizations. Moreover, it allows us to examine the richness in the first and second layers. And to do this we really need an appreciation of Senge's detail and dynamic complexity (5).

In essence we can subdivide layers 1 & 2 into two;

- (1a) We don't agree about the **extent** of the problem – **detail complexity**.
- (1b) We don't agree about the **nature** of the problem – **dynamic complexity**.
- (2a) We don't agree about the **direction** of the solution – **dynamic complexity**.
- (2b) We don't agree about the **completeness** of the solution – **detail complexity**.

When we reach the discussion on the Thinking Processes we will see that there is one tool that is especially suited to dynamic problems – the cloud. There are two tools that are more especially suited to the detail of the problem and of the solution, the current reality tree and the future reality tree. These three devices together allow us to determine the problem and to determine a solution. However the key is the cloud.

Summary

We have presented a number of verbalizations of the layers of resistance and derived a compact synthesis that will be useful later in these pages. For the time being, let's map these various verbalizations against the Thinking Process tools and see if that better helps to understand the interrelationships.

75% of Indian Students Use Internet to “Research for School”

by *Anand Murali* · in *India Online*

One third of Indian students use twitter to communicate with peers, according to a new survey. Nearly 7 out of every 10 high school students own mobile phones and nearly 20 % use mobile phones to access the internet, this is nearly a two fold jump compared to just 12% seen in 2009, the survey said.

Which of these brands of electronic items do you use?			
Brands	All India	Metro	Mini Metro
Samsung	48.28	49.45	47.10
Nokia	46.46	46.48	46.43
Apple	39.56	38.01	41.11
HTC	36.54	37.64	35.45
Other	33.96	34.16	33.76

The report titled ‘Gen-Y Survey 2012-13’ was based on a survey conducted by IT major TCS on nearly 17,500 high school students across 14 Indian cities. It found that smart devices and unprecedented levels of online access are making this generation the most connected generation yet.

Here are some of other the key insights from the survey:

Nearly 3 out of 4 students said “Research for School” was the main reason to access the Internet followed by social reasons like chatting/connecting with friends (62%).

Accessing e-mail is a growing preference (49% vs 44.54% in 2011-12) at the cost of listening to music (45.47% vs 50.27% in 2011-12).

Using Cyber Cafes as an online access point has dramatically dropped from 46% in 2009 to 14% today.

1 in 5 respondents spend between a nearly 2-3 hours on the Internet

daily, while 1 in 5 spend between 1-2 hours.

Social networks like Facebook are the primary and clear favorite among Gen Y to connect with their peers with 92% of respondents preferring this social platform. Other social platforms like Orkut have taken a back-seat with a 28% preference.

Mobiles (18.17%) have emerged as the fastest growing mediums for accessing the Internet among Gen Y, at the

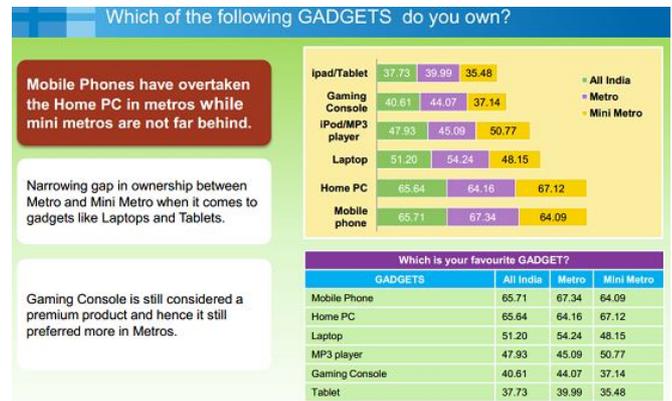
expense of home (72.03% vs 84.29% last year), School (14.41% vs 22.08%) and Cyber Cafes (13.57% vs 20.54%).

74% of those surveyed said they use Facebook the most to communicate, while 54% used SMS – both significantly higher than the number of students who said they used voice calls (44%) for the same purpose.

Tablet ownership made an entry this year with 38% owning a device, with 40% metro-based respondents owning one compared with 35% in mini metros.

Preferred electronic devices in order of preference are: Samsung (48.28%), Nokia (46.46%), Apple (39.56%) and HTC (36.54%).

Respondents from mini metros shop online more than their peers in met-



ros for movie tickets, books/DVDs/ music and airline/train tickets but respondents in metros are more fashion conscious, shopping more for clothes and accessories.

IT remains the top career preference amongst youngsters irrespective of geography with Engineering and Medicine following. Media / Entertainment is emerging as a clear urban favourite but the biggest gainer has been banks and financial services.

Which of the following Social Networking Sites have you registered with ?			
Website	All India	Metro	Mini Metro
Facebook	83.38	83.95	82.81
Twitter	29.43	29.79	29.08
Orkut	27.85	29.01	26.68
Others	23.99	24.59	23.39
None of the Above	22.33	22.47	22.20
Pinterest	15.73	22.23	9.23
LinkedIn	14.54	20.22	8.86

Early use of career sites like **LinkedIn** are more popular in business centric metros (20.22%) compared with mini metros (8.86%) were Linked-In is still catching on .

Students are one of the most sought after target demographic in the Internet and telecom industry. Telecom majors such as Reliance Communications and Airtel have custom plans to attract this crowd. Messaging services like What app have partnered with Reliance Communications to roll out free Whatsapp on campuses.

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