



*"My father bought a piglet. He fed it well and he fattened it up. He sold the pig to buy a motorbike.*

*It was a 350cc Ariel and riding that bike he taught himself the art of the racing line and the beginnings of the art of engineering. One day he went to a little road race circuit called Syston in Leicestershire and he won the 350cc race with record lap and record race speeds. He entered the 500cc class and won that too, with record lap and race speeds. He entered the 1000cc class and did it again. All on a 350cc bike. He was King of Syston and came away, walking on air, with a works contract. The stuff of legends.*

*He raced at Brooklands and the Isle of Man TT. He did very well out of it but he had to sell up and join up for the Second World War.*

*As a Squadron Leader in the Technical Corps he was a meticulous engineer and he made a great reputation. Later he became race chief for AJS and Matchless motorcycles but suffered from the appalling British management of manufacturing in the 'fifties. Just when he was sure he had a bike capable of winning the World Championship they scrapped the race team and soon after bankrupted the company. He earned his Membership of the MechE with a paper which I have been told is a Standard of understanding fluid dynamics with the basics of inlet port gas flow.*

*My father smoked a pipe. His pipe was his trade-mark. Deep in thought or deep in conversation my father would go through the automatic ritual of lighting his pipe. Tapping out the old charge, filling the pipe with new tobacco, tamping it down, lighting up and he would complete the ritual and puff thoughtfully away on the pipe – and then put it in his jacket pocket. It was an extraordinary thing to do! He often set himself on fire but on at least two occasions, when he was both in deep thought and deep conversation it seemed that either a fire extinguisher or a bucket of water would be needed to extinguish the billowing smoke and the impending human conflagration. But he would be wearing the same jacket the next day. He had his own way to contribute to global warming*

*He was very English and proud to be British. It was his career model that mine so unintentionally mimicked. Even his frustrations of poor manufacturing management the 1950s and '60s repeated for me in 1970s.*

*There were at least two differences between his and my careers. My career did not start with a piglet and whereas in his the fastest bikes were British, in mine the fastest were Italian or Japanese and I was desperate to ride the fastest bikes.*

*In 1967 I was leading the World Championship with my single cylinder Arter Matchless Special. One dark midnight in the Isle of Man I was very busy preparing my bike for the next morning's practice. Although I was busy I was persuaded to talk to some people in a car waiting outside. Very mysterious. Two men in dark suits and dark glasses. I thought, "Blimey, it's the Manx Mafia!" But instead, they were two very nice Japanese chaps. "Mr Williams san we work for Yamaha. Will you come to our hotel tomorrow to meet our chief?" I got there at 3pm and they took me to the bedroom. (We didn't have meeting rooms in those days. The whole team was there except for the two team riders and the boss.*

*Perhaps I should explain that this was at the height of the first Japanese onslaught on motorcycle racing. Honda raced 5-cylinder 125cc 4-stroke bikes against twin cylinder 2-stroke Yamahas and Suzukis; Honda raced 6-cylinder 250cc 4-strokes against 4-cylinder 2-stroke, liquid cooled Yamahas. They were incredible machines, They were a "showcase" for Japanese engineering. And they were fast, incredibly fast. Phil Read*

*and Bill Ivy were the riders for Yamaha. Phil Read was already a World Champion and would win more but he was a bit of a "so-and-so".*

*After a few minutes the race chief came in and said, "Mr. Williams, you know Mr Read rides our Yamahas. Mr Read is, ah, difficult to work with. Mr. Williams, if you ride our Yamaha will you beat Mr. Hailwood on the Honda?"*

*Beat Mike Hailwood? Mike Hailwood, the best, the greatest rider the world had seen?*

*Well, I know what I should have said. I guess I know what you would have said. I wish now that I had said, "Yes." But I said, "No".*

*It was lack of confidence, a fear of not being able to deliver, that let me down. Confidence is very important in life and business.*

*That moment and that one word, "No", may have defined my future for I effectively discarded the possibility of ever being a World Champion.*

*Instead of trying to be a World Champion, I was able to feed my patriotism and my love of engineering by the re-emergence of the British name, Norton, from the post-war industrial mud. By joining Norton I got two intense pleasures. I got the intense pleasure of winning races. Not because it shows that I was a better rider but because of the experience of riding nearer to perfection than anyone else and sometimes doing the near impossible. The engineering was intense too. When I had an idea for something, did the sums, did the drawings, got the thing made, fitted it to the bike. And then to see that bit more power on the dyno; or to see a few more revs on the rev counter; or to shave a second off a lap time, it was an intense pleasure!!*

*I experienced it again this year. I have designed a new sort of chassis without a frame. It does not use the engine as part of the structure. It is a Monocoque. It replaces the traditional frame with the stressed bodywork. I designed it because the normal, traditional frame gets in the way of everything. It's a bloody nuisance. The 600cc Honda engine in my prototype was replaced quite easily by an electric motor and batteries.*

*Almost the first turns of my prototype's wheels were down Bray Hill in the Isle of Man TT. My heart was in my mouth as it did the two laps of the toughest road circuit in the world. But it did it with no problems because my calculations were correct. My claim that the bike could carry more batteries than any other is correct. The bike steers beautifully. What pleasure, what satisfaction.*

*The satisfaction of making things work is why we are engineers. We, the British, are pretty good at engineering and I want Britain – Great Britain – to make things again. I want Great Britain to be a Great Manufacturer again, using the technologies that our British brains and talent for engineering can bring about.*

*And, of course, we are here this week as a step towards that. In particular, we are here this week to work with the rest of the world to work out what the world will need for its transport of human beings and cargo in twenty or thirty years from now. Maybe sooner!*

*I am amazed at the vast investment in hydrogen by Japan and Germany – and London. It presents a simple face with a complicated and expensive background.*

*My personal opinion is that the hybrid is the answer. It will have a constant speed internal combustion engine fuelled by alcohol harvested from the sun's energy and driving a generator charging batteries to power electric motors. But if that is not the answer then it is part of the exciting engineering adventure that awaits us for the next thirty years by which time I am sure the way forward will be clear. It better be.*

*This Conference is part of that adventure in nurturing Networking and Communication towards that aim.*

*But my word “adventure” makes light of what is a very, very serious business. The world, our World, our planet, depends on the scientist and the engineer to get things right. And I suggest to you that this serious business is as serious as a World War.*

*We are all in something like the Third World War right now, and we win it by World Cooperation.*

*The methodology for success is in Teamwork.*

*Not just of teams within your engineering departments and inside each company that produces the superb ideas we see at Millbrook this week. This Conference is not just about showing off the clever bits of kit that your clever companies have developed.*

*It is about Networking and Communication but it is also about Collaboration. There is collaboration between companies but there must be much, much more. We British tend to work alone on our pet fascination of the moment and then, when finished, move on to a new craze complaining the while that we haven't made any money out of the last one.*

*Some years ago I was at dinner with a Japanese friend who told me that if he wanted to have a prototype made he came to England; if he wanted a hundred he would go to Germany; if he wanted ten thousand he put people to work at home.*

*By definition our engineering companies are separate from each other.*

*Therefore our companies are fragments of the industry.*

*For this emergency our companies should join together into a strong association – stronger than the sum of its parts - able to show a united face to government and investors to give them confidence to provide much more funds to solve the problem – the emergency.*

*Its back to that word, “confidence”, and that word, “organisation”. Actually, unlike those incompetents of my father's and my own experience thirty, forty and fifty years ago, when we want to be good organisers, when we have to be good organisers, we are great organisers. Formula One is a great example of what we can do. It's an example not just of engineering prowess, but of organisation, too. You don't win races without the best organisation, the best car and the best driver, but it is organisation that comes first and attracts the car design and the driver.*

*It has been fifty years since the Japanese started to show us the Management Techniques that are the basis for efficient working and Lean Manufacture. There are some British companies who have bought into them very successfully but I think that, as a general rule, we in Britain only pay lip service to these principles and techniques.*

*But we have to get much more serious about them.*

*Adopt them more and adapt them more, target them to a wider and coordinated research process than we have now to enable Great Britain to provide the answers.*

*Knowledge is Power and Manufacturing is Wealth. This is a Commercial World but it is a World facing an Emergency.*

*So, share your knowledge. Work in teams. Work in teams of companies.*

*Let's defragment. Let's get together as a country and with our friends from overseas and save the World. And in the process, make Britain great again.*

*Thank you.*

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