

Engineering habits of mind

Read (if you have not already):

What makes an Engineer an Engineer? By Erik Anders Nelson, Structures Congress 2012.

Extract: "Engineers, at a minimum, are visual thinkers, artists, scientists, risk takers, worriers, and self-reflective professionals who value intuition, logic, and living meaningful lives. We are in constant search for the knowledge to be able to do things (know-how) not necessarily knowledge itself (know-that). We want to actively participate in creating a better built world."

The following list contains jokes and short definitions or comments. Both cast light on what an engineer is, how s/he thinks and (equally as important, I fear) how he (not usually she) is regarded by society. None of them are original to me, most are unattributed, and some of the jokes are not even funny – but they are out there! Thanks to Ed McCann for several of them.

I have ordered them roughly, with the more serious first.

"A scientist can discover a new star, but he cannot make one. He would have to ask an engineer to do that." — *Gordon L. Glegg, British Engineer, 1969.*

Scientists observe the world to improve their minds; engineers use their minds to improve the world. (*Quoted by Ed McCann*)

Price doesn't matter. This point was taught to us on day one, class one, hour one of the engineering program I attended. Cost is what matters, the rest is just math and imagination.

Engineering problems are under-defined, there are many solutions, good, bad and indifferent. The art is to arrive at a good solution. This is a creative activity, involving imagination, intuition and deliberate choice. - *Ove Arup*

Engineering is the art of modelling materials we do not wholly understand, into shapes we cannot precisely analyse so as to withstand forces we cannot properly assess, in such a way that the public has no reason to suspect the extent of our ignorance. - *Dr AR Dykes*

A good scientist is a person with original ideas. A good engineer is a person who makes a design that works with as few original ideas as possible - *Freeman Dyson*

Aeroplanes are not designed by science, but by art in spite of some pretence and humbug to the contrary. I do not mean to suggest that engineering can do without science, on the contrary, it stands on scientific foundations, but there is a big gap between scientific research and the engineering product which has to be bridged by the art of the engineer.

[I am] opposed to the laying down of rules or conditions to be observed in the construction of bridges lest the progress of improvement tomorrow might be embarrassed or shackled by recording or registering as law the prejudices or errors of today. - *Isambard Kingdom Brunel*

My advice is to look out for engineers. They begin with sewing machines and end up with nuclear bombs. *Marcel Pagnol*

There is nothing in machinery, there is nothing in embankments and railways and iron bridges and engineering devices to oblige them to be ugly. Ugliness is the measure of imperfection. *H.G. Wells*

Engineering is a great profession. There is the satisfaction of watching a figment of the imagination emerge through the aid of science to a plan on paper. Then it moves to realisation in stone or metal or energy. Then it brings homes to men or women. Then it elevates the standard of living and adds to the comforts of life. This is the engineer's high privilege. *Herbert Hoover*

Engineering is not merely knowing and being knowledgeable, like a walking encyclopedia; engineering is not merely analysis; engineering is not merely the possession of the capacity to get elegant solutions to non-existent engineering problems; engineering is practicing the art of the organized forcing of technological change... Engineers operate at the interface between science and society... *Dean Gordon Brown*

The ideal engineer is a composite ... He is not a scientist, he is not a mathematician, he is not a sociologist or a writer; but he may use the knowledge and techniques of any or all of these disciplines in solving engineering problems. *N. W. Dougherty*

Go for civil engineering, because civil engineering is the branch of engineering which teaches you the most about managing people. Managing people is a skill which is very, very useful and applies almost regardless of what you do. - *Sir John Harvey Jones*

Experience serves not only to confirm theory, but differs from it without disturbing it, it leads to new truths which theory only has not been able to reach. - *Dalembert*

I am an Engineer, I serve mankind, by making dreams come true

I take the vision which comes from dreams and apply the magic of science and mathematics, adding the heritage of my profession and my knowledge of nature's materials to create a design

Engineering refers to the practice of organizing the design and construction [and, I would add operation] of any artifice which transforms the physical world around us to meet some recognized need. - *GFC Rogers*

Engineers ... are not mere technicians and should not approve or lend their name to any project that does not promise to be beneficent to man and the advancement of civilization - *John Fowler*

An engineer is someone who can do for 10 pence what any fool can do for a quid.

An engineer is a person who studies hard to be able to drink more than anyone else while in school, then makes more money than the same people in the workforce.

The aerospace engineer is the guy in the plane who is whimpering quietly and looking worried.

Optimist: "The glass is half full."

Pessimist: "The glass is half empty."

Engineer: "The glass is twice the size it needs to be."

"To the engineer, all matter in the universe can be placed into one of two categories: (1) things that need to be fixed, and (2) things that will need to be fixed after you've had a few minutes to play with them. Engineers like to solve problems. If there are no problems handily available, they will create their own problems. Normal people don't understand this concept; they believe that if it ain't broke, don't fix it. Engineers believe that if it ain't broke, it doesn't have enough features yet." - *Scott Adams, The Dilbert Principle*

Suppose you meet a girl in a park. She's riding a bike. Taking off all her clothes she screams 'Take whatever you want'. If you take the bike, you're an engineer (the clothes wouldn't have fit you anyway). [*Yes, I know this assumes that engineers are male*]

An engineer is kick-ass uber-genius with godly math and science abilities, the training for which being at the expense of those abilities for spelling and talking to members of the opposite sex.

When a surgeon makes a mistake he kills one person; if an engineer were to make a mistake she would kill hundreds.

Three men (only one of them an engineer) were about to be put to the guillotine. The first person to go up made a last request, to face upward towards god. They allowed it and pulled the lever; The blade came down, but stopped an inch before cutting his head off, so he was released. The second man made the same request, and the same thing happened. Last was the engineer. He said, "you know what? why not?" and he also faced upward towards god. Just before they pulled the lever, the engineer said "wait a second, I see the problem".

What is the difference between Mechanical Engineers and Civil Engineers? Mechanical Engineers build weapons; Civil Engineers build targets

What do engineers use for birth control? Their personalities.

An engineer is someone who washes his hands before going to the toilet.

An engineer is someone who is good with figures, but doesn't have the personality of an accountant.

A mathematician, a physicist and an engineer were being interviewed. As part of the process, they were given 2 brass ball bearings, left alone for a while, then asked what they had done.
Mathematician: "I haven't done anything with them, but I've some theories about 2-ness."
Physicist: "I've tried to balance one on the other, and have some ideas about friction."
Engineer: "Er... they broke."

A common mistake that people make when trying to design something completely foolproof is to underestimate the ingenuity of complete fools. - *Douglas Adams*

Q: What is the definition of an engineer?

A: Someone who solves a problem you didn't know you had in a way you don't understand.

Q: How do you drive an engineer completely insane?

A: Tie him to a chair, stand in front of him, and fold up a road map the wrong way.

An engineer was crossing a road one day when a frog called out to him and said, "If you kiss me, I'll turn into a beautiful princess, and I'll be yours forever." He bent over, picked up the frog, and put it in his pocket. The frog spoke up again and said, "if you kiss me and turn me back into a beautiful princess, I'll be yours forever". Again the engineer took the frog out, smiled at it and put it back into his pocket. Finally, the frog asked, "What is the matter? I've told you I'm actually a beautiful princess and that I'll be yours forever. Why won't you kiss me?" The engineer said, "Look, I'm an engineer. I don't have time for a girlfriend, but a talking frog, now that's cool!"

.... and finally, of course you should watch Dilbert's The Knack at :

<http://www.youtube.com/watch?v=CmYDgncMhXw>

compiled, with no claims for originality, by Peter Goodhew, October 2013