



Episode 666 | June 10, 2022 | 12:00 PM EST

Robert Bean Adam Muggleton

The Edifice Complex Hosts and Radio Joe Team Up to
Solve the World's IAQ & Building Science Problems

This week we offered a change of pace for our audience. We are playing back a new show that Radio Joe recorded recently with the hosts of the Edifice Complex Podcast, Robert Bean and Adam Muggleton. This was a wide-ranging show on the subjects of: podcasting, IAQ, building science and disaster restoration. We may not have solved all the world's problems but we did at least start to assemble a list of issues and begin defining what's needed. This was a thought provoking show great time with two worldly Canadians one of whom is a transplant from the UK. This was wide ranging discussion on the past present and future of IAQ and the built environment.

Robert Bean is a retired engineering technology professional having practiced in building construction engineering technology and mechanical engineering. He specialized in the design of indoor environments and high-performance building systems. Bean is a third term ASHRAE Distinguished Lecturer, recipient of the Lou Flagg Award, and Distinguished Service Award. He has authored numerous papers, articles, and course curriculums and serves on several technical committees related to indoor environmental quality, building, and thermal energy systems.

Motto: Design for People, Good Buildings Follow

Adam Muggleton has been immersed in property and construction for 37 years. Having worked in 20 countries and held leadership positions at several firms, Adam has a unique skill set derived from experience in property development, design team management, project management, and building commissioning.

Adam is passionate about promoting the concept of Commissioning Management as an effective project management tool, to hand over buildings that actually work. He devises and delivers successful project, leadership and testing strategies that achieve optimum outcomes for those involved and affected.

As an industry leader, Adam served on the CIBSE Commissioning Code “A” committee for the 1996 code re-write and the UK BSRIA steering group for Application Guide 16/2002 Variable Flow Water Systems. Adam also served as an international board member for the USA Building Commissioning Association.

Adam’s focus is on property development as a:

- Property Industry Blogger, Podcaster, and Philosopher
- Chartered Project Management Surveyor (RICS)
- Qualified Building Commissioning Professional

Philosophically, the question is this, “why are zero defect, high-performance buildings not normally delivered?”

Nuggets mined from today’s show.

- Like a Star Trek episode, Robert Bean and Adam Muggleton similar to Radio Joe and the Z-Man live in parallel worlds of IEQ related podcasting.
- The Edifice Complex Podcast began when Adam pitched the idea of a podcast to Robert in a bar.
- (Radio Joe) The IAQradio Podcast began after Cliff learned about TalkShoe (a computer program that simplified podcasting) and pitched Joe on the idea.
- (Radio Joe) After 16 years and 666 shows; the IAQradio team of Radio Joe and Z-Man are now the “old guys” of IEQ podcasting with a deep archive of interviews which remains relevant today.
- (Radio Joe) IAQradio began as a podcast and has now expanded distribution through Podbean and YouTube.
- (Robert) IAQradio is multidisciplinary with invaluable knowledge and info on: IAQ, IEQ, disaster restoration, building science.
- Adam nailed it when he commented the keys to successful podcasting: it’s dependable, consistent, and executing at a high level.

- (Radio Joe and Z-Man) The disaster restoration industry in North America has matured. Investors have gotten into the industry and are buying both restoration firms, suppliers and manufacturers.
- (Adam) Why do insurance companies insure waterfront property in hurricane prone areas? These areas remain desirable to owners and investors, because insurance creates moral hazard by lowering, the true cost of risk, therefore artificially lowering the costs of ownership. Insurance companies should adjust their costs annually or withdraw coverage.
- Adam appreciates restoration and adaptive reuse of existing buildings and offered the former Bankside Power Station in London UK which is now an art gallery as an example: <https://www.tate.org.uk/about-us/history-tate/history-tate-modern>
- (Radio Joe) Disaster Restoration is a global business. Strong interest in North America, Europe, UK, Austral Asia, Middle East, etc.
- (Radio Joe, Adam & Robert) Certification should be the single source of truth and authority. However, the industry currently lacks consistency. In the USA alone there are 16 different certification programs for building commissioning. Some consist of 2 days in a room and others require extensive training and experience plus a rigorous technical exam. Unfortunately, the market cannot easily differentiate the good from the bad. There is strong resistance to consolidate due to turf wars. This is not just an American problem; there are over 600 Green Building Certifications worldwide! Paralysis through analysis. Overproduction of elites. Certification inflation. Credential chasers who collect acronyms to put after their names. In Adam's experience, more credentials are often inversely proportionally to knowledge, experience and skill! The credential PE is all that is needed to know that someone is a licensed engineer. Some presenters resumes' exceed the length of their presentations. Anything longer than a one page resume is a crime against humanity.
- (Robert & Radio Joe)The guests on IAQradio show number 1 were: Nicholas Money (author of Carpet Monsters and Killer Spores), Glenn Felman (former publisher and association executive) and Tom Yacobellis (founder of Ductbusters).
- The industry started out as IAQ, morphed into IEQ and now due to Covid went back to IAQ. IAQ is more than just high CO² levels. IAQ is now a global consideration.

- (Radio Joe) ACGIH's "CIH" designation is well recognized and keeps chugging along. CIH's were more industrially orientated rather than residential oriented. CIH that work in IEQ need building science training.
- According to Robert Bean, when people hear the term IAQ they immediately think HVAC. IAQ is much more than HVAC. Moisture is the #1 damage function in buildings. HVAC folks aren't trained in moisture. The industry needs better and simpler building science training for practitioners. Some people research things to the nth degree such as cars and vacations and then rely on unknowing people to specify systems going into their homes. Radio Joe suggests that building science training begin in junior high school with practical examples using the student's home (e.g. condensation in shower) as a learning environment. (Z-Man suggestion) For instance using the chart below to explain the concept of masking.



- (Radio Joe) Some of the best building investigators don't have formal training in building science or engineering; they are people like Jeff May and Carl Grimes whose homes made them sick and couldn't find anyone who could explain why. There is a career here. Things need to be fixed.
- (Adam) Construction quality will only change when buyers demand better quality.
- The NFPA has been effective in driving change. The insurance sector is the 8,000 pound gorilla.
- (Adam) The genius of LEED is the motivation to do better and compete on virtue. Legislation is what really moves the needle because it has compulsion (Latin for force). Building Codes are generally 10 years behind actual industry practice and societal needs. The easiest way to change the Building Code is to first change individual municipal buildings codes.
- (Adam) Litigation is an effective tool in the US; big awards create incentives and disincentives. The UK "Cladding Crisis" is the result of 2 apartment building fires that resulted in significant loss of life and property damage. After investigation the government was unable to hold any parties responsible. https://en.wikipedia.org/wiki/United_Kingdom_cladding_crisis
- As a result of the "cladding crisis" the UK instituted the Golden thread, in order to document building and construction related decisions and be able to hold responsible parties accountable. <https://goldenthread.co.uk/>
- Adam predicts that the Goldenthread will reach across the pond into North America.
- (Adam) Evidence based design and control. Predicts that with advancements in measurement and sensors homes will soon have built in sensors, controls and alarms to alert occupants of problems. (Radio Joe) Haven IAQ is a great example of a firm working in this area. <https://haveniaq.com/>
- (Robert) Lobbyists will vigorously fight this, society hopes that lobbyists will lose. Mandatory increases of insulation and residential fire suppression systems are examples of issues against which construction industry lobbied and lost.

- Adam noted that 25% of the building cost in Toronto, Canada is taxes and fees.
- (Robert) Bill Bahnfleth (Penn State) deserves a humanitarian award for work correcting misinformation circulated in Canada regarding Covid. The ventilation rates are based upon when the building was built, these ventilation rates were not pathogen driven!
- Open source data is a great idea. (Radio Joe & Robert) It's frustrating we must buy access to published research to learn how to help clients. (Robert) While moderating a panel discussion at a conference a woman stood up and said "We're trying to save the 'f---ing' planet, please share your info!". (Robert) I decided to buy shares in the publishing companies that sell the data to be able to afford the data I'm buying.
- (Adam) North America is blessed with cheap energy, in the UK and Europe energy costs are much higher driving more concentration on building tightness. When things are expensive solutions will come!
- (Adam) Building Codes change is easier in the UK due to less lobbying resistance.
- (Robert) Denmark is a world leader in energy conservation, efficiency and extracting the maximum amount of work. Custom Building Codes.
- Contractors only want to do minimal compliance. What will the consumer tolerate?
- (Adam) UK and Denmark use radiant heat. The US supply chain is optimized for air systems, so it's hard to recommend radiant systems in North America.
- (Radio Joe) What about Middle East, and China? (Robert) The Middle East emulated North American construction style with heavy incorporation of windows; they've learned the toll windows take on energy efficiency in hot climate and are moving back to their traditional building styles. Dubai is moving away from fossil fuels. In China, there is a lack of resources so decisions are cost driven. (Adam) Due to the environmental movement and LEED the needle moves where energy is cheap due to aspirational reasons. (Robert) Asia has many good engineers, the desire to do it, along with the usual BS. China requires energy efficiency. They have huge cities. Sustainability love of ethos, every building is local; responding to local requirements. (Adam) North America is blessed. (Robert) North Korea and South Korea are bookends, one country is backward and the other modern.

- (Radio Joe) What about India? (Robert) India has too many people and not enough stuff. India has population and resource constraints. There are many frustrated scientists in India. When they attend events globally they are among the smartest attendees. They understand the science, the engineering and the social issues; and struggle within their own boundaries and borders. With a population of 1 billion, its impossible for India to be like North America.

ROUNDUP-

- (Robert) Our best regards to the Z-Man, sorry he couldn't join us.
- (Adam) We should do this type of show again periodically.
- Congratulations on 600+ shows
- (Radio Joe) Thank you to our loyal sponsors. Without them we couldn't do the show.

Z-Man signing off