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Navigating from Academia to Industry

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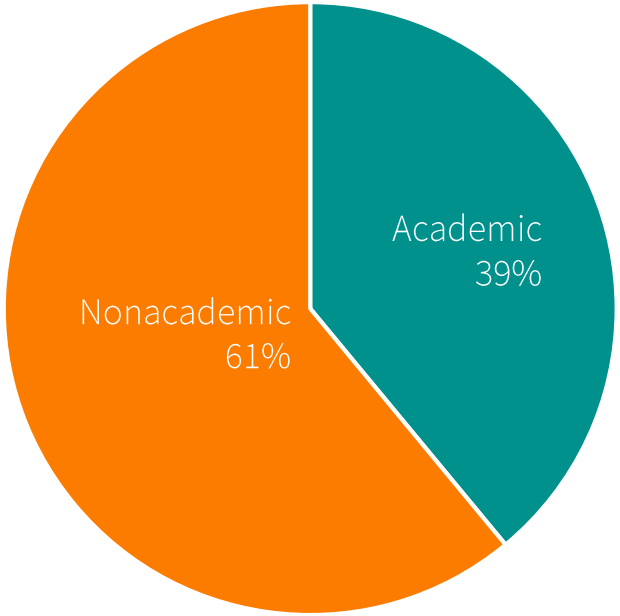
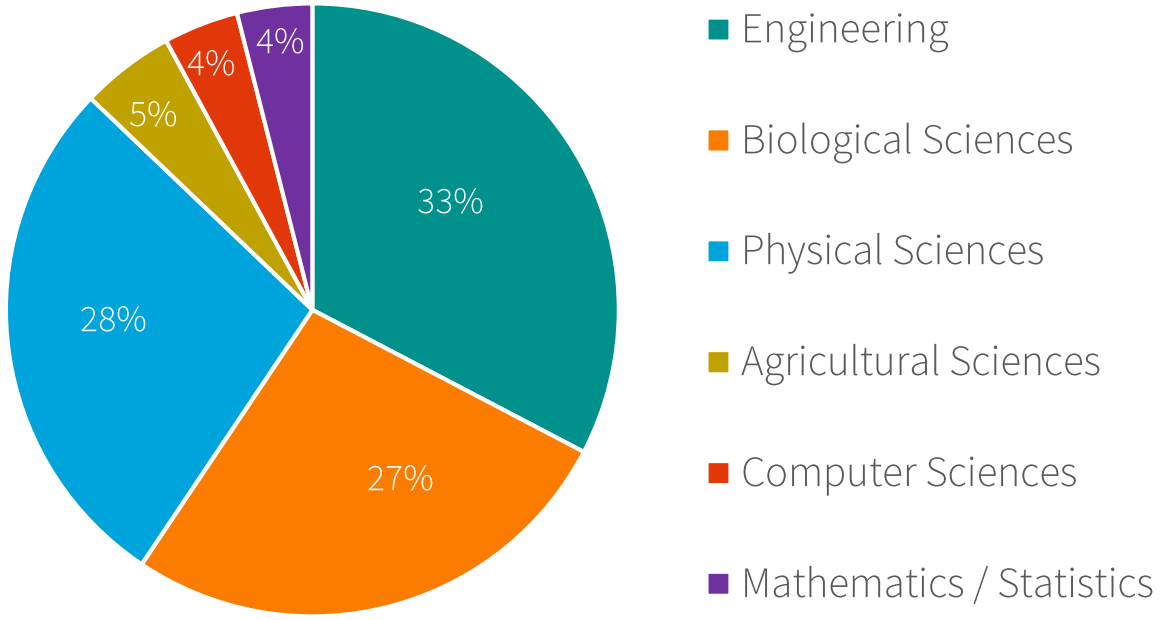
May 22nd, 2019

Non-Academic STEM Distribution

- Careers change: I started graduate school intent on becoming a professor
- Realized I wasn't a 'fit' for an academic model
- I pivoted by taking a postdoctoral appointment on more applied work





Turk-Bicakci, Lori, et al. "The Nonacademic Careers of STEM Ph.D. Holders." *American Institutes for Research*, 16 May 2016, www.air.org/resource/nonacademic-careers-stem-ph-d-holders.

My Path From Graduate Student into Engineering Consultant

Graduate Student

Engineering Consultant

- Northwestern University, Ph.D.
  - Oxide non-linear optical crystals
- Naval Research Laboratory, PostDoc
  - Pseudocapacitor metal oxides
- SiNode (now NanoGraf)
  - Silicon anodes
- Exponent
  - Engineering Consulting
    - Battery assessment

My Path to Industry: Leveraging Experience and Connections

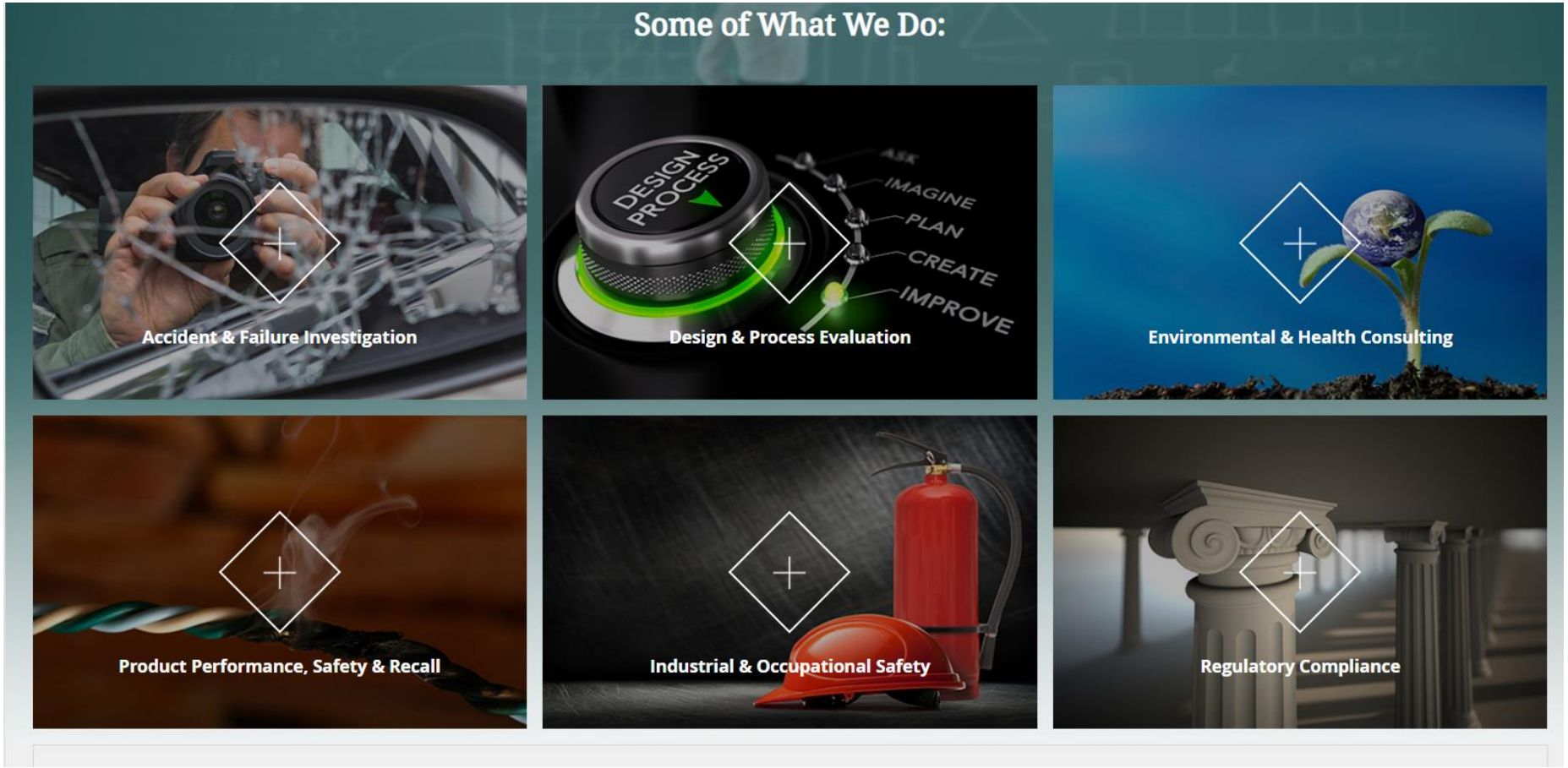
- Northwestern University, Ph.D.
  - Attended numerous conferences: met my future PostDoc adviser
  - Worked on as many broad projects as I could

- Naval Research Laboratory, PostDoc
  - Used my experience in fundamental structure analysis for electrochemistry

- SiNode (now NanoGraf)
  - Startup out of my graduate school

- Exponent
  - Didn't know what engineering consulting was; I knew someone already employed at Exponent

Working as an Engineering Consultant



- I arrived at Exponent via people I met at conferences and friends/colleagues
- To do this, communication throughout my PhD, PostDoc, and Industry were vital
- Communication is a two way street and is more dependent on **listening**

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Communication of Work

- "'Interesting and unpublished' is equivalent to 'non-existent'" – George Whitesides
  - To enter industry, your work experience must be known either by personal interactions, papers, conferences, and hopefully all three

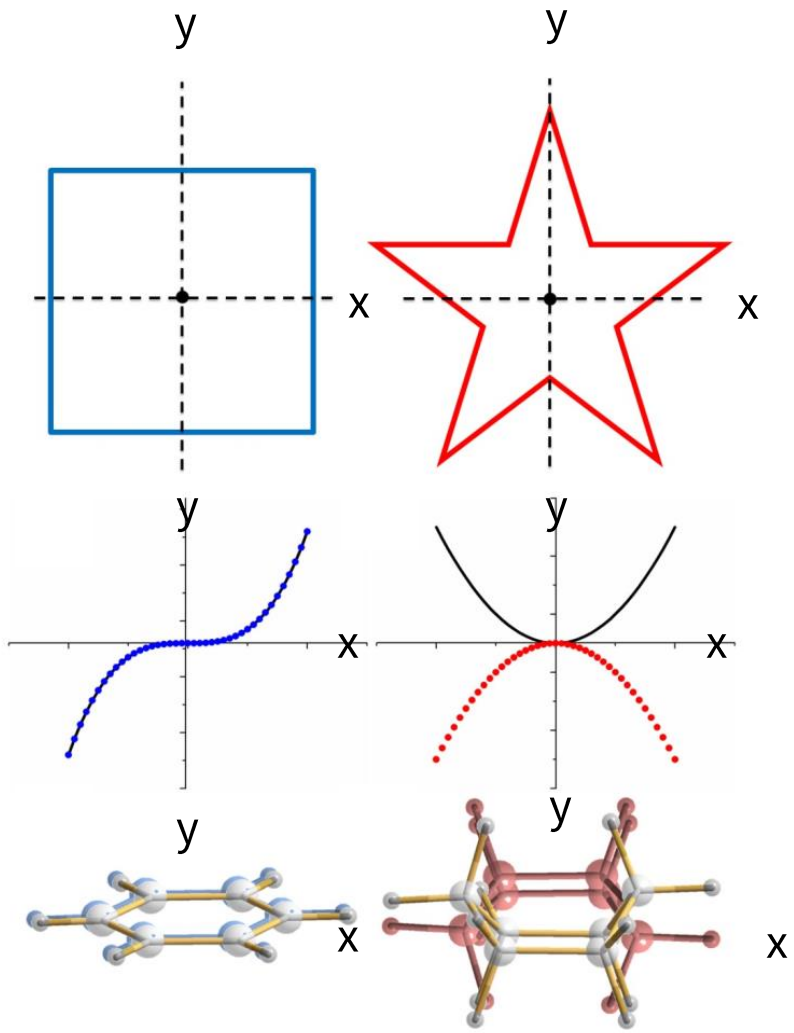
- To go into industry, you have to communicate your research
  - What do the results mean?
  - How was the work done?
  - Why was the work done?

- Consider your audience
  - Do they have a technical background? Do they have the same type of background (eg biology vs physics)?
  - Are they in an analytic position or more qualitative?
  - Tied to position (Lawyer vs Economist vs Public)

Whitesides, G. M. "Whitesides' Group: Writing a Paper." *Advanced Materials*, John Wiley & Sons, Ltd, 25 Aug. 2004, onlinelibrary.wiley.com/doi/abs/10.1002/adma.200400767.

Communication of Work

- Analogies help
  - To explain my (very) fundamental science PhD to the general public I relied on analogies to every day objects
- I studied nonlinear optics that rely on asymmetry
  - A common example are left and right hand gloves



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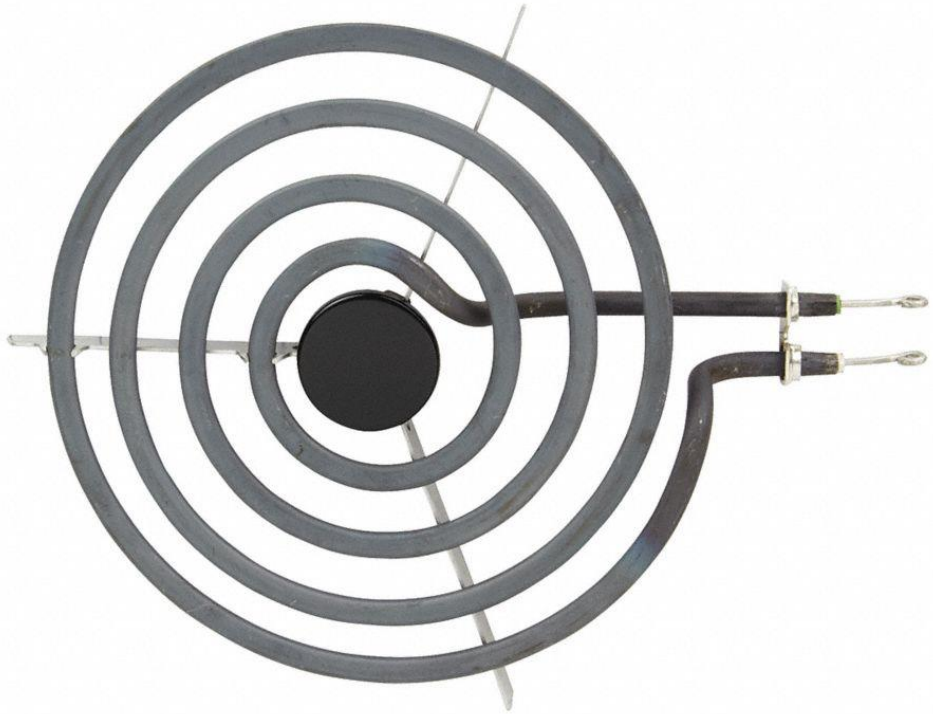
https://commons.wikimedia.org/wiki/Glove#/media/File:Disposable_nitrile_glove.jpg

Interviews

- At my interview, I was asked:
  “If I were a lawyer, how would you explain resistance”
- Analogy: stove tops



https://static.grainger.com/rp/s/is/image/Grainger/42FD83_AS01?hei=800&wid=935
https://commons.wikimedia.org/wiki/File:Resistor_symbol_America.svg

Interviews

- Example Interview Questions:
  - Give me an example when you built a network with others before you needed it?
    - The primary purpose of conferences is to meet others
  - Give me an example when you chose to work with others when you could have done it alone
  - Give me an example where you heard what the customer (adviser) was *really* saying about your product/service/research
    - Communication skills also require exceptional listening skills!

Listening

- Listening is very important but often overlooked in networking, interviews, meetings

  - Body language – are you engaged in the person talking?
  - Interruptions: red flags that someone is not listening

  - Listening isn't easily 'turned on' and is something that should be continually practiced at work (in academia and industry)
    - Listening to others at conferences is an easy way to learn what a particular employer, professor does and you can *then* communicate how you could help if you were hired

Thank You

Graduate Student

Northwestern University

- Northwestern University, Ph.D.
  - Fundamental oxide non-linear optical crystals

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    - Battery assessment to industry

Engineering Consultant

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