Maintaining Lifelong, Personal Global-Competitiveness

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Outline

Introduction: The Illusion of Stability
The State of STEM Employees
A Worked Example: Top US Research Universities
5 Key Attributes
5 Actions
Feedback from Working Engineers/Scientists
Conclusion and Vision
Terms

STEM: Science, Technology, Engineering, Mathematics

S&E: Science and Engineering

R&D: Research and Development
The Illusion of Stability

What is more stable?
- A job at a large company
- A government job
- An “overseas” position at a multinational corporation
- An independent contractor position

Who is prepared for a sudden career “stress-test?”
- Large-company employee
- Government employee
- Low-cost overseas employee with multinational experience
- Independent contractor
Stress Test Your Career

If you lost your job tomorrow, what would you do?

If there were a significant probably of losing your job 6 months from now, what would you do to prepare?

If you knew you would not get a new position for 6-12 months, how would those actions change?
The Longer You’re Unemployed, the More Likely You are to Stay Unemployed

US workforce by year: Percentage of unemployed who have been unemployed for the specified duration (left axis). Number of transitions from unemployed to employed (right axis). [10]
My Career Plan: Original

Find an R&D job, climb the technology and management ladders each year ...

Until Retirement.
My Career Plan: Actual

Find 1-3 new R&D “jobs” each year ...

Every year ...

For Life.
Common Success Advice

Find someone who is doing what you want to be doing

Ask them how they got there
Top US Research Universities

Each year, the majority of their new grads (often with limited work experience) find good STEM jobs

They have to find dozens (or hundreds) of new STEM jobs, each year ... for life!
Top 10 Research Universities (2011)

Table 1. Top 10 of 500 Major Universities Ranked by the University of Leiden on Scientific Performance [1]

<table>
<thead>
<tr>
<th>Rank</th>
<th>University</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Massachusetts Institute of Technology (MIT)</td>
</tr>
<tr>
<td>2</td>
<td>Princeton University</td>
</tr>
<tr>
<td>3</td>
<td>Harvard University</td>
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<td>4</td>
<td>Rice University</td>
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<tr>
<td>5</td>
<td>Stanford University</td>
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<tr>
<td>6</td>
<td>California Institute of Technology (Caltech)</td>
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<tr>
<td>7</td>
<td>University of California, Santa Barbara (UCSB)</td>
</tr>
<tr>
<td>8</td>
<td>University of California, Berkeley (Berkeley)</td>
</tr>
<tr>
<td>9</td>
<td>Carnegie Mellon University (CMU)</td>
</tr>
<tr>
<td>10</td>
<td>University of California, San Francisco</td>
</tr>
</tbody>
</table>
Two Examples

Carnegie Mellon University

2011: 89% of new-graduates of engineering college had post-college plans set before graduation

University of California, Santa Barbara

2011: 88% of computer science graduates had post-college plans set before graduation
How do they do it?

How can this be used as a model for experienced STEM workers throughout their careers?
5 Key Attributes of New-Grads from Top Research Universities

Skills are largely up-to-date
Recommended by a trusted source
Demonstrated understandable results
Easy-to-find
Good Value
5 Key Actions for Experienced STEM Workers to Take to Emulate the Attributes of New-Grads

1. Become an Expert
2. Network Effectively, Selectively, and Generously
3. Demonstrate Understandable Results
4. Be Easy-to-Find
5. Establish and Maintain Financial Flexibility
1. Become an Expert

Not “the best”
Does not know everything
No certification

Can explain complex concepts so clearly that others can retell their explanation
Knows the “4 corners” of the field
Can find answers
Knows what is currently unanswerable and why
2. Network Effectively, Selectively, and Generously

Wrong: “Network all the time, with anyone”

Network with people and organizations you can help
Make connections for others
Ask/answer specific questions
Go to conferences – participate in conferences
Start (continue) today!
3. Demonstrate Understandable Results

Provide value for free (like Google!)
  Non-trivial, repeatable worked-example
  Resource list for a newcomer to get started
  Reviews of books or other resources
  A quiz to check understanding
  ...

Understandable by whom?
  A smart high school student
  YOU, before your education and experience
4. Be Easy-to-Find

Make people want to find you
Become the terminus of a targeted search
   - PDF, webinar, YouTube, interviews, software, ...
Search Engine Optimization (SEO)
Google AdSense
   - Advertisements placed on your site
Google AdWords
   - Advertisements you place on other people’s sites
Google Analytics
The Unspoken Universal Business Plan

Time

Revenue, Profit

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Training by Engineers for Engineers

Lifelong Global-Competitiveness  Slide 21
Wages: Experience

Realities of the (bachelor’s) Engineer’s “Business Plan”

Source: http://wadhwa.com/blog/2010/08/28/silicon-valley%e2%80%99s-dark-secret-it%e2%80%99s-all-about-age/
Annual salary + bonus + overtime for all engineers surveyed (2010). [12]
5. Establish and Maintain
Financial Flexibility

Target non-discretionary spending to be \( \leq 50\% \) of take-home pay

Emergency fund: 6-12 months of non-discretionary spending

Become counter-cyclic (Don’t race to the top of the market bubble: Sell when others are buying; buy when they are selling)

Invest in your career

Instead of retirement, strive to be self-funded
“Hirable for Life”

www.HirableForLife.com

30-45 minute talk

For STEM students at universities

Engineering/science group meetings (IEEE)
Technical University of Delft (2011)
The Netherlands
Concerns of Recent/Current Engineering and Science Students and Experienced Workers

Difficult to keep learning
   Life fills up time
   Capabilities decline with age
What do you “give away for free?”
Should increased hirability mean increased wage?
How do I pick my
   First job?
   Next job?
H4L

Maintaining the Global Competitiveness of the Best Engineers and Scientists

“H4L” (Hirable for Life, for experienced engineers and scientists)

½-day class for Experienced Engineers and Scientists
IEEE Metro Area Workshop
September 28, 2012, Santa Clara, CA
Conclusion

Annual career stress-test exercise

What would your actions be if you lost your job tomorrow?

What actions would you take now if you knew you were going to lose your job in 6 months?

What would your actions be if you knew you would be out of work for 6 to 12 months?
Don’t prepare for the future of the past
Prepare for a future that will keep changing

Summary: Start Taking Action on this Goal
Create an easy-to-find web presence that is the satisfying endpoint of a targeted search
Repeat and improve!
“Stack the Deck” in Your Favor

Society’s Recognized Needs

Build career/business here

Your Talents

Your Passions
Rule-of-Thumb

If your current job no longer provides enough opportunity and resources to build new skills, connections, and knowledge that increase your hirability for your next job (including those within the same department or company), then it is time to take the next job.
Corporate Vision

What if all of your employees were “Hirable for Life?”
Each is working at the company *by choice*, not because of lack of options

The company must strive to remain the employer-of-choice of these very hirable employees

That company’s products and services will be “very hirable” by their customers
Thank you!

Let’s expand our networks:

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www.twitter.com/ChannelScience
References (in Full Paper)

3. Private communication from Terri Coleman, Assistant Dean for Student Services, University of California, Santa Barbara, *Engineering Placement Data*, February 15, 2012
15. LinkedIn, www.LinkedIn.com