



Lessons and Insights

From a non-traditional career

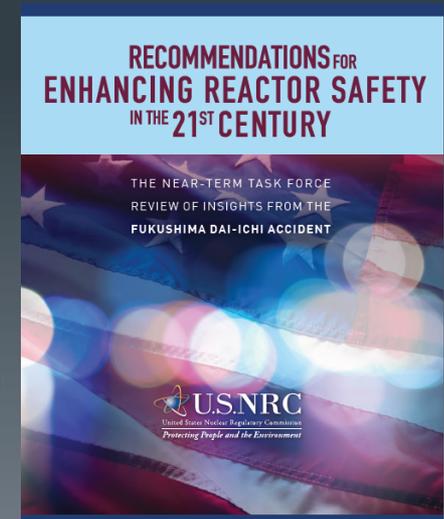
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Background

- “Non-traditional” because I’ve rarely done anything that a “normal” geotechnical engineer would have done...and experience in academia, consulting, and government
- Finished PhD in 2002 & moved to London to work for Arup
- **Returned to US fall of 2002**
 - Guest lectured at Berkeley fall 2002 & Consulted in Arup San Francisco
 - Mostly infrastructure, energy, and “sensitive” buildings
 - Work had both focused (PSHA, liquefaction) & interdisciplinary (SSI, on-site engineering) tasks/projects
 - Gained a reputation for taking “outside the box” work & being willing and able to do unusual things (which got me a lot of cool work)
- **In 2006 moved to the Nuclear Regulatory Commission**
 - Went for 2 years with the intent of updating seismic hazard guidance and then returning to consulting. Stayed for 7 ½ years.
 - I didn’t fit in the culture which is why I was effective but stressed
- **November 2013 back to Consulting in San Francisco as Principal Seismologist for Bechtel**

Background at NRC

- My “normal” day job at the NRC was to coordinate the seismic and tsunami research program (government & academia)
- Went on an 18 month detail to implement the Post-Fukushima Near Term Task Force recommendations
- Technical lead for Recommendation 2.3: seismic walkdowns of all operating nuclear power plants (NPPs)
- Technical expert for developing guidance on other recommendations for:
 - Updating hazard assessments for all US NPPs
 - Performing probabilistic risk assessments for NPPs whose new hazard exceeds its design
 - Changing the federal code to require new hazard evaluations every 10 years
- Significant amount of work with IAEA (continuing with Bechtel)



Some experiences

- Owner's on-site engineer for first liquefied natural gas (LNG) receiving terminal in western North America (+dozens of projects globally)
- Developed and modernized PSHA guidance and models for NPPs in the US
- Through work with USGS and NOAA, developed the first real guidance on tsunami hazard assessment for US NPPs. Wrote guidance for IAEA
- Author of new guidance on seismic isolation for NPPs (2014)
- Oversaw post-Fukushima walkdowns for all US NPPs
- Grew NRC research program from scratch into a \$4M respected program doing important research that reaches beyond nuclear
- NAE Frontiers of Engineering alumni & invited to NAE workshops
- 2 dozen+ publications and lots of lectures

“know thyself”

- Jobs in academia, consulting, and government are very different. The work is different and the cultures are different. Each has benefits and drawbacks. There are also differences between universities/companies/agencies.
- To find happiness you must first look inward and understand yourself. What type of work makes you happy? What kind of office makes you happy? What do you want your work-life balance to look like? Decisions for your future should honor what you know about yourself (above money, what your family & friends say, etc).
- If you are an intuitive person, honor that gift and follow what your gut is telling you.
- Wherever you are be yourself...preferably the best version of yourself.

Keep learning

- The old idea that PhDs mean you have to teach is not true
- If you are interested in something, learn about it even if you can't see how it fits into your work
- Multi-disciplinary knowledge is very rare and can set you apart
 - Attend lectures in other fields
 - Talk to colleagues of other disciplines
 - Pay attention in meetings
 - Being able to “translate” across disciplines is extremely valuable
- Pursue projects that broaden your skill set & ask to work on project with people you admire
- Take advantage of trainings and courses offered at work
- Look for mentors, reach out to them, and be a good mentee

Learn to communicate well

- The ability to communicate effectively will be a major differentiator in your success and opportunities.
- Present to communicate, not to show how smart you are.
 - Learn to present complex concepts simply
 - Learn to keep yourself out of the weeds
 - Don't be overly precise in dealing with laypeople
- Learn to write clearly, concisely, and for the technical layman. Take classes if you need to. Non-native speakers should also develop skills and rely on editors/tech editors. The need to be able to write well cannot be overstated.
- Emails should ALSO be grammatically correct and clear.
- Leaders have a clear goal, see how to achieve the goal, and can communicate that vision such that it inspires others.
- Regardless of leadership abilities, the person who can communicate well is ALWAYS highly valued.

Be a good person to others and yourself

- Be nice
 - Say “thank you”
 - Show patience and empathy (*this was my struggle at the NRC*)
 - Give others due credit, especially those under you
 - Be a good mentor to the young people under you OR show appreciation for your mentor’s time
- Always be ethical
- Always be responsible and someone that others can rely on
 - Be honest if you are overburdened
- Give back to the profession and society
- Take care of your health
- Make sure those you love know it

Network

- We all know this right? This is how most people in consulting actually get their jobs
- If you are shy, force yourself to talk to others at conferences, meetings, and professional gatherings
 - this made a huge difference in my life and how I found Tom O'Rourke as a life-long mentor and developed a big network
- Develop an elevator talk (sum yourself up in one minute)
- Give out and get lots of card (write notes on cards as reminders)
- Helps with international work
- Easier once you get to know people
- Practice makes it easier too



Learn & pay attention to the legal stuff

- Eventually you will have to work with contracts. Learn what you can about them along the way.
- Contracts are king. If it's not in the contract, it wasn't agreed to and isn't expected.
- Never sign (or approve) a contract without reading it (either at work or in your personal life).
- In consulting, learn to identify, point out, and document scope creep. Don't agree to out of contract work without the understanding that you will get paid.
- If there is an opportunity to take a class in contract risk management...take it.

International work?

- Do you LOVE to travel?
- Are you free to travel?
- Are you adventurous?
- Do you have broad skills and do you like pushing into new areas?
- Can you think outside the box?
- Options
 - International Consulting
 - Construction monitoring
 - Project management
 - Design-Build companies
 - Government

Pros and Cons

- Government
 - Science/Engineering work can be very interesting
 - Feel like you're giving back to society
 - Great benefits & stable work
 - Can be pretty good pay depending by agency (at highest levels always lower than private industry)
 - The highly competent and responsible people tend to work very long hours
 - Lots of jobs to get you outdoors
 - More structured and you have to deal with more "roadblocks" and "dead wood"

Pros and Cons

- Academia
 - Highest flexibility (except for private consulting)
 - Interesting work that you can control (except for all the committees)
 - Valued and respected by society
 - Constant need to be writing proposals & rejection rate can be frustrating
 - Constant need to be publishing
 - Stressful and long hours until you get tenure
 - Exception is a teaching university, which is more laid back. If you really just love to teach and make work-life balance a priority, this is a great option.
 - Options for additional private consulting

Pros and Cons

- Consulting
 - Hours can be flexible or rigid (generally long hours regardless)
 - Can have a “family” or “corporate” environment, depending on company culture and size
 - Some firms have really interesting work, some focus on a “standard” type of project and just churn and burn
 - Often limited options for creative work, except on your own time
 - Can be highly lucrative
 - Transition to private consulting at the end of your career is fairly easy
 - Most firms not great for work-life balance



Most of all...

Have fun, be healthy,
and enjoy your life