




# The Power of the PhD

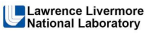




**Dr. Peter S. Fiske**  
**August 4, 2019**  
**NSF PrePARE**





**First, a bit about me...**

- Trained as a scientist (PhD – Stanford, Geology)
- Worked in the White House, Pentagon
- Ran a research program at a US National Lab
- Received an MBA (UC Berkeley)
- Left to start a technology company
- CEO of a technology company (in a very non-innovative industry: water)
- Center Director – National Lab










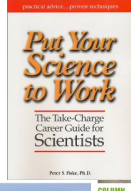





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**... and along the way**

- Published 70 articles and two books on the subject of careers and career development for PhDs
- Have given career development workshops to over 19,000 PhDs in the U.S. and Europe
- Mentor PhDs as they embark on entrepreneurial experiences







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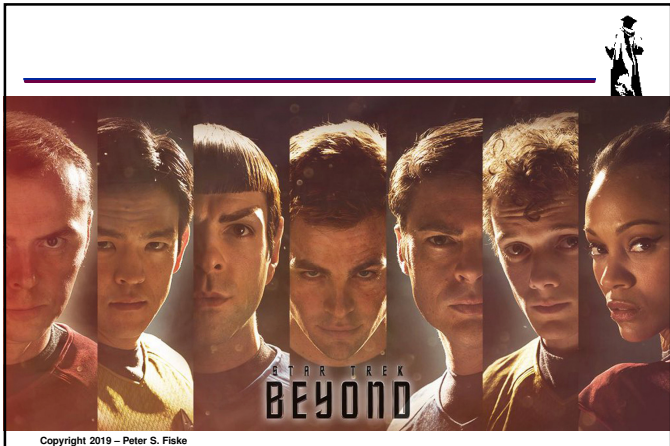


**What do we want you to be?**

- Brilliant, insightful, creative scientists**
  - Immersed in the scientific method
  - High standards for intellectual integrity
- Articulate, persuasive communicators**
  - Skilled in the methods of communication
  - Trained to advanced levels of presentation
- Organized, efficient and effective managers**
  - Practiced in modern management skills such as project management, financial management, legal management, and human capital management
- Inspirational leaders**
  - Courageous, humane, and committed
  - Able to articulate a compelling vision for our world and our future



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What are most academic programs preparing PhDs to be?



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Some basic facts



- **Going to graduate school is a professional decision**
  - You need to accept responsibility for your own professional development
- **The PhD experience is inherently isolating and an intellectually and emotionally channeling experience**
  - You can make it, but watch out for common and well-documented pit-falls
- **Even the most well-intentioned PhD advisor can't care as much about your future as you do**
  - Take your advisors advice in the context in which it is given

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The 80:10:10 rule



How will you grow and gain new skills if you don't invest the time?

How will people know of your abilities if you don't tell them?

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The power of the PhD:  
Dr. Rodrigo Guerrero

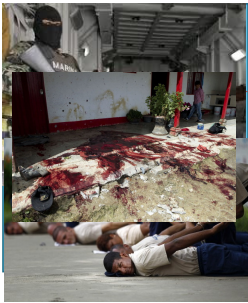



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### Crime in Colombia...

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- Epicenter of the drug trade
- Murder rate in 1993 – 120 per 100,000 residents (Detroit at its worst: 57 per 100,000)
- Widely accepted explanation: Norte del Valle Cartel faction war

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### Dr. Rodrigo Guerrero

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- MD - Universidad del Valle in Cali
- Ph.D. Harvard University – Epidemiology
- President of the University del Valle
- 1992 – elected Mayor of Cali






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### His approach: use tools of epidemiology to understand crime

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- **Conventional belief**
  - Violent crime is due to drug trade and gangs
  - “Convenient” to let them kill each other
- **What would YOU predict the temporal, geographic and demographic distribution of violent crimes be?**
  - Would violent crime be uniformly distributed across the city?
  - Would crime victims be uniformly distributed in age, and gender?
  - Would violent crimes be uniformly distributed across the day, week, month and year?




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### His approach: use tools of epidemiology to understand crime

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- **Data collection**
  - Spent 1 year of his 2.5 year term gathering data
- **Data analysis**
  - Violent crime rates are NOT uniformly distributed in time
    - Concentrated on weekends, especially payday weekends
  - Violent crimes are NOT uniformly distributed in space
    - Clustered around bars, victims are often intoxicated (not clustered around gang boundaries)
  - Violent crimes are committed by (and on) young men under the age of 24

**Drug gangs do not wait 'til the weekend and get their victims drunk before they kill them**




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### His conclusions

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- **Drug war provides a context of violence and the presence of many guns**
- **Violent crime is highly correlated to:**
  - Alcohol consumption
  - Age
  - Prevalence of guns




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### His policy changes

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- **Close the bars down early (1 AM on weeknights, 2 AM on weekends)**
  - Huge protest from bar owners
  - Dr. Guerrero said: let's run experiment for 3 months
  - Results were huge and instantaneous
    - Bar owners bought in
- **Ban the carrying of guns on payday weekends and holidays – enforce w/ checkpoints**
  - Huge protest from Army (who manufacture and sell guns – and had to staff the checkpoints)
  - Comparison of crime rate on gun ban days versus other days (and cities) showed huge reductions
- **Curfew for those under 24 in high crime neighborhoods**



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### Cali Colombia today..



- Violent crime dropped 40% by 1997
- Cities that adopted and maintained the approach saw similar drops
- Dr. Guerrero reelected in 2011



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### Lessons learned



- Preconceived ideas and the absence of data lead to erroneous conclusions, costly mistakes and loss of life
- Dr. Guerrero applied “common-sense” scientific principals to study the phenomenon and adopted practical policy changes to address the factors that affected crime

“The approach was very low-cost and pragmatic. You can see it was conceived by someone who was an academic and a policy maker.”

Joan Serra Hoffman  
Senior Policy Analyst – World Bank

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### Things that will SHOCK if you leave academia



- Nobody knows (or cares) who your advisor was
- Nobody cares what grades you got – only what you can do
  - Grades and publications are mostly a measure of determination and willingness to work hard (both of which are good)
  - People do NOT assume that good grades = ability or good judgment
- With a PhD, people will assume you are a lot smarter than you actually are
- You have spent your entire life learning that you are only qualified to work on things that you are an expert in, and to otherwise is to misrepresent yourself.
  - Your boss, your colleagues, your family does not think this: only you do.
  - The sooner you un-learn this, the better

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### Further information and resources



Nature  
March 8, 2018  
Page 275

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