

The background is a complex, abstract composition. It features a light blue base with various geometric shapes in shades of red, green, and yellow. A prominent network diagram is overlaid, consisting of several large, semi-transparent circles in red, green, and yellow, connected by thin red lines. The overall aesthetic is modern and scientific.

Running a lab:
You are what you
communicate!

Kathy Barker
Mt. Sinai

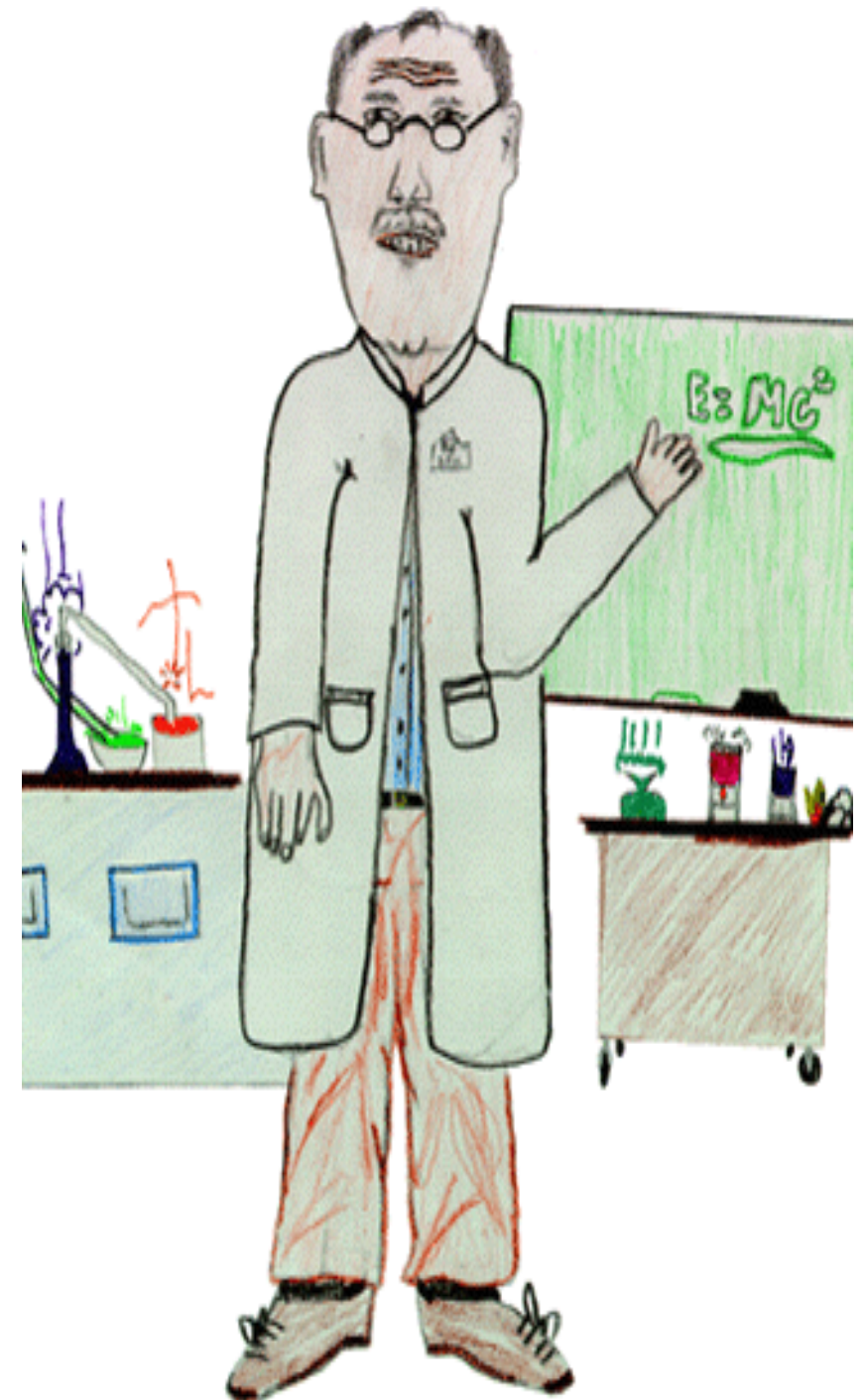
Office of Postdoctoral Affairs
February 26, 2016



You qualified for your job with
one set of skills...

But you will keep it with
another set of skills.

COMMUNICATION SKILLS!



How scientific and technical project leaders misread events in project teams.

- **Unaware** of interpersonal conflict in team.
- **Unaware** of personal agendas on part of team members.
- **Didn't understand** motivations, needs, or expectations of team members.
- **Didn't listen** carefully in team discussions.
- **Misread** lack of argument as agreement.

(Gemmill and Wilemon, 1997) in Cohen and Cohen, Lab Dynamics: Management Skills for Scientists, 2005

What is in the tenure dossier?

- Significant and continuous funding: at least 1 NIH grant and renewal.
- Publication of a significant body of research in high-quality journals.
- A national/international reputation: scientific presentations, invitations to meetings or seminars, letters from leaders.
- Teaching excellence: student and peer assessments.
- Service: committee work, study section, editorial board.
- A self-statement: Accomplishments, and plans.

Be a good colleague!

It's very much about relationships with:

- Top scientists in your field, colleagues, students....
- Administrators, etc..
- NIH Program officer, journal editors, etc...
- Support personnel, journalists, etc...



WHEN TO TELL YOUR ADVISOR YOU'RE GOING ON VACATION

MONTHS BEFORE

They'll ignore you, but make sure you get it in writing for when they later forget. . . .

TWO WEEKS NOTICE: A BAD IDEA

"You're leaving? Before you go, can you finish what you haven't done all year?"

THE AWKWARD PERIOD

if you haven't told him/her by now, you might as well wait until the night before.

THE NIGHT BEFORE

"bye i'm leaving see you later please don't fire me!"

GET ON PLANE

VACATION!

THE VACATION MID-WAY POINT

if you get busted:

CONFESS
"actually... i'm in another continent"

DELAY
"uh, yeah, it'll take me a few days..."



AFTER THE FACT

over-compensate by sending out a lot of e-mails.

... NEVER →

two weeks without talking to your advisor is not a vacation. it's normal.

Establish a group culture that supports
transparent communications, good
relationships, clear
expectations, etc.

Organize to reflect your
values.



Consider **your own** style and strengths.

- What are **YOU** motivated by in science?
- Will you be more effective at the **bench** or the **desk**?
- Do you want to manage **details**, or deal only with the big picture?
- Motivator or facilitator?
- Do you work better with peers, bosses, or subordinates?
- Do you even *like* people?



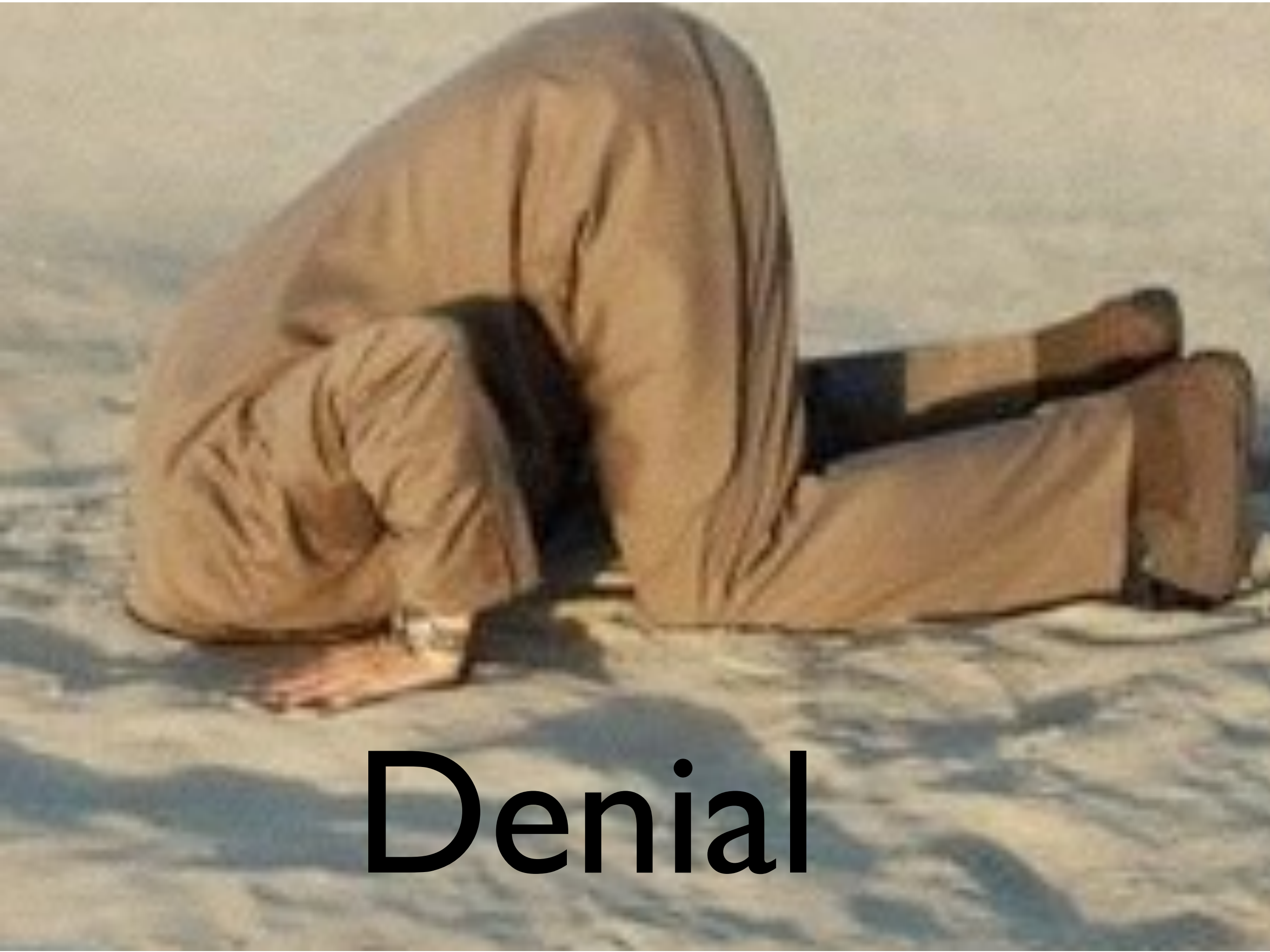
Know yourself:

Strengths,
weaknesses,
values,
5 year plan.

Find a mentor- find 2 or 3!

- Scientific
- Institutional
- Personal
- Intellectual





Denial

Build a framework to support the culture you want.

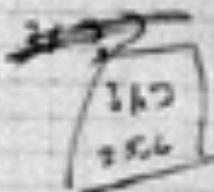
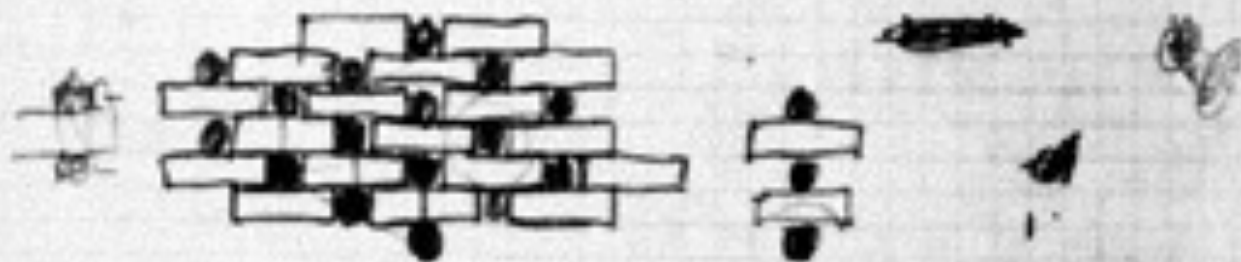
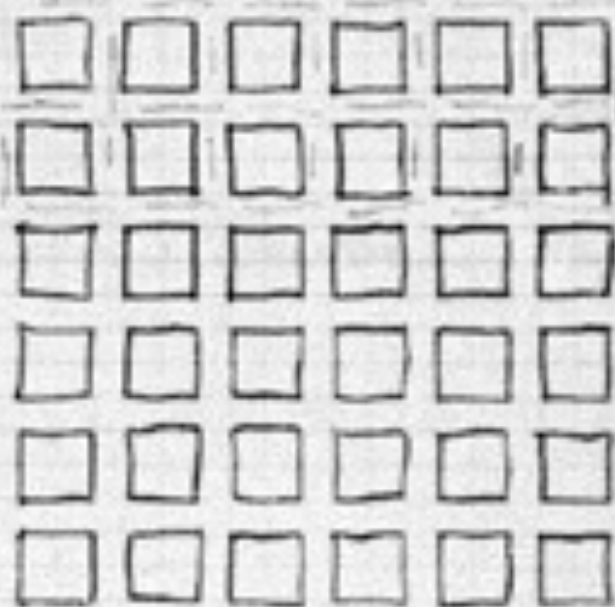
- The lab manual
- Stocks, ordering
- Lab notebooks
- Lab jobs
- Meetings



What to communicate? What is important.

$$\frac{508}{227} = 2.24$$

$$\frac{2.13}{1.15} = .95$$



191

24

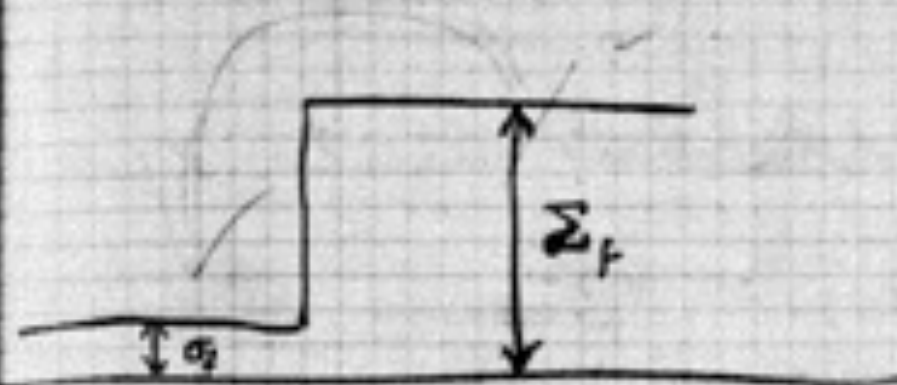
(2)

UC₂₀

$$\sqrt{\lambda_s \lambda_f}$$

$$\frac{60}{.015} = 4000$$

November 3 1941



Σ_f = fission cross-section above threshold

σ_f = " " " below "

ν = no of neutrons per fission

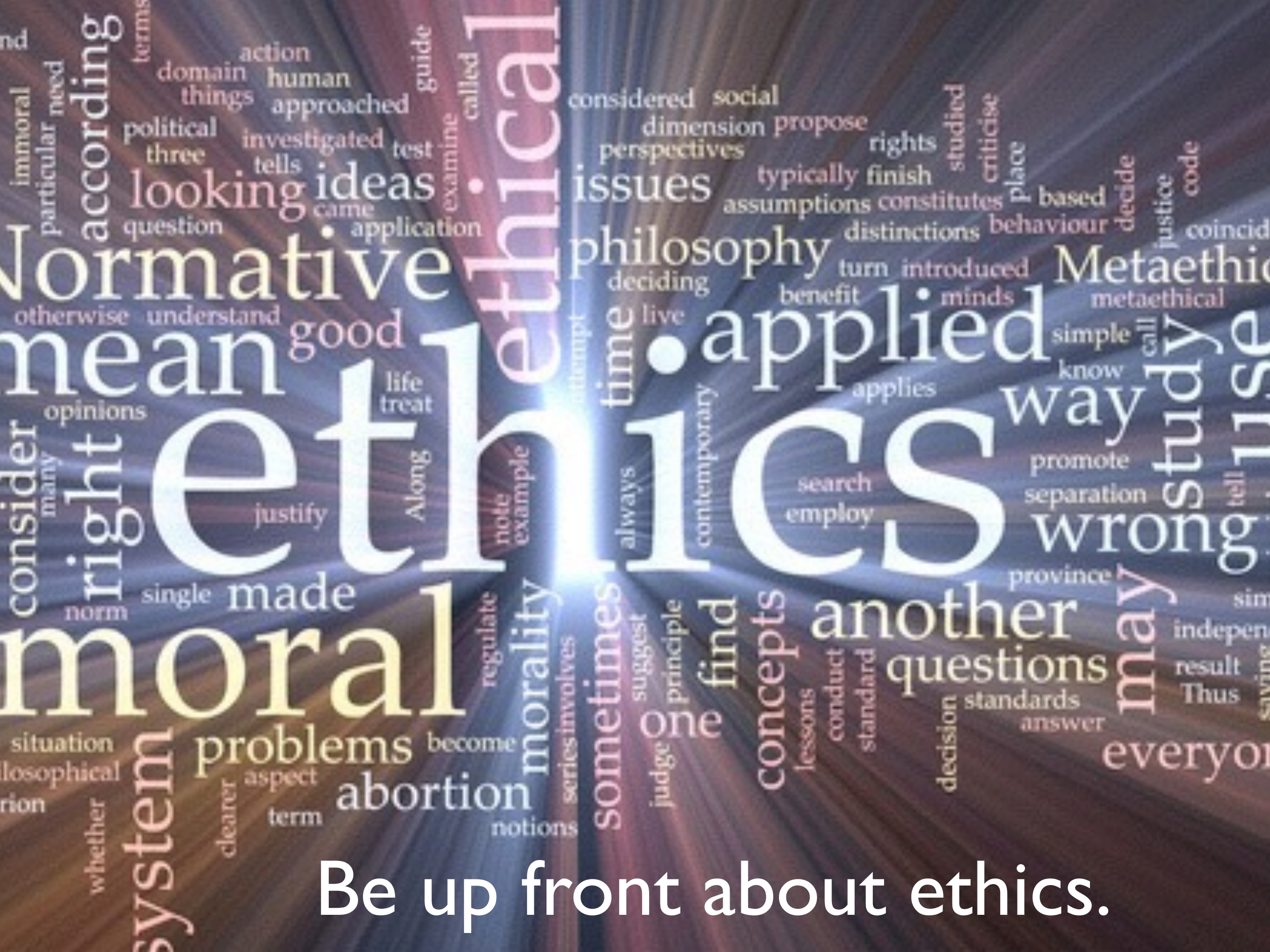
p = probability that first collision fission

$1-p$ = " " " " " slows down below threshold

$q \approx$ probabilities of { fission, capture } below threshold

Condition for chain reaction

$$\frac{q\nu}{1-p\nu} > 1$$



Be up front about ethics.



Be clear about authorships.

- What makes a good paper?
- Who writes the paper?
- How is authorship decided?
- What are *your* ethical considerations?



Talk about data.

- Formal lab meetings.
- Informal lab meetings.
- Multi-lab or topic meetings.
- One-on one meetings.



Make lab meetings useful to all.

Journal clubs are an important tool.

- To discuss the **current and relevant** literature.
- To teach **critical thinking**.
- To teach the **art of giving a presentation**.
- To establish and **maintain the lab culture** within science.

So don't leave journal clubs up to chance.

Talk and
think
about
funding.

bloomingdale's
little pink book
in support of
The Breast Cancer Research Foundation®



october 2010
"The Bloomingdale's Doctor"
Illustrated exclusively
for *Little Pink Book* by
Marisa Acocella Marchetto

**Bad people are much
worse than no people!**



Hiring lessons from P.I.s

- Call all recommenders..
- Don't hire people who are self-centered, arrogant, can't get along with others....
- Hire for **character**, not for technical expertise.
- Use the **probation period**.
- Make good use of the **interview**.
- Follow your **gut** reaction.



A collaborative culture must be encouraged and rewarded and **protected**.

- Put new people to work with more **experienced** ones.
- **Facilitate** collaborations outside the lab.
- **Maintain** collaborations with lab members who have left the lab.



Consider a collaboration contract.

- Who will be involved?
- What will each person's contribution be?
- If a paper comes out of the collaboration, who will get authorship?
- What happens if another person's skills are needed?
- When is the collaboration over?

Mentoring will be assumed.

- Research techniques, good science...
- Writing a grant, budgets..
- Writing, reviewing manuscripts.
- Communication and networking.



Learning to use criticism!

Compact between Postdoctoral Appointees and Their
Mentors www.aamc.org/postdoccompact

Formal self-evaluation: How do you think you are doing?

(Otteman 2002, Science's SAGE KE:38, 5.)

- Experimental.
- Productivity.
- Notebook, record keeping, and organization.
- Gain of scientific knowledge and critical thinking.
- Lab meeting participation.
- Lab citizenship.
- Communication within the lab, outside the lab, and with the P.I.

Find a way to get help for those who need it.

- Health services.
- Ombudsman.
- Chairperson
- Dean.
- Personnel office.



Remember that your mentee is
NOT a clone of you.

Consider pathways
and life choices
other than your
own.



Characteristic	Silent/ veteran	Baby boomer	Gen X	Millennial/ Gen Y
Birth year range	1926-1945	1945-1964	1965-1981	1982-2003
Work ethic	Dedicated	Driven	Balanced	Ambitious
View of authority	Respectful	Love/hate	Unimpress ed	Relaxed/ polite
Leadership by	Hierarchy	Competence	Censusus	Achievement
Relationships	Personal sacrifice	Personal gratification	Reluctant to commit	Loyal
Perspective	Civic	Team	Self	Civic
Outlook	Practical	Optimistic	Skeptical	Hopeful

Generational Profiles

from Bland et al, 2009, Faculty Success through Mentoring, adapted from Crisp, 2003



The 9
year
student



Everything works.



The short
fuse



Bad citizen

Lab characters



COMMUNICATION
FAT

MAKE
SENSE
SMART

CONNECT

SORT
COMPARRE

BACK

SENSITIVE
INNOVATIVE

WE
ARE
ALL
DIFFERENT!

Many people find
criticism to be
immediately
confrontational.

Conflict is interwoven into every event and relationship.

- All communications may mean something else to others because of differences in needs, style, perception, goals, roles, values, unclear expectations....etc.



People get upset when
their expectations aren't
met.

What kind of conflicts might you find?

Which are you willing to deal with?

Project problems

Authorship problems

Personnel problems.

Personal problems.

Interaction with P.I.



How do **YOU** deal
with conflict in the
lab?

And can you do it **better?**

There are two ways you can learn to better deal with conflict:

Manage your own emotional control and communications.

Have a process to reduce and mediate conflict.

Be competent with your emotions.

- Learn to *really* take criticism.
- Establish trust with predictability.
- Assume best intentions.
- Anger is also intimacy.



Dealing with someone's anger...

Do not respond in anger.

Identify the immediate problem and underlying issues.

Empathize to acknowledge the validity of the other person's emotions or situations.

Assure the other person that you are working towards the same goals.

Be honest about your own responsibility and fault.

DO NOT PUSH



THE RED BUTTON

- “Always”
“Never”
- “You”
- Bring in older issues.
- Bring up character flaws.



**Know
yours.**



**Work hard at
communication!**

It's not just about the delivery.



- Learn to **listen**.
- Try to understand.
- You don't have to fill the silence.
- Avoid preparing what you are going to say while someone is still talking.



Gender and communication?

- Mitigating statements with qualifiers.
- Complex sentences.
- Hesitation when speaking, as if searching for the right words.
- Rising intonation at the end of the sentence.
- Talking about own life to establish rapport.

Small talk isn't so
small.

Hello.

Hi.

How are you?

I'm fine, thanks.

And you?

I'm fine, too.

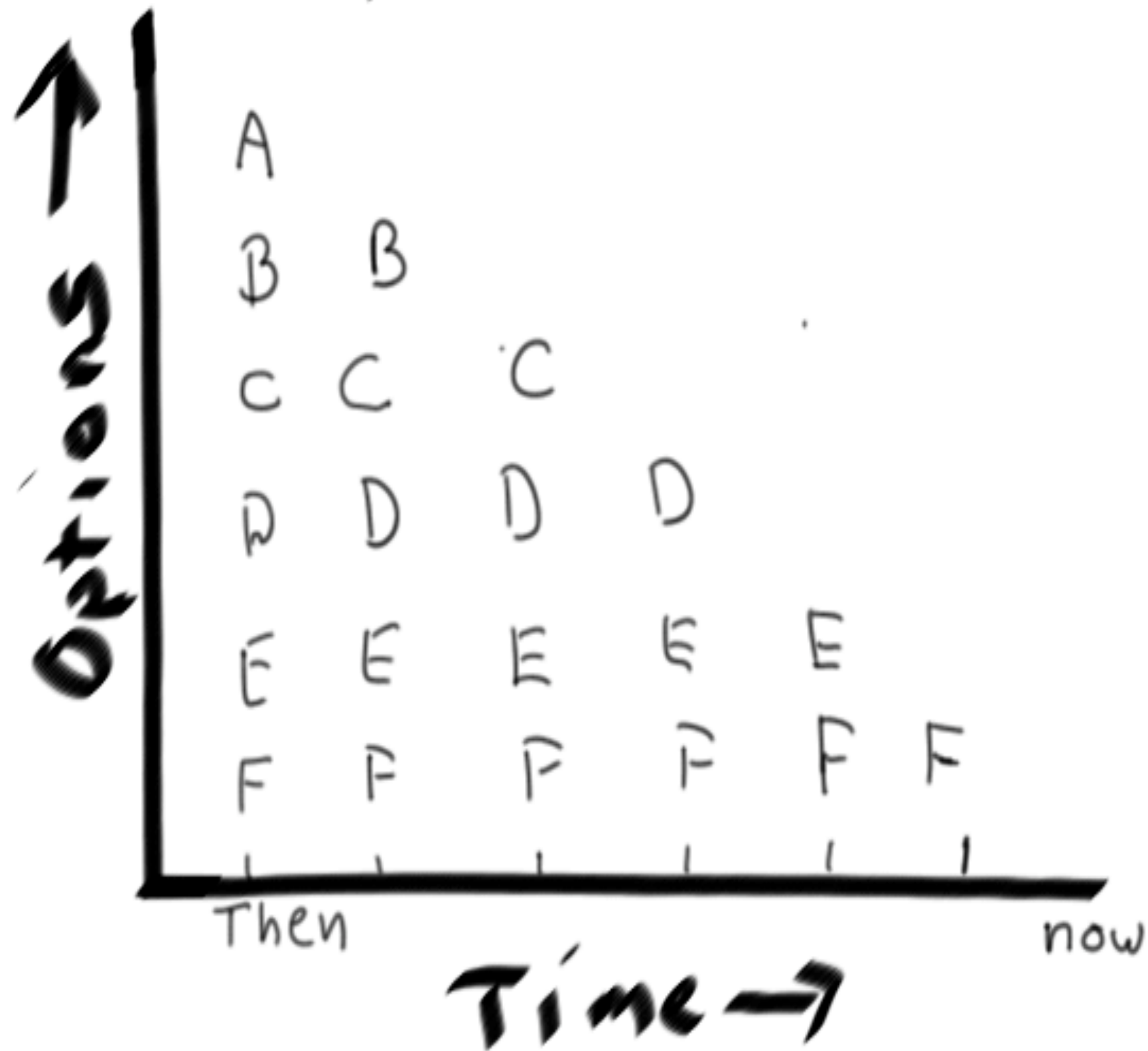
“When I needed lunch, I
would buy it (and be
seen doing so) in
one of the NIH cafeterias.”

Harold Varmus in *The Art and Politics of
Science*.



Fair process
counts more
than outcome.

Options over time



Some ways to deal with conflict:

- Avoid it.
- Be accommodating.
- Take a position.
- Consider **interests**, not issues.



Scientists commonly take a positional approach.....

A position is a claim to answer the immediate question (the issue).

Often stated to be the only solution to the issue.

Often is the first option that comes to mind.

....but there are problems with a positional approach.

- It narrows options in the beginning to two positions, and neither one may be the best answer to the issue.
- It tends to either produce a winner and loser- or two losers.
- May harm the relationship.

Try an interest-based approach.

Interests are needs that must be satisfied and values that must be preserved, such as:

- Self- esteem
- Good working relationship
- Research excellence
- Financial security
- Reputation

The process of interest-based negotiation.



Difficulties in practice with an interest-based approach-

Against our “nature?”

Scientists are trained to be solution-oriented.

Rewarded for defending “solutions” well.

Slower than other approaches.

Strong emotions are triggered.

Maintain group morale.

- Make the lab feel part of the bigger world of science.
- Help each person feel part of the lab: don't let anyone be marginalized.

Celebrate.



The dysfunctional lab can be fixed.

- Is it the **science**?
- Is performance (research, citizenship, mentorship) recognized and rewarded?
- Is it the **group** dynamic? Is it an individual? The P.I.?
- Is it **YOU**? Are you there? Are you depressed or unpredictable? Are you pushing too hard, or appearing uninterested?

ISTJ



The Inspector

ISFJ



The Protector

INFJ



The Counselor

INTJ



The Mastermind

ISTP



The Artisan

ISFP



The Composer

INFP



The Healer

INTP



The Architect

ESTP



The Dynamo

ESFP



The Performer

ENFP



The Champion

ENTP



The Visionary

ESTJ



The Supervisor

ESFJ



The Provider

ENFJ



The Teacher

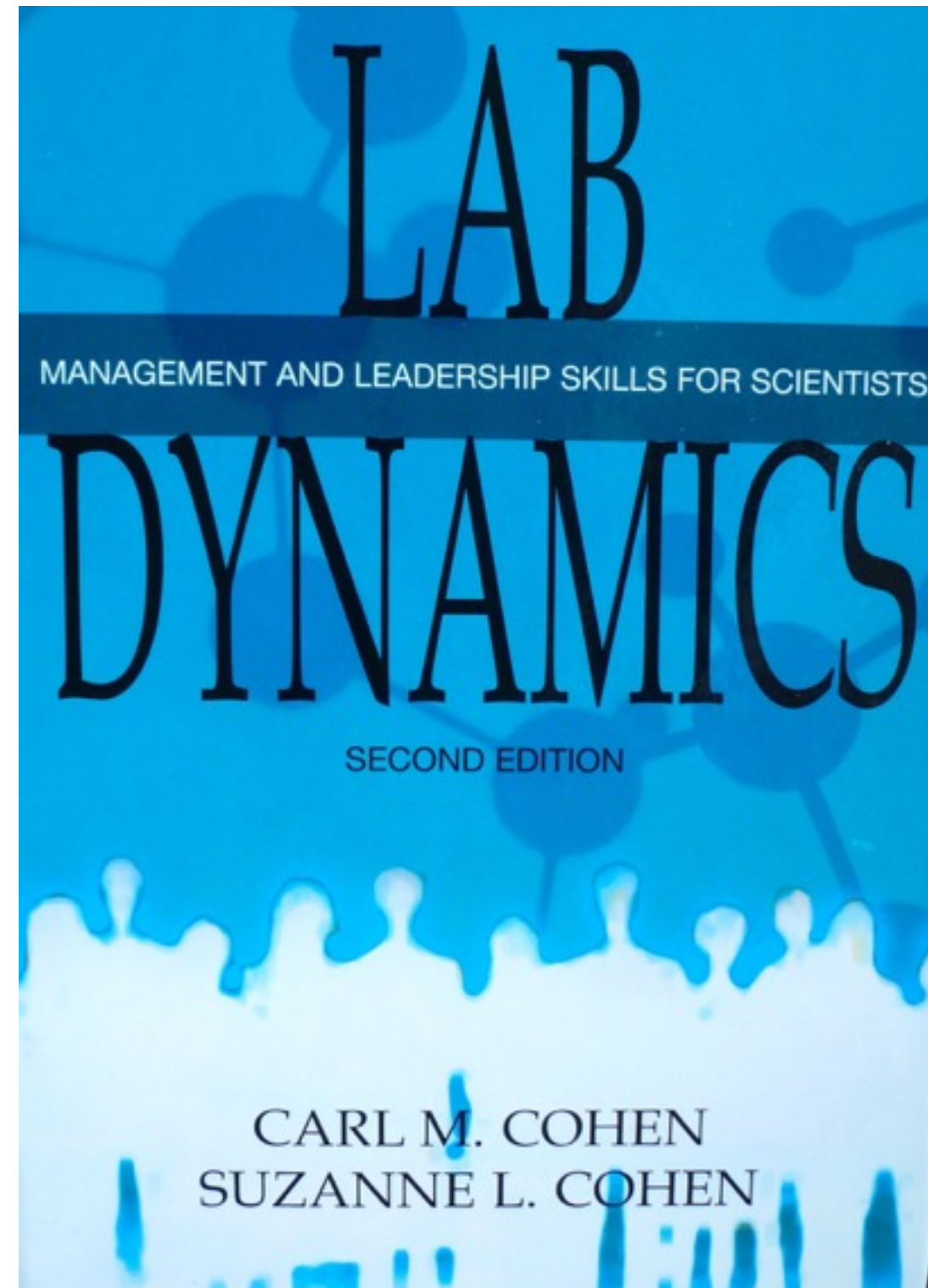
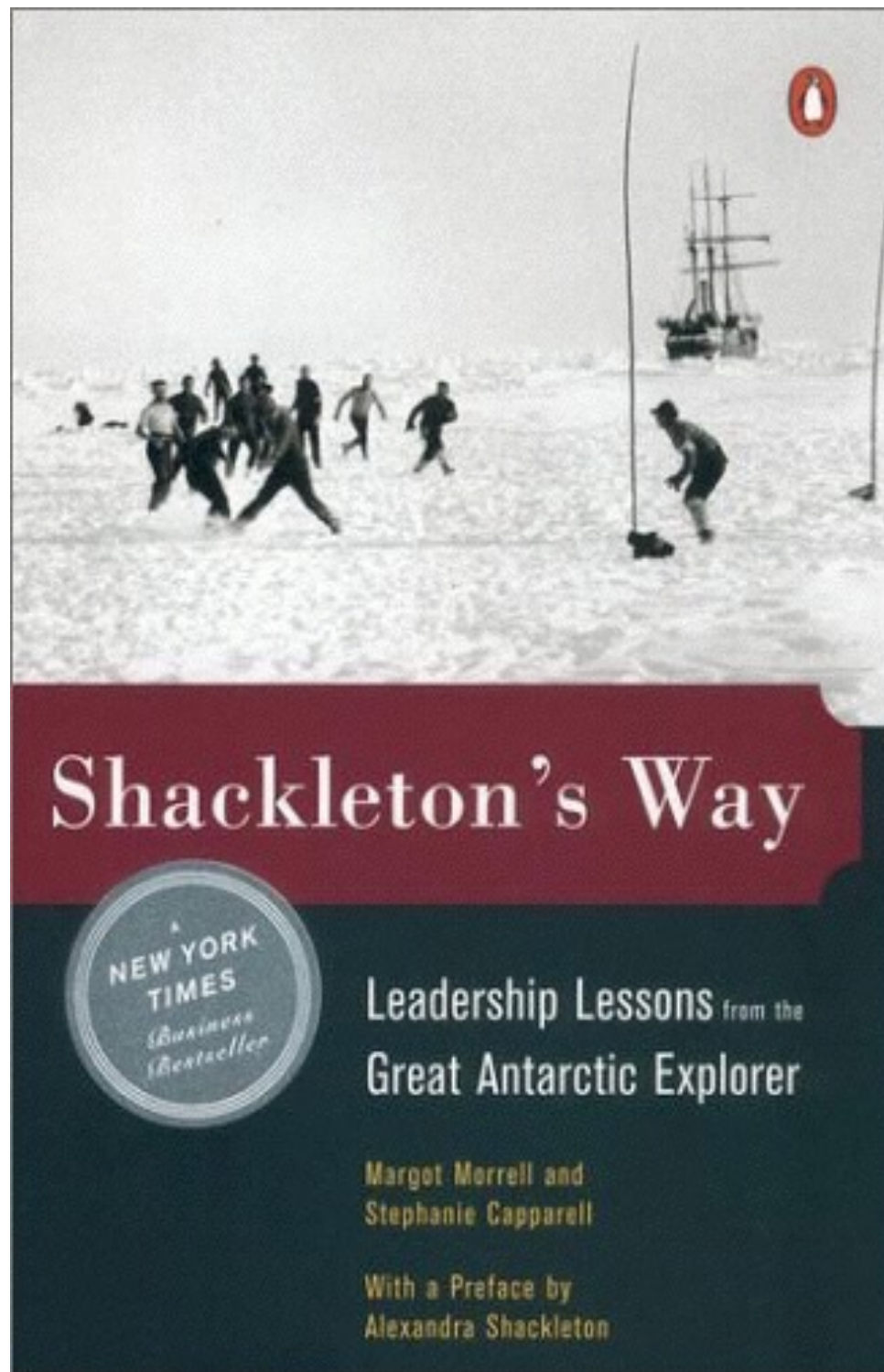
ENTJ



The Commander

Get some
perspective.

[http://
www.halverson-
law.com/
1-5.htm#start](http://www.halverson-law.com/1-5.htm#start)



Think about team communication.

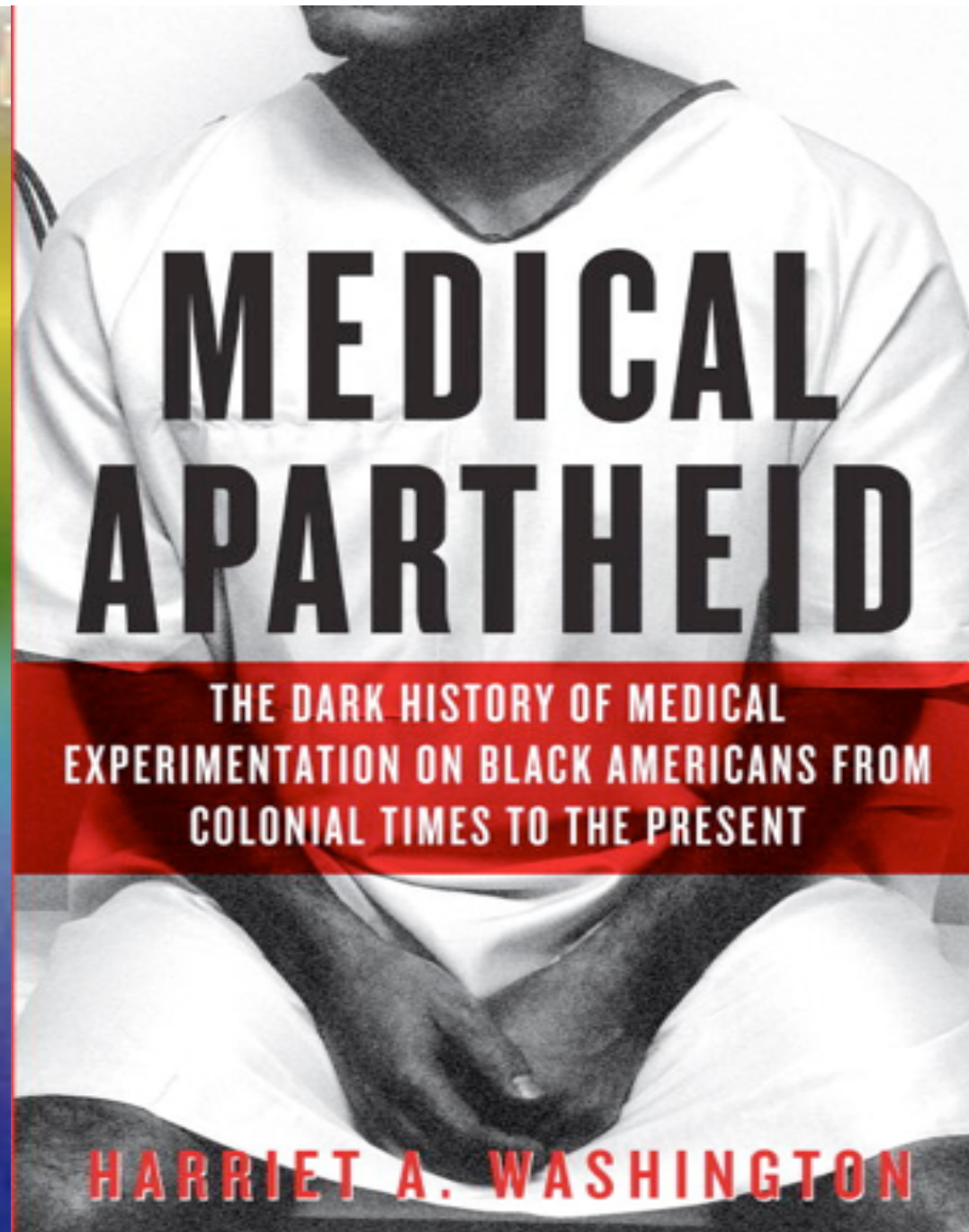
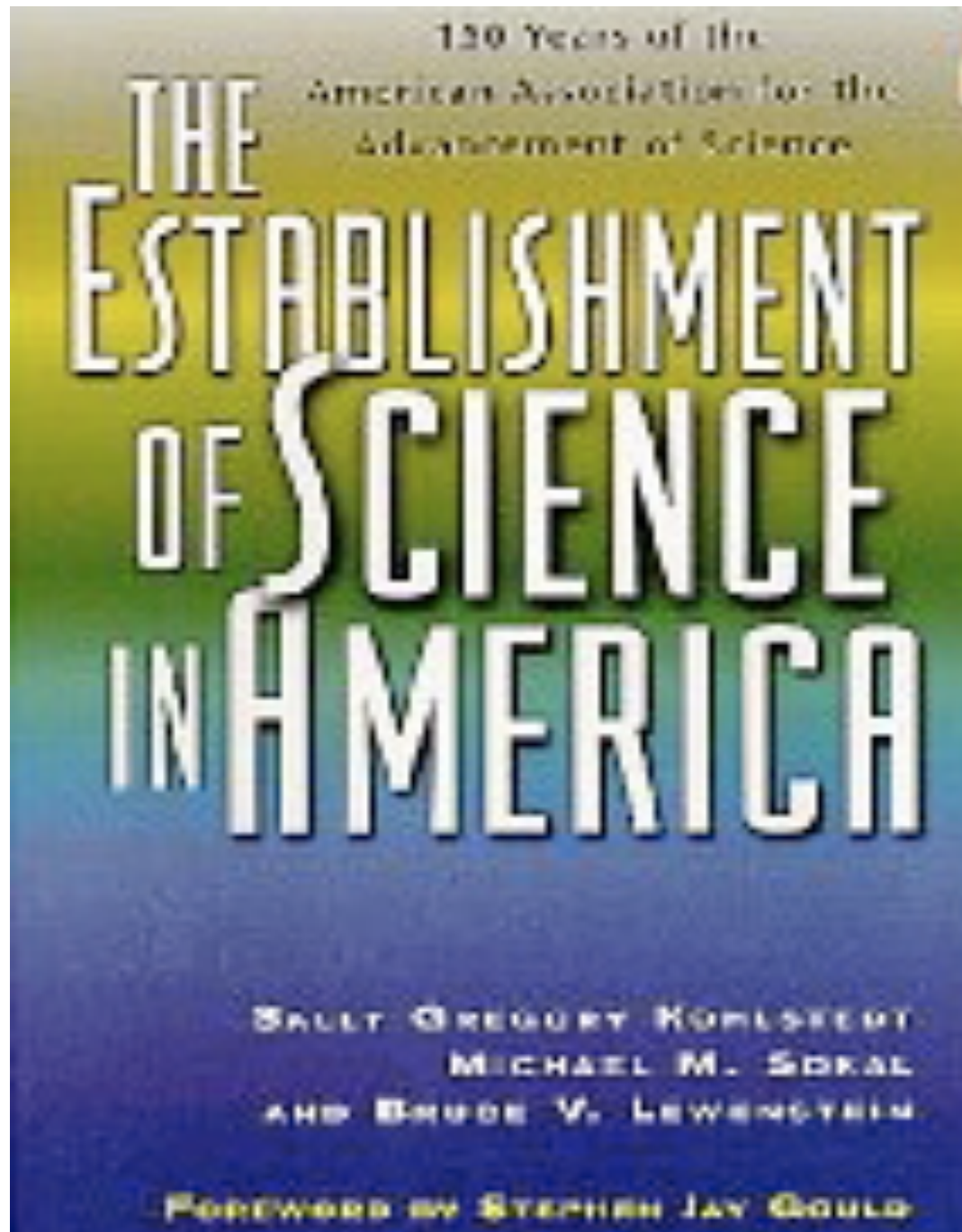


**Don't leave the bench
too soon.**

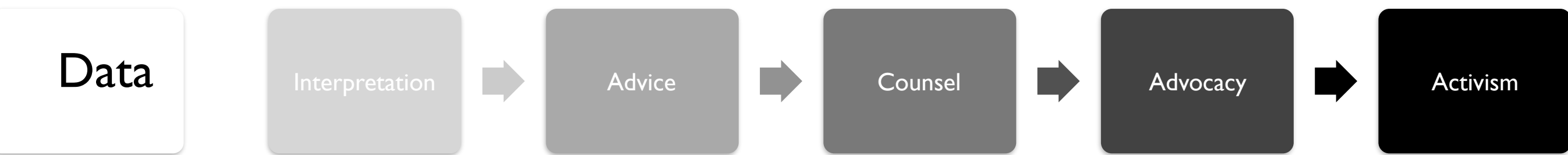
Evolve with your lab!

- Big lab, small lab.
- More competent personnel.
- Failure and success.

Remind yourself to think BIG.



Activism takes you to the realm of controversy.



How to Lose Your Political Virginity while Keeping Your Scientific Credibility
David Blockstein, BioScience 52(1): 91-96. 2002.

Are scientists activists?



Albert Einstein, of course.

The image shows a blackboard with handwritten mathematical equations. At the top, there are two equations for the Lorentz transformation of energy and momentum:

$$\sum \frac{1}{\sqrt{1-u^2}} = \sum \frac{1}{\sqrt{1-v^2}}$$
$$\sum \frac{u}{\sqrt{1-u^2}} = \sum \frac{v}{\sqrt{1-v^2}}$$

Below these, there are equations for the energy-momentum relation in different frames:

$$G_{m, L, K'}: 2G_0 + 2m\left(\frac{1}{\sqrt{1-u^2}} - 1\right) =$$
$$G_{m, L, K}: 2G_0 + m\left(\frac{1}{\sqrt{1-u^2}} - 1\right) + m\left(\frac{1}{\sqrt{1-v^2}} - 1\right)$$

Then, there is an equation for the energy-momentum relation in a frame moving with velocity u :

$$G_0 - m + \frac{m}{\sqrt{1-u^2}} = \bar{G}_0 - \bar{m}$$

Finally, there is an equation for the energy-momentum relation in a frame moving with velocity v :

$$G_0 - m + \frac{m}{\sqrt{1-u^2}} = \bar{G}_0 - \bar{m}$$

A curved arrow points from the equation for $G_{m, L, K}$ to the equation for $G_0 - m + \frac{m}{\sqrt{1-u^2}} = \bar{G}_0 - \bar{m}$.

problems.

Sincerely yours,

A. Einstein

Professor Albert Ein

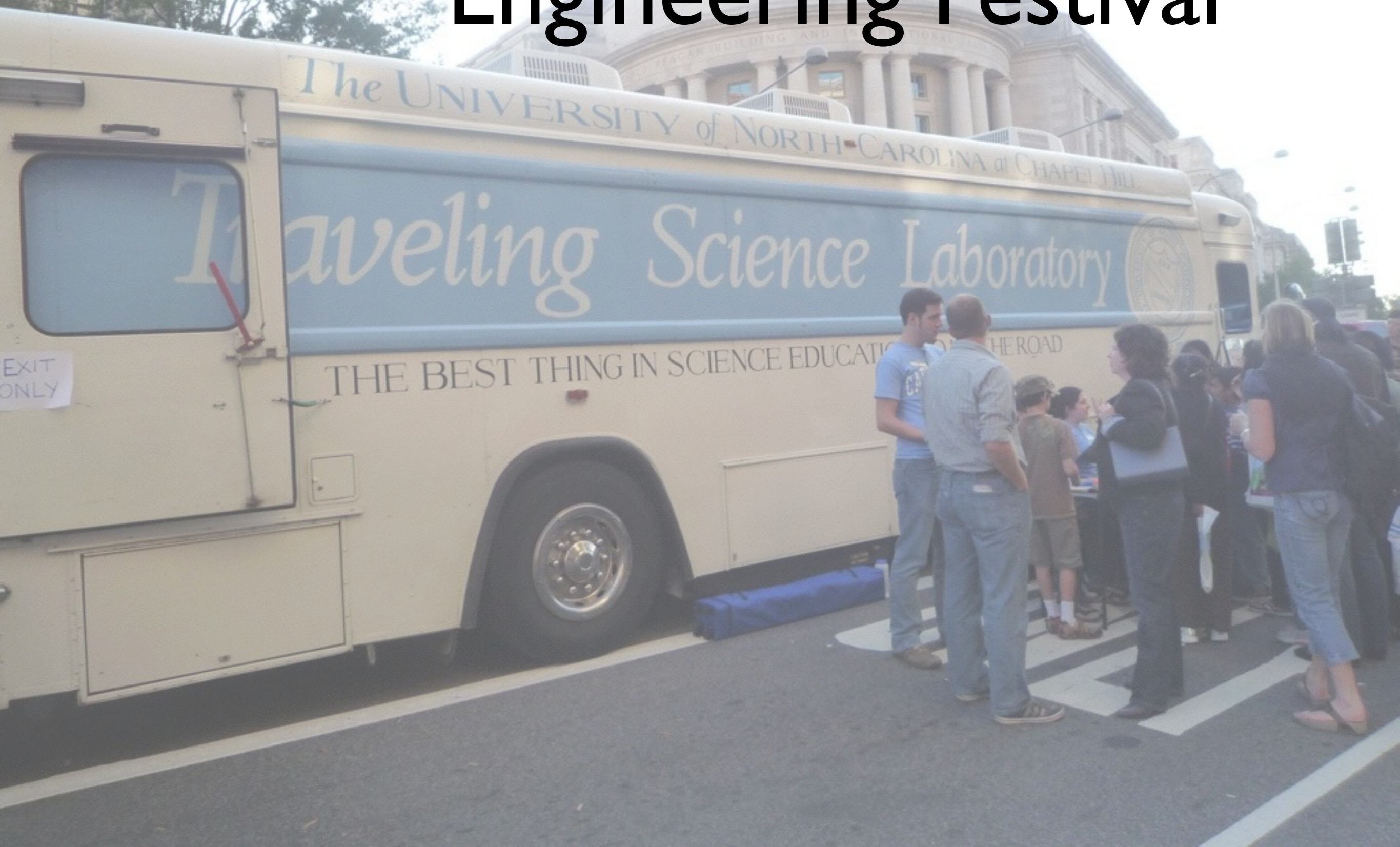
The economic anarchy of capitalist society as it exists today is, in my opinion, the real source of evil.
(Albert Einstein, 1949)

There **iS** a strong
culture of activism in
science.



But it is not yet
the mainstream
story.

1st USA Science and Engineering Festival



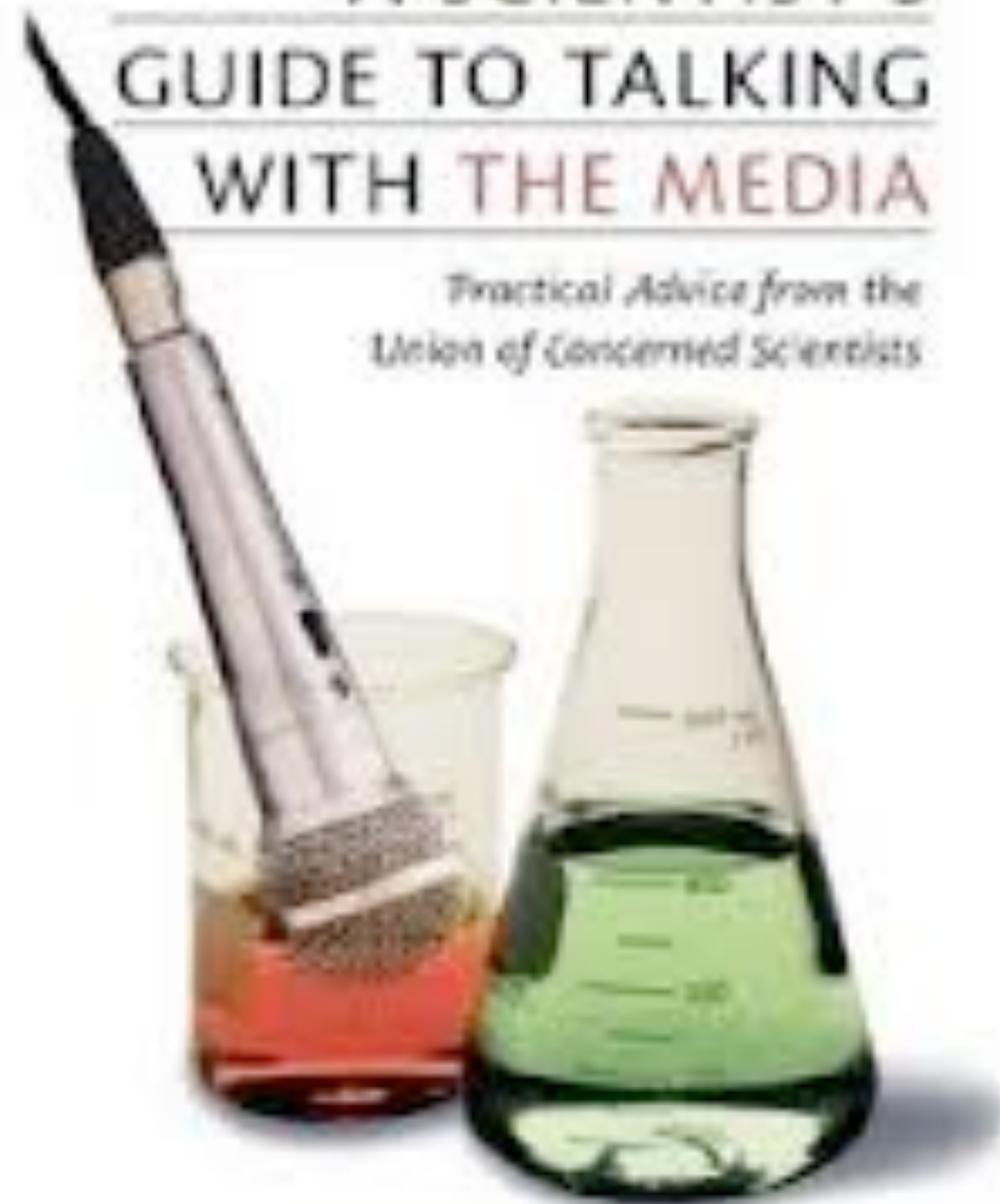
CORNELIA DEAN

am i making myself clear?

A SCIENTIST'S GUIDE TO
TALKING TO THE PUBLIC

A SCIENTIST'S GUIDE TO TALKING WITH THE MEDIA

*Practical Advice from the
Union of Concerned Scientists*

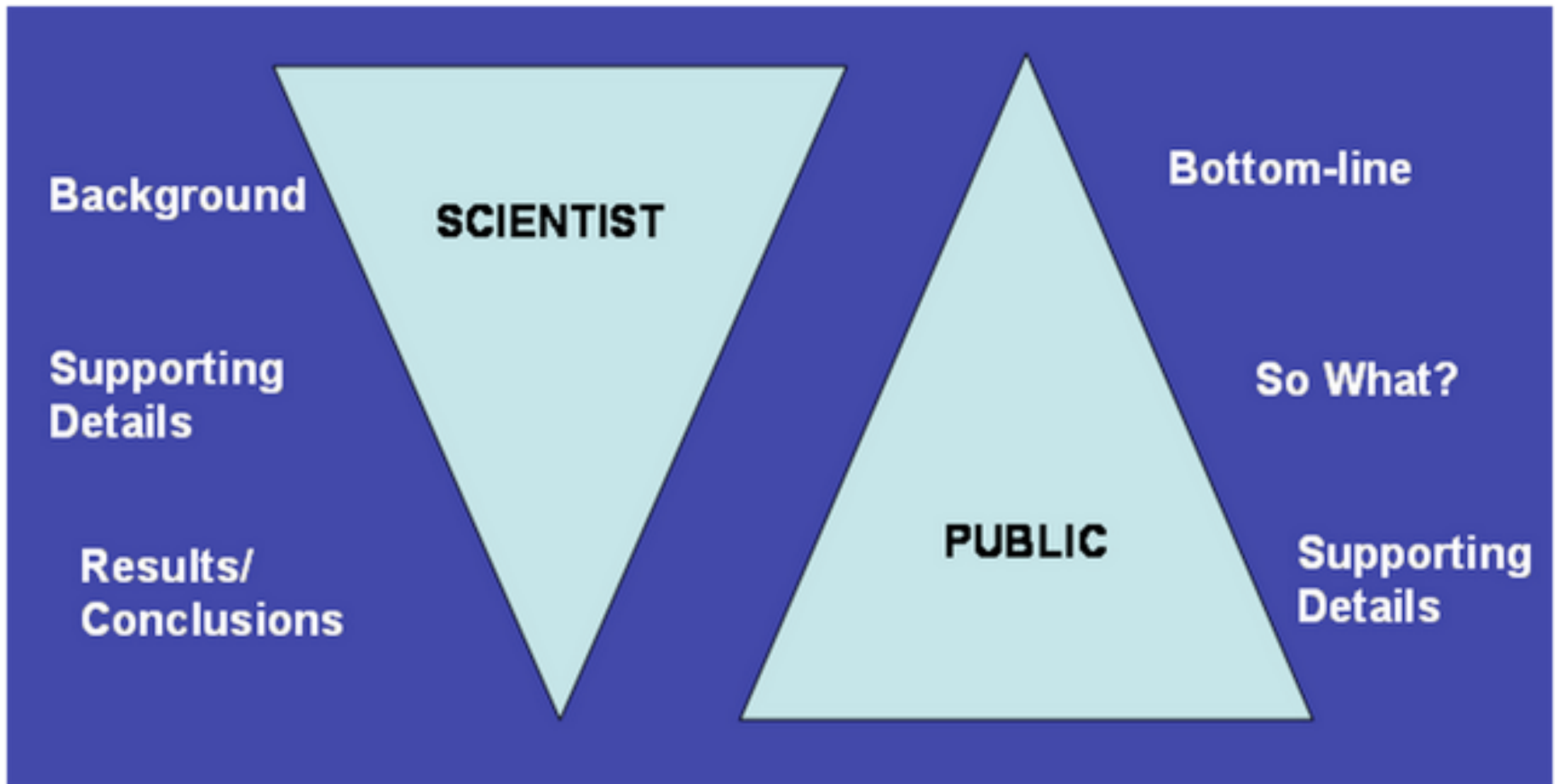


RICHARD HAYES and DANIEL CROSSMAN

Talking to non-scientists....

- Tell a story- it isn't about the data.
- Explain why the work or result it is important.
- Avoid technical and specialized language.
- Be brief, avoid detail.





Converse beyond the bench.

<http://eloquentwoman.blogspot.com/2010/07/whats-difference-when-scientists.html>

You can find a way to communicate.



<http://ed.fnal.gov/projects/scientists/>

What can you do now?

- Assess your progress, even if your PI doesn't.
- Gather skills and information.
Workshops, seminars, books, conversation.
- Study successful PIs: Research, communication, organization.

THE LAB

Avoiding Research Misconduct



<http://ori.hhs.gov/thelab>

WRITE every day!

Write up your data.

Write papers.

Write up proposals for
future research.

Write a grant.

Edit other's grants and
papers and proposals.



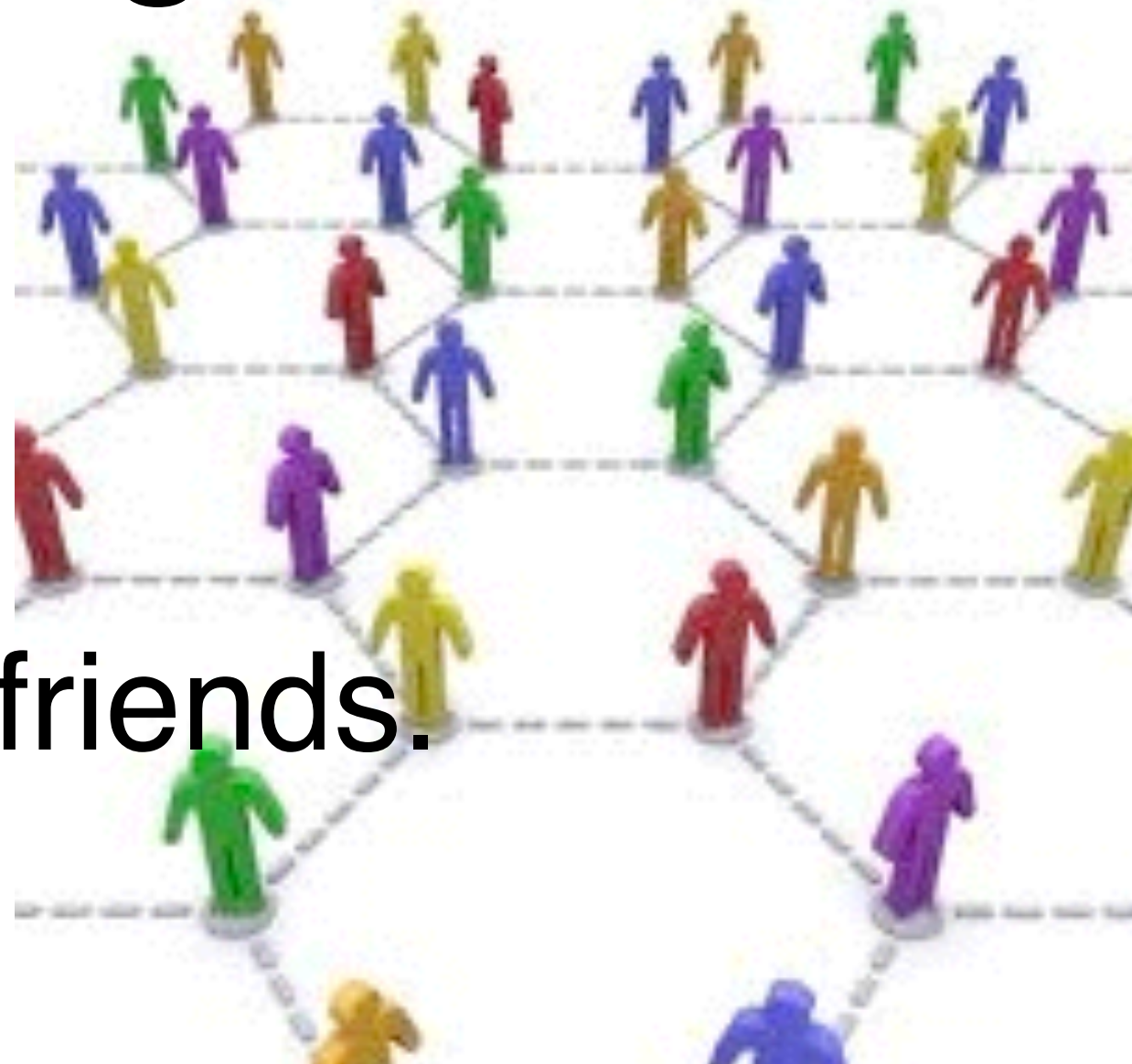


Talk about data and research
and science.

Cultivate relationships.

Don't let yourself get isolated!

Develop a network of mentors, colleagues, friends.



“....I mean, you can take a piece of information, and you can do lots of things with it. You can try to publish it; you can try to develop a practical aspect of it, like a therapy, or a machine; or you can look at the implications in the public health arena, or the public policy arena. I guess I’ve always considered those a kind of continuum of ways that information becomes valuable, and ways that I take information and then try and go further with it.”

David Baltimore

Be
revolutionary.

Thanks!

Kathy Barker
kbarkerbtb@gmail.com
scientistsascitizens.org

