Reality check time

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1. So Where Are We?

I take over from Andy Ford at a very uncertain time. Some see the issue as avoiding a ‘Double Dip’ and finding the ‘Recovery’. Others ask, ‘recovery to exactly what?’, and claim the very fundamentals have changed. I am not qualified to judge, but I am haunted by the list of countries now outperforming the UK economy. It is not they are doing what we do, only better. Most are doing something different: being normal. The Office for Budget Responsibility now tells us we had deluded ourselves into thinking that we were the ‘fastest growing economy’ in the OECD. But when we thought we were, every eccentricity was argued as the recipe for our success not the precursor of our downfall. Now the myth is bust, it ought to be the time to rethink fundamentals. As they are now saying in France, it is time to be Normal. That is my theme tonight.

2. Engineering and Its Inconvenient Truths

I am reminded of the story of the Emperor’s New Clothes. As a systems engineer I see the state at the last page as follows: Conmen and money have disappeared; a mystified child; a reaffirming grumpy old man; people ridiculing the Emperor with no recollection they had once been conned as well; Emperor wondering whether there might be something in what they say. But, and here is the part that did not survive Danny Kaye: the Chancellor still grimly holding on to what he had previously advised was a visible Imperial train. Look around. Does any of that sound familiar?
The story needs updating. Today the conmen would not have absconded. They would have sued the child’s parents for slander. Before a naked Judge Judy the child would get a well-deserved ASBO. The Chamberlain would have hired a PR company to reposition the Imperial Brand and saturate media space – ‘cold is the new cool’. Where I wonder should I put the Chartered Institute of Robe Makers? They could have supported the child, or they could have spotted that making nothing was a good line of business and instead took the conmen to the Competition Commission.

But then where does CIBSE fit in, pinned down as it is by inconvenient facts? Do we stick with 19C as the comfort temperature for heavily robed Emperors or drop it quietly to 25C to avoid the Imperial lineage terminating with hyperthermia? It’s a tricky call that I don’t have to make. The problem that others have with engineers is that engineers deal with reality. ‘No one is a relativist at 30,000 feet’ as Richard Dawkins once said. And reality can mean inconvenient truths.

It seems to me that Engineering Institutions have some thinking to do, especially in the UK where many public institutions have almost no internal engineering expertise. One institution I see has awarded itself the accolade ‘thought leader’ – cool, like Aristotle, whatever. If engineering institutions fail to comprehend that good engineering requires tight language not diffuse ideas, we are in trouble. That challenge is my topic tonight.

3. Public Relations and Engineering Facts

The Shard is, to say the least, a controversial building. It is one of those structures that looks impressive from afar, and awful close up. Readers of the Financial Times will know that I share Ken Shuttleworth’s critique in Building Design. The building is unerringly like the Ministry of Truth on the opening page of 1984. That is all personal opinion. But those tasked in spinning the invisible robe to command a rent in thousands of pounds per square foot keep transgressing into engineering fact rather than concentrating on the tenants’ view. It is the tallest building in Europe, but that does not make it an Ariane Rocket. It just means London has a quirky land use planning system. Should IStructE prick the bubble that this is just a fully glazed lift shaft? It is a tough call, since some of its members have spent a lot of skill working out how to bolt it together. It is not a ‘vertical city’, at least if CIBSE Guide D is
right, more a vertical cul-de-sac. And what wears my patience thin is that the architect is allowed to assert that it is 30% more energy efficient than a building of its type without saying what type. My back of fag packet has it twice the consumption of a more normal structure. Developers naturally want to get their money back. But why should their PR consultants seem to think they can exaggerate engineering with no risk of comeback?

To me an even graver transgression into CIBSE's patch was a campaign run by the global advertising agency JWT on behalf of a major oil company. In bold the advertisement says 'Let's Heat Our Cities with Clean Energy'. Well lets. Nothing on this advertisement is there by accident. Imagine how long it took to Photoshop the street snow scene at the bottom. The company logo finds itself conveniently just where your eye stops its scan of the frame. Since nothing is accidental, I conclude that the four unconnected sentences in small font are not accidental either. They allude, but never quite assert, that gas and the company are the solution.

What is different here from the poor old Shard is that a first reaction is that it is ‘only an advertisement’. But unlike the Shard it is everywhere: my station, my magazines, my airport terminal, my main street, your main street. It is not intended to reason with you the case for gas, it is intended to subvert your reasoning. If YouGov were to report '60% think gas is the cleanest fuel', it is not because those polled know it to be true, but because their subconscious remembers it must be. MORI phones me from time to time as energy thought leader (sic) to elicit my perceptions of this company. They never ask for facts. The Poll is designed to pick up the advertising campaign, the Campaign the Poll. So ‘gas heated’ appears in our client’s brief without us having the slightest idea whether this is thought out, or just Pavlovian reaction.

I have no idea whether any institution challenged the company on this campaign. As an experiment I took it to the Advertising Standards Authority on ‘250 years of gas’. It got as far as Council. The only satisfaction I have is that the summer campaign has been tweaked and now makes a fraction more sense. I do not wish to pillory oil companies here. On this campus their internal engineering expertise is up with the Gods and they are locked, probably unwillingly, in an arms race of corporate image building. But I cannot see how legislatures in participatory democracies are supposed to work in this kind of environment. The total confusion over the true shale gas story is a tragic case in point.
But might not the PR industry suggest that this criticism is throwing stones in our own greenhouse? Have not engineers themselves become embroiled in this mendacious way of presenting their wares? Have you ever used the word ‘smart’ – smart meters, smart grids, smart cities? Did you ever mean anything other than plain ‘automated’? Would not ‘automated’ have been a more honest presentation of the limitations of real time control systems? May be that was why you used smart. May be smart is the Emperor’s new dumb.

4. Is ‘sustainability’ sustainable?

Finally, I come to the mother of all nonsense, ‘sustainability’. The twentieth anniversary of the Rio World Conference, when sustainable development was launched on the world, takes place on my watch. Ten years ago Terry Wyatt went to the Jo’Burg Conference and returned inspired by what he saw and jolted us to look at what were our impacts on the external environment. It is also when I started teaching engineering for sustainable development to Master students. Their first assignment was to find the original Brundtland Report written 25 years ago and read it. That can be a bit of a shock. It is a full length readable paperback. It reviews all the major issues of the day without fear or favour. Some are depressingly familiar, like biodiversity loss. But others like population, megacities and arms control have since mysteriously disappeared from the discourse. The Commission found Governments tended to push development today while fudging that it would have to be paid for tomorrow. That sounds just too familiar this minute. The ‘learning’, as they say, was for the student to understand that the issue of managing sustainable levels of development were perfectly comprehensible before clever diplomats, wordsmiths and the corporate responsibility industry mangled it. The famous Brundtland definition was just to make it clear they meant big issues over big timescales.

Twenty-five years is a long time. I am reminded of a quip by the author Jeanette Winterson ‘Don’t forget entropy and gravity. What is next is not necessarily Progress’. In a quarter of a century we have watched, as spectators, the epic sweep of Brundtland shrink to virtually nothing. This is not the occasion to deconstruct ‘sustainability’. But should not we as the industry’s systems engineers raised concerns at the logic we now have? If IStructE had thrown away the Eurocodes and promoted ‘loadibility’ instead
would any of us have felt it safe to go back into a building? As it is, giving ‘sustainable’ to the wordsmiths of provocative planning applications has been like giving vodka to Eskimos. We, like the RIBA, rightly give members guidance how to thread their way through all this stuff, but it is hard to see how it saves the planet. We have ‘environmental sustainability’ as what is left. If we were Normal would we not just have had an environment policy instead? Or like using automated for smart would we have been just smoked out? It is an odd environment policy that just seems to make things ugly.

5. Low carbon coal and Its friends

A particular issue for CIBSE has been making sense of manmade climate change. I do not mean the mendacity of some climate contrarians in the US Tea Party. I mean the particularly British eccentricity of making it all so complicated, when the Normal position might have simply been ‘save energy and save the planet’. Just suppose in the style of the original Framework Convention on Climate Change that I helped negotiate, CIBSE Members had been asked to do better what we were already getting the hang of – reducing primary energy consumption – with some renewables thrown in for energy security and good measure. Would we not be still where we are today, since it is the same engineering? Indeed we might have been further forward in outturn performance because we would not have spent so much time worrying about 2050, a date beyond reasonable forecasting. We might also have had more players in tow. Even Nigel Lawson, who cannot see climate change when it is staring at him, might buy better energy performance for a country switching to become a major energy importer from unstable and volatile energy markets.

Readers of the Journal no doubt understand what is meant by the low carbon agenda. But what people on the Clapham omnibus make of ‘near net zero carbon’ I am not so sure. The point of this gobbledygook is presumably to leave a margin to bamboozle. A ‘near net zero energy bill’ is inconveniently something even the dimmest of clients could check for themselves. Indeed I wonder just how many times ‘energy’ is thrown at us – energy performance of building directive, energy efficiency directive, even the Energy Efficiency Deployment Office – before we raise our heads and spot that greenhouse gases are not our only energy issue. Rapidly rising prices for imports and infrastructure renewal are looming for our
clients on a massive scale. Installed generating power is declining. The trick is surely to solve the mounting problems while decreasing greenhouse gas emissions. This year’s Annual Lecture is to be given by Alistair Buchannan Chief Executive of Ofgem, so watch this space.

6. Knowledge

It is time to help reality strike back. In the 1970’s when I joined the industry, engineering authenticity was on autopilot. Audiences knew what a concert hall sounded like and the Festival Hall didn’t. School children knew what it was to be comfortable and in summer they weren’t. Clerks knew what they had to see and because of glare and shadow they could not. Pioneers in building science like Parkin, Humphreys, Milbank, Hopkinson and their co-workers codified these issues in a way that Normal engineering could address. Their work forms the foundation of the CIBSE Guides. It was also the foundation for the great engineering success of the last two decades. The construction industry has created some of the most awesome internal spaces in the whole of the history of construction. It is taken for granted that they will not be cold and draughty or dark. It is the lot of the services engineering that when the job is done really well, by definition, no one notices what we have done. Presumably that is what makes us so humble!

That knowledge is also the central foundation of the Knowledge Portal. It is where I suggest that we launch our fight back on behalf of Normal engineering. In Andy’s presidency the portal was opened to the membership. That is a game-changer for the Institution. We are no longer the owner of a selective bookshop, we are the purveyor of a knowledge system – from W.H. Smith’s to Britannica.

The response to the Portal has been fantastic and a credit to the HQ team who constructed it, with some 40,000 visits. This I contend is the significance of Normal engineering. In a time of mega info, nano know how and zero wisdom, a knowledge system is at a premium. The Portal is not quite there yet but if we have to iron out every wrinkle we would be too late for its task. We need all the Members’ help we can get. If you hear a media studies graduate say fuel cells run off of water, do not fume, send us your piece on fuel cells in services. If you hear someone else talking about energy harvesting of body heat, don’t bury your head, send us a piece on low temperature heat recovery. The Board
will be sharing with Council our plans to incorporate the Portal’s development process into all our technical machinery. This is serious business and we are fortunate in having the wise head of one of our Past Presidents, David Hughes, to guide the process.

7. Blogging President

I will be undertaking a President’s Blog. I hope to spend some time in it rubbing out green-wash, a topic I know bothers our Young Engineers Network. But it has to be rant free – which comes with the office, and, as you will gather, hard work for me. So send what bothers you to president@cibse.org and I will do my best. But do locate where it clashes with what is in the Portal. That, as befits material for use by many of us when expert witnesses, is a spin free zone. ‘Smart’ doesn’t even appear in the narratives! Of course spin adds a bit of fun to life, just keep your spin off of our Portal’s turf. One part time blog is not going to win a war about transgression of spin into engineering fact. Social media is a weapon that can be used for good or ill. Imagine having to follow the Fuehrer on Twitter or have Uncle Joe Stalin as your Facebook friend! But no time to shirk, and I am going to explore with CIBSE staff what more we can do to push the Normal back into public life.

8. Outcomes Are Our Weak Flank

But now my final worry – why should I have to do all this? Other engineers work with very creative people without their own engineering authenticity being compromised. It then struck me in a flash. The difference was that their engineering actually worked. I justly celebrated what we can achieve in the internal environment, but I forgot to mention reading the meters. Spin has sniffed out our weak flank and exploited it. High performance buildings are what we do well and what we celebrate each year at the Building Performance Awards. But there is a serious disconnect when designers at RIBA Stage B are worrying about carbon intensity of the grid (whatever that means) to one part in a thousand, while Commissioning Engineers and Facilities Management at Stage L think they are lucky if they get anywhere near 20% of design values. As they might say in software engineering: WIDIWYG – what is designed isn’t what you get!

So the real field to muster our forces is measuring and learning from the performance of real buildings. If we knew how to deliver what we promised we would be much more likely to be able
insist on promising something real. That must mean making a real effort to support benchmarking of occupied buildings. In normal engineering the general principle is ‘if it ain’t tested it won’t work’. There is no crime in not meeting a design aspiration of a Design Energy Certificate C. The crime would be not finding out why. Once you have the answer rush it into the Portal. England and Wales already have the basis for a brilliant benchmarking system based on public building DECs. It is unfortunately hard to get at, to say the least. I am hoping we can work with Departments to get around the problem. It would be a very English tragedy to have got a lead on Europe (and indeed Scotland) only to fritter it away because of some creaky statutes. I am sure the Secretary of State for Communities and Local Government is right alongside us in wanting to get down the costs to local authorities of energy use. Benchmarking is the proven way to do it. There is a lot more to be done, and we hope to work with our fellow institution ASHRAE in bringing benchmarking and labelling to the fore where ever high performance buildings are required in any part of the world.

9. Conclusion

You have all been very patient with my letting off steam tonight. Personally it has been very frustrating for someone who began life in monitoring buildings to see the prostitution of fact in the interests of spreading confusion. I hope individual members will feel free to mount their own protests whether to planning authorities or advertisers or even government press offices because normal engineering cannot survive without its grass roots advocates. Nor can we survive in this tough new world without normal engineering. CIBSE is in one sense a small player, but in an area under much pressure. At the same time, what we do affects something like a third of the energy costs of the economy. We are about better building performance in the most rounded sense. We need to make that clear in how we present ourselves in the role we play.

In his Annual Lecture this year Chris Wise, designer of the Velodrome, challenged engineers to say ‘yes’. I have no problem with that. Problem solving is our business. But I hope I have persuaded you tonight that there are times when Emperors are wandering around lost and naked that you should want your Institution to say ‘No’, as a big ‘Yes’ vote for being Normal.

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