

**THINK  
LIKE AN  
ENGINEER**

**DON'T  
ACT LIKE  
ONE**

**JAN KAREL MAK**

## LOOKING FROM THE INSIDE OUT, AND THE OUTSIDE IN

Engineers make the world. Using their intellect and experience, they are always coming up with new, better, safer machines, roads, locks, buildings and instruments. Non-engineers look on their works with admiration, but sometimes with a certain astonishment. Astonishment most of all about the engineer's ambiguities: ingenious and self-assured in technical realms, but often a little idiosyncratic in other respects. And despite all they do for the world, frequently prepared to accept lower rates of pay than a lot of other talented professionals.

The things an engineer designs are bought or rejected by "ordinary" people, used or discarded, lauded or ridiculed. It is in that use (or non-use) that their intrinsic value lies. The essence of engineering work is not the technology itself, but its interaction with the world around it – the world of critics, buyers, users...

**Engineer:** you do what you do for people. People who are sometimes hard to please, so it helps if you can see things from their point of view. Empathy, listening, selling, teamwork, persuasiveness: these are the skills you need in your everyday working life, even though they are overshadowed in your training by technical know-how.

**Non-engineer:** technical work is complicated, sure. But what engineers find really difficult is explaining it, and putting it into practice. Once you realize that, you will understand them much better.

This collection of anecdotes, tips, and observations is the product of thirty years of experience in the world of engineering. It is written in part "from the inside out" – from the point of view of engineers like me – and in part "from the outside in," through the eyes of a person seeing the engineer at work. As I do too. I hope that the result will provide engineers and those who deal with them with food for thought, and perhaps even raise a smile.

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#2



# BE JUST PRECISE ENOUGH

Everything. A perfume combining 1400 fragrances.

Engineers are used to giving precise information. It shows that they're the specialist. That they know what they're talking about. 19.9 plus 22.3 isn't 42. No, it's 42.2. But in many cases such precision is unnecessary. Annoying, even. If someone asks you how many weeks there are in a quarter, "13" really is a better answer than "13.045". Being too meticulous can cause confusion and make it harder to get your message across. Match the degree of detail and exactitude to the situation and the needs of the person in front of you. Otherwise you'll just be viewed as an irritating know-all with all your complicated sums and pedantic decimal places. ■



**#3**

# GO AGAINST THE FLOW

Gerrit Rietveld, Berlin Chair, 1923

As an engineer, you're expected to do your homework. You check that what other people say is correct, and you test generally held opinions and beliefs. But when there's a lot at stake, it can be hard to go against claims widely accepted as true – especially if they're espoused by influential figures. And yet that's exactly what you have to do. After all, you haven't been hired as a yes-man (or woman). You may not be thanked for it at the time, but prevent a wrong decision and eventually you'll be the hero. Say nothing and you can be darned sure who'll get the blame if things go wrong: "Well, you were the engineer..." ■



#4

# YOU'RE THE ENGINEER

Genius Diego Maradona playing against Belgium at the 1982 soccer World Cup.

For you, numbers, ratios, and relative differences are second nature. But not for everyone. Exponents, logarithms, arc seconds, Fourier series... To most people, they mean nothing. They don't immediately realize, for example, that stepping up the volume from 70 dB to 73 dB isn't a slight increase, it actually doubles the noise intensity. Or that if the number of visitors grows by 7 percent per quarter, after five years there'll be four times as many cars to park. Think carefully about who you're talking to, and how to explain things so that your non-technical customer or colleague understands them. ■







**#67**

## **DARE TO BE PROUD**

Crowd cheers as actors arrive at the premier of the movie *Black Mass* at the Coolidge Corner Theater in Brookline (Mass, U.S.A.).

As an engineer, imagine you're working on a major project vital to the community. A new and innovative hospital, say. The outside world is extremely curious about it, as are the hospital's own PR department and the medical specialists. But you'd rather be cautious. After all, "We can't be sure yet that everything's going to work." And: "Hey, we've been working on it for a while, so it's not all that new." Or: "Now isn't the time for PR talk – get back to us in three years, once we've tested everything..." Wrong! Never forget to be proud of your work. Even now, even though things aren't done and dusted yet. ■

**This collection of anecdotes, tips and observations is part of the series Think Like a Pro, Don't Act Like One, which reveals the world as seen through professional eyes. From the lawyer's to the designer's.**

## **THINK LIKE AN ENGINEER DON'T ACT LIKE ONE**

**offers 75 ingenious insights for a richer life. Discover what you can learn from Jacques Brel, how you can use Trump to your advantage, and why Maradona is a shining example for everyone. Even if, like most people, you're not technically minded. This is a handbook for everyone trying to understand our "kind".**

**"I try to inculcate in my students the idea that there are different 'ways of thinking' and that they must be capable of adopting the right one for the task at hand. This collection helps one to understand what it means to 'think like an engineer', combining the precision of a scientist, the aesthetics of an artist and the social consciousness of one who knows that what they do will matter in the real world."**

Howard Shrobe - Principal Research Scientist  
MIT Computer Science and Artificial Intelligence Laboratory

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