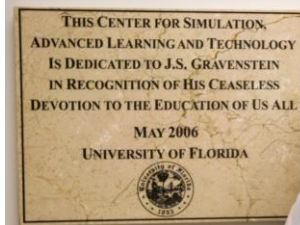
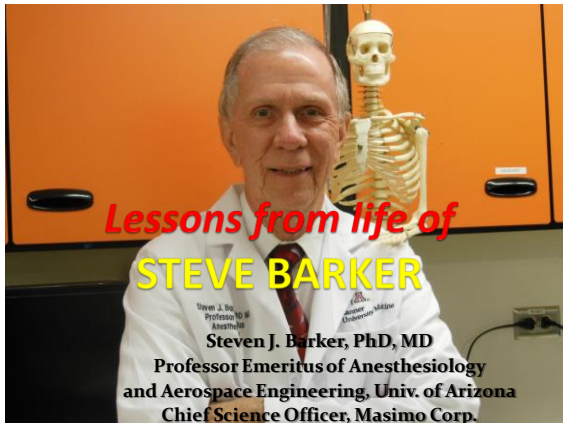


## J.S. "Nik" Gravenstein



## Gravenstein Award Recipients

- 2015 - Jeffrey Cooper, MD, for his visionary understanding of the role of technology in anesthesia care and lifetime commitment to patient safety.
- 2014 - Chester Phillips, III, MD, for his longstanding, visionary leadership in the development of electronic anesthesia record-keeping systems.
- 2013 - Takuo Aoyagi, MD, for his discovery of the principle behind the pulse oximeter
- 2012 - Kevin Tremper, MD, for achievement in monitoring technology, use of electronic health records in anesthesia, multicenter collaboration and the development of the MPOG Center
- 2011 - David Gaba, MD, for launching the field of simulation training within the field of Anesthesia
- 2010 - Maynard (Mike) Ramsey III, medical device entrepreneur and inventor of the Dinamap noninvasive blood pressure monitor
- 2009 - William New, founder and former chairman of Nellcor, and a pioneer in pulse oximetry
- 2008 - Dwayne R. Westenskow, for sustained research, leadership, and mentoring in the field of anesthesia technology
- 2007 - Michael Cudahy, co-founder and former president of Marquette Electronics, and a visionary who fostered engineer-clinician collaboration
- 2006 - Susan E. Dorsch and Jerry A. Dorsch, contributions to the understanding of the theory and operation of anesthetic equipment
- 2005 - Stanley Weitzner, for his advancement of national and international anesthesia equipment standards
- 2004 - Peter Schreiber, founder and former president of North American Drager and a pioneer in patient safety
- 2002 - N. Ty Smith, a pioneer in computer modelling of human physiology
- 2001 - John Severinghaus, a pioneer in blood gas analysis and respiratory physiology
- 2000 - Stephen Abrahamson, a pioneer in medical simulator technology.



## My Favorite Quote:

- **Original:** "Those who cannot remember the past are condemned to repeat it."  
--George Santayana, in *The Life of Reason*, 1905.
- **Popular form:** "Those who fail to learn from history are doomed to repeat it".
- And that leads us to:

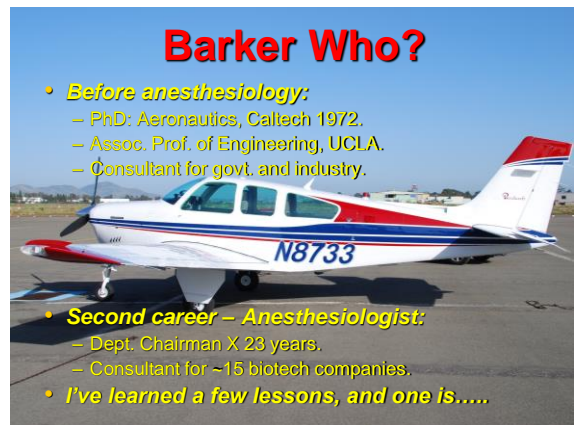
## Lesson #1

### SJB's Two Levels of Wisdom:

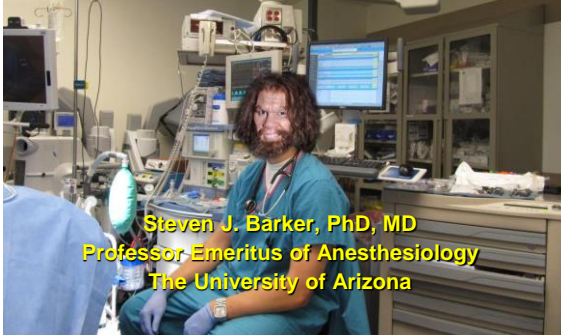
- Level I: Learn from your mistakes.
  - Analyze them – understand all causes and effects.
  - Make plans for NOT repeating them.
- Level II: Learn from **MY** mistakes!
  - And everyone else's too.
  - I've made more than you have, especially if you're < 60.

## Barker Who?

- **Before anesthesiology:**
  - PhD: Aeronautics, Caltech 1972.
  - Assoc. Prof. of Engineering, UCLA.
  - Consultant for govt. and industry.
- **Second career – Anesthesiologist:**
  - Dept. Chairman X 23 years.
  - Consultant for ~15 biotech companies.
- **I've learned a few lessons, and one is.....**



## Flying the Anesthesia Machine: "So easy a caveman can do it?"



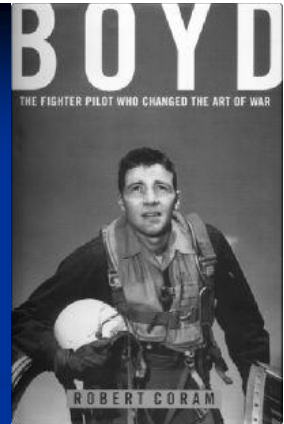
## OODA Loop

Developed for air combat, but applies to any "real-time" decision process.

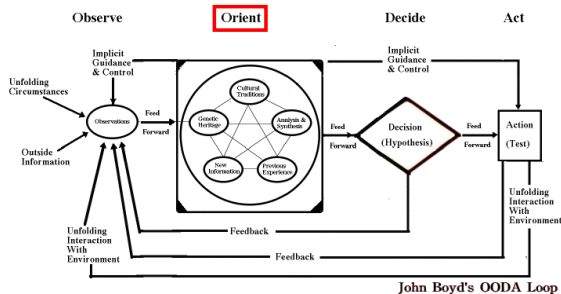
*No, I have not totally lost it!*

Coram R: **Boyd: The Fighter Pilot Who Changed the Art of War.**  
Little-Brown, New York, 2002.

Available on Kindle too!



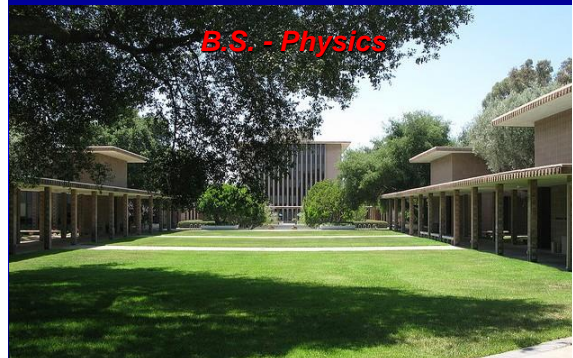
## Boyd's "OODA Loop"



*So, to learn anything from this talk,  
you need to know how I got here....*

## Harvey Mudd College, 1962-1967

**B.S. - Physics**



## Caltech: 1967-1974 MS-1968, PhD-1972



GRADUATE AERONAUTICAL LABORATORIES  
CALIFORNIA INSTITUTE OF TECHNOLOGY

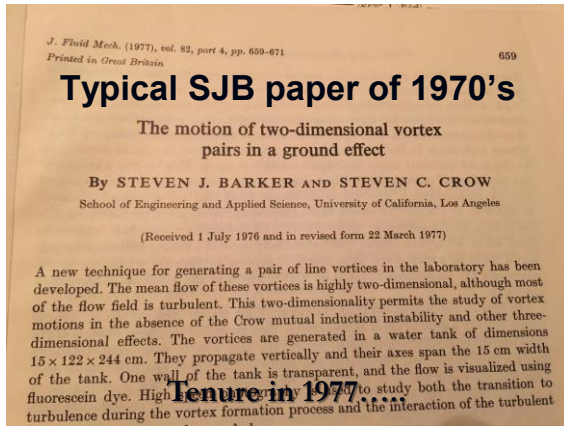
Radiated Noise and Wall Pressure  
Measurements in Turbulent  
Boundary Layers in Dilute  
Polymer Solutions  
Ph. D. Thesis  
Steven J. Barker, 1971

**Barker's guaranteed  
cure for insomnia!**

Firestone Flight Sciences Laboratory  
Guggenheim Aeronautical Laboratory  
Kármán Laboratory of Fluid Mechanics and Jet Propulsion

Pasadena





**AND THEN.....**

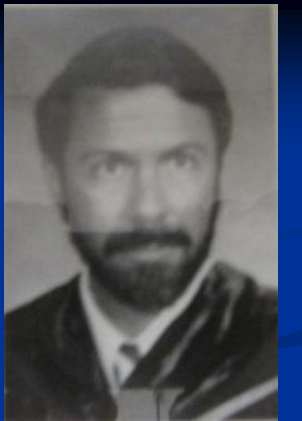


**WHY?**

*That's another discussion*

**Lesson:** If you have a dream, and an opportunity.....**GO FOR IT!**

**U of Miami  
School of Medicine  
MD - 1981**



**UC San Diego  
Anesthesiology Residency  
1981-1984**

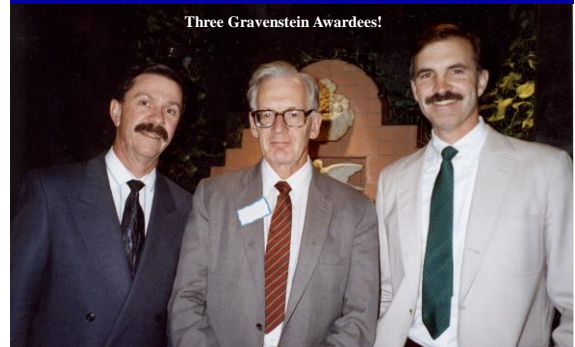


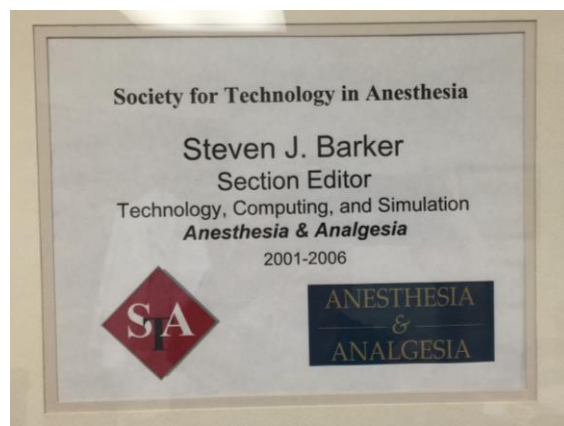
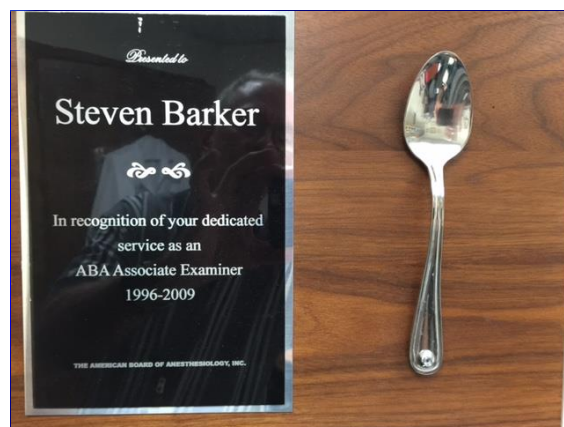
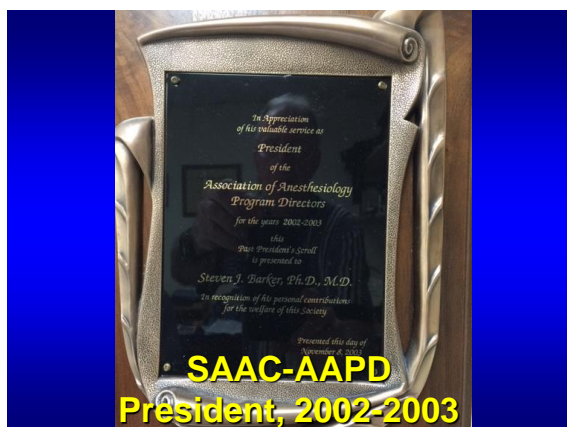
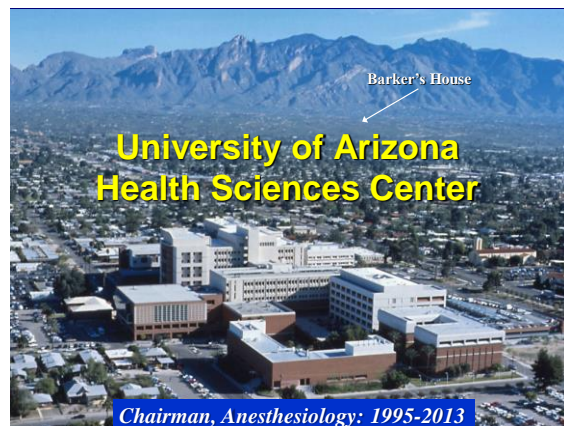
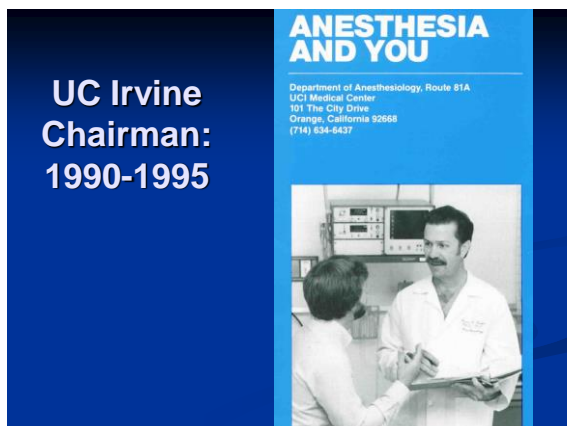
**UC Irvine Medical Center  
1984-1995**



**Barker-Severinghaus-Tremper**

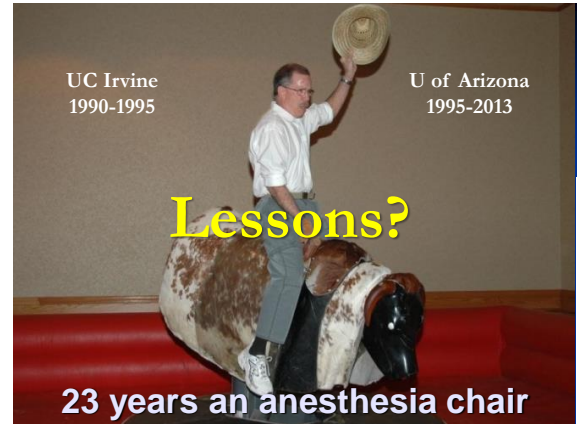
Three Gravenstein Awardees!







## "Banner University Medical Center" 2015



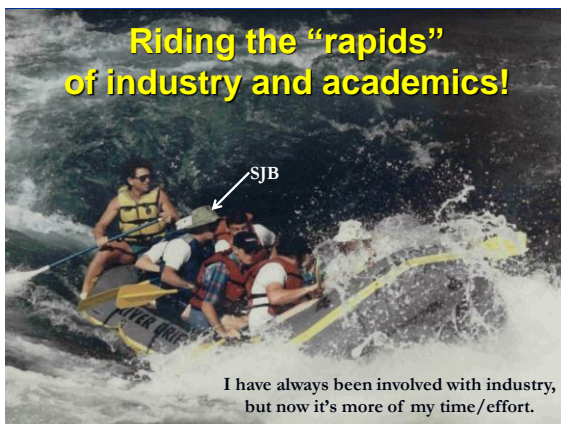
## Chair Lessons + other administrator positions

- Why do you really want to do this?
  - Is this the best use of your skills?
  - If "moving-up" is on your reasons list, **DON'T!**
- Will you have the *controls* to do the good things that you need to do?
- Remember who put you there (the dean) – *he/she can take you out!*
- If your top five priorities include "keeping your job," **it's time to quit!**

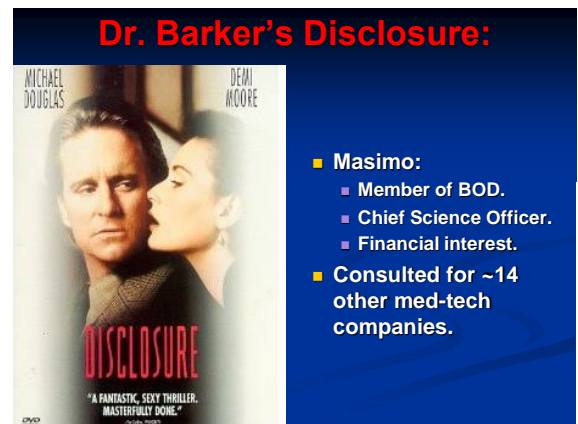
## Regrets?

- No! *Glad I did it.*
  - Many good years – I think I accomplished some things.
- What would I change?
  - Maybe quit a little sooner (3-5 years).
  - *Lesson:* Have a timeline in mind – don't make administration your career!
- Get out when one of the following:
  - Your timeline is up; it's not fun anymore; you get a dean/organization you can't work with.

## Riding the "rapids" of industry and academics!



## Dr. Barker's Disclosure:



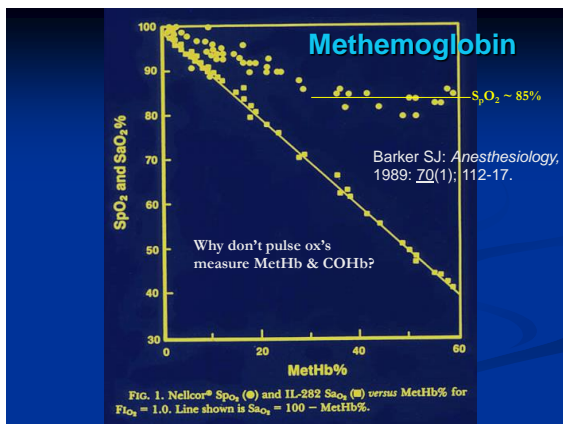
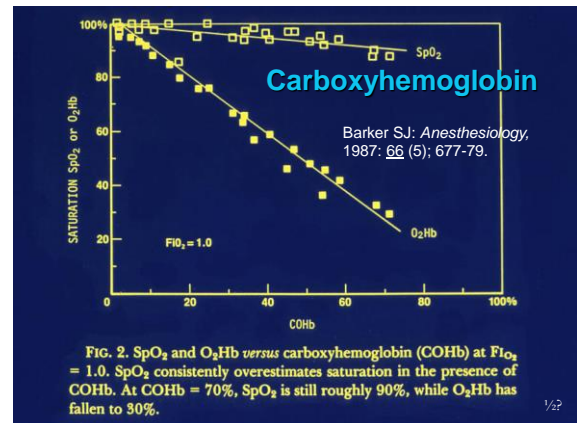
- Masimo:
  - Member of BOD.
  - Chief Science Officer.
  - Financial interest.
- Consulted for ~14 other med-tech companies.

## Chapter X: Biomedical Industry

- 1984 – 1990: I consulted for ~14 different med-tech companies, mostly on patient monitoring.
- Then in 1990, two young fellows came to my office....



## Masimo goes public: 2007



## Masimo "Rainbow" Rad-7 Pulse CO-oximeter

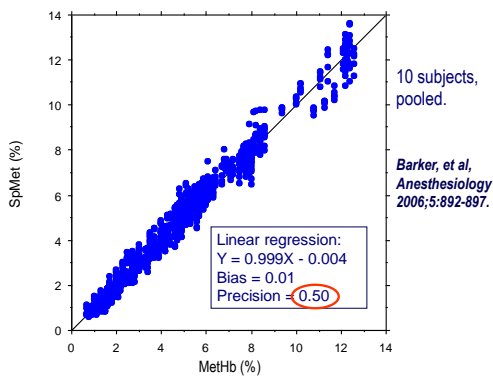
(released in April 2005)

- "Rainbow Technology"™
- Eight (8) wavelengths!
- Provides  $SpCO$  (COHb%),  $SpMet$  (MetHb%), and  $SpO_2$



And now: SpHb

MethHb by Rad-57 vs. MethHb by CO-oximeter



## Lessons:

- **WE** can directly influence directions taken by med-tech industry. *That's the fun part!*
- The "American Dream" is still possible!
- It's becoming more difficult: increasing gov't "involvement" and our litigious society.
- Question: "Will it still be possible for our grandkids?"



## Chapter 6: The Narrowing Path!

# COI



Bias  
Corruption  
Kickbacks



## Acknowledgements

Thank you for your help and materials on COI.

- **Bruce Gingles**  
Vice President, Global Technology and Health Policy  
Cook Medical Group
- **Lance Stell, PhD**  
Professor of Medicine, UNC School of Medicine  
Thatcher Professor of Philosophy, Davidson College
- **Tom Stossel, MD**  
Hematology Division, Brigham and Women's Hospital  
Professor of Medicine, Harvard Medical School.

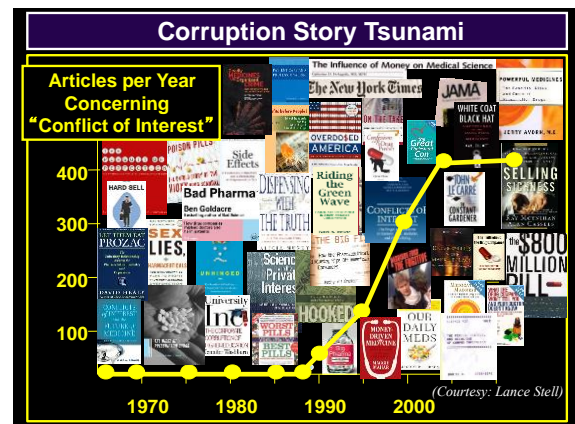
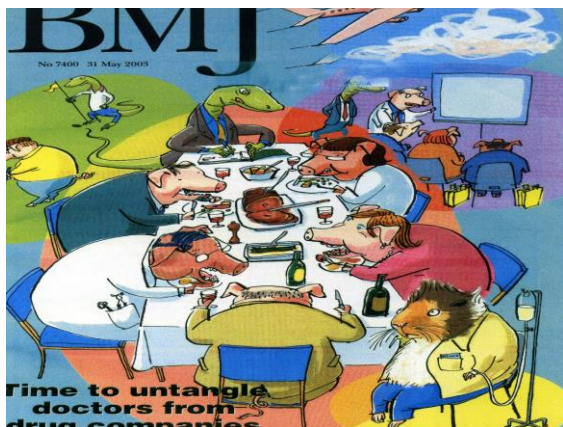
## COI: Definition

"A conflict of interest is a set of circumstances that creates a risk that professional judgment or actions regarding a primary interest will be unduly influenced by a secondary interest."

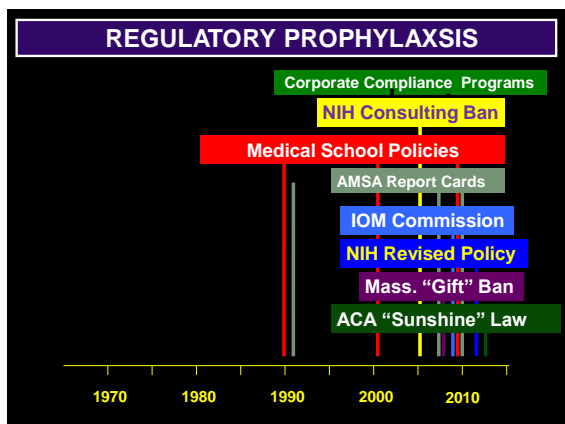
# COI

## As an academician:

- What is an "interest"?
  - Financial: Stockholder, options, income,
  - Control: BOD, officer, even consultants?
  - Nepotism: Family member (*friend?*) has interest!
- When is there a "conflict"?
  - When the responsibilities of your academic position or the interests of your academic institution *may* conflict with or be *influenced* by your industrial relationship.
  - Usually, just the *appearance* of a possible COI is enough to cause you trouble!







## Are docs really bought by "pens and pizza"?

- COI lobby says YES!
- Therefore, academic docs should not enjoy freedom of association with industry reps.
- At least one program does not allow residents to speak with reps unless a faculty "chaperone" is present.

**REALLY?**

## On the other hand.....

Are "Conflicts of Interest" Harmful or Helpful?

Physician POV by Linda Girgis, MD, FFAEP on Aug. 10, 2015  
 PM360 "The essential resource for pharma marketers"  
<http://www.pm360online.com/are-conflicts-of-interest-harmful-or-helpful/>

"Transparency" is a hot word in healthcare today, and while conflicts of interest should be disclosed, *it would be harmful to eliminate the conflicts themselves*. People do need to know if a speaker is invested in a company they are speaking about. *Nothing, however, is inherently wrong with a conflict of interest if it is openly acknowledged*. This applies to anything—but it especially holds true regarding the relationships between physicians and pharmaceutical companies.

## Disclosure:



- When in doubt, **DISCLOSE!**
- Even when it seems terribly obvious.

## PHARMAPHOBIA

HOW THE  
CONFLICT OF INTEREST  
MYTH UNDERMINES  
AMERICAN MEDICAL  
INNOVATION



**Best Book on this Subject!**

Yes, it's available on Kindle.

THOMAS P. STOSSEL

## According to Stossel:

- The "COI Movement" assumes all academic-corporate relationships are driven by greed.
- All results of such relationships are suspect.
- Medicine is treated differently from all other professions in this regard.

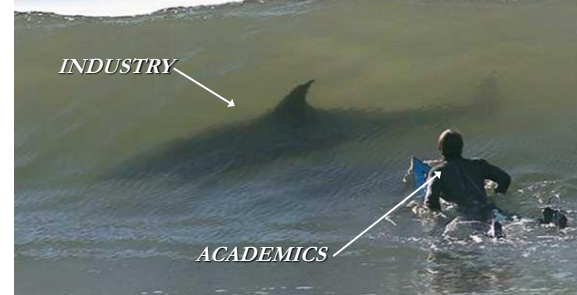
## Interesting contrast:

As Asst. Professor of Engineering  
at UCLA, 1975

- Total salary: \$15K per year!
- We were *encouraged* to spend 20% time consulting for industry.
- Consulting income ~ academic salary.
- COI issues were discussed, managed.
- Industry and academics both benefited, was a true "win-win"!
- Why is medicine different?

## Is this really us?

*Must restrict industry access!  
No industry-sponsored CME! NO doughnuts!*



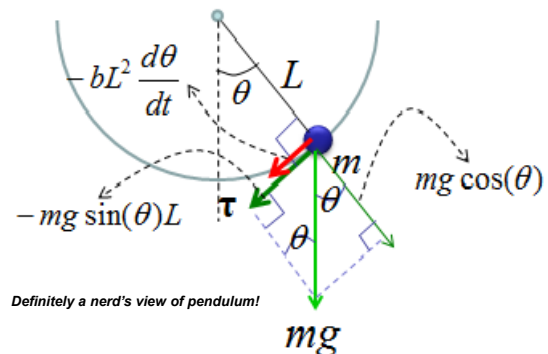
## Can we do better?

(at controlling bias & COI)

- Yes, but there is a cost.
- If we over-regulate, we can destroy our partnership.
- FIND THE BALANCE between oversight and creative productivity!



## Has the pendulum swung too far?



Medscape **PHYSICIAN LIFESTYLE** REPORT  
September, 2015

## Anesthesiologist Burnout A Growing Crisis

Physician burnout has increased by 16% in just 2 years. What else is changing for anesthesiologists and how will it impact you?

**Why?**

[VIEW REPORT >](#)

HEALTH · WEALTH · WEED  
**BURNOUT**

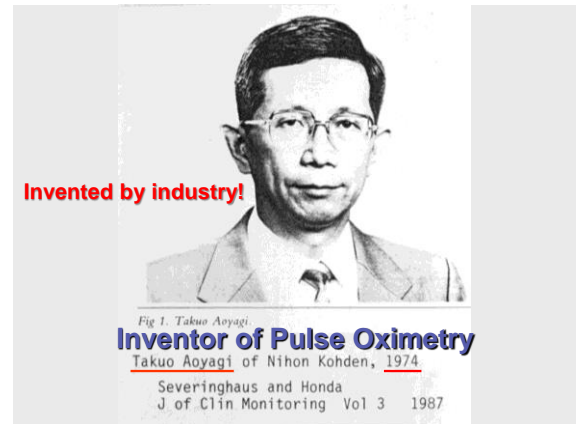
## What makes US medicine great?

*A common scenario:*

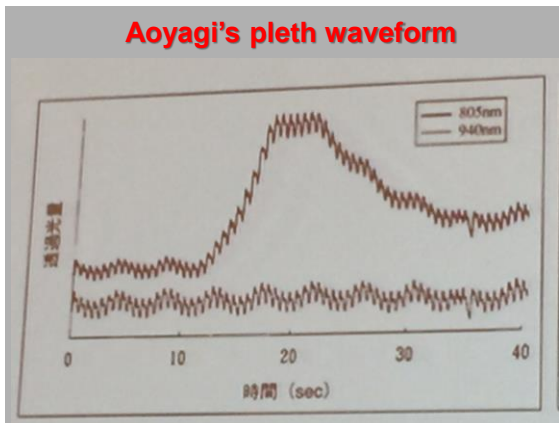
- Either academics or industry comes up with new idea.
- Academics: How would it improve patient care?
- Industry: How can we build it and make it work?
- Academics: Try it in patients! Result?
- Industry: Refine it, make it better.
- Academics: Educate consumers (MD's hospitals, patients)
- Industry: Produce it!
- Academics: Measure the outcomes.

*And that's TRANSLATIONAL RESEARCH!*

## EXAMPLE: Pulse Oximetry



Aoyagi's pleth waveform



And 41 years later.....



## SUMMARY:

- Pulse ox invented by industry.
- Developed and applied by academics.
- Back to industry for improvements.
  - At least three cycles of this.
- **BOTH** required for success.

## This marriage is productive!

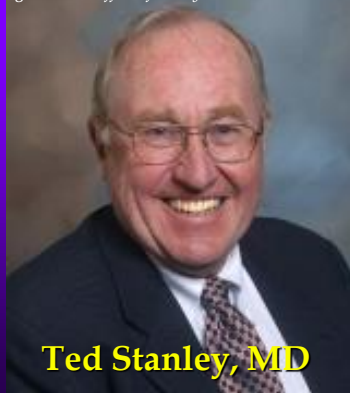
Some recent "children" of  
academic-industry marriage:

- Sevoflurane, Desflurane, Propofol.
- High-potency narcotics.
- Outpatient anesthesia.
- Pulse oximetry & other O<sub>2</sub> monitors.
- Capnography & agent monitoring.
- Processed EEG (Bis, SedLine).
- TEE.
- Electronic medical records.
- Cardiac output.

*A relationship to be cultivated, not persecuted!*



Almost anything with the suffix "-fentanyl" involved Dr. Stanley + industry.



**Ted Stanley, MD**

Now let me think,  
what anesthesia  
societies were founded  
as a partnership of  
academics and bio-tech  
industry, from their first  
beginnings?



SOCIETY FOR TECHNOLOGY IN ANESTHESIA



## Why does industry need academics?

- They really need the clinical perspective, orientation, priorities. *For example:*
  - What drugs are needed; what side effects are tolerable?
  - What should monitors measure? How accurate and reliable?
  - How are the data presented? How do clinicians use them?
- Human subject data.
  - They need access to our patients and volunteers for development studies.
  - They need us to conduct those studies -- scientifically, objectively and safely.
- Clinical application.
  - We show whether the final product has an impact on patient care and outcomes.

## Why does academics need industry?

- Because there is no "National Institute of Anesthesiology"!
  - Only 17% of US academic anesthesia depts have *any* NIH support!
  - We need their financial support.
- Most of our research relates to DRUGS or TECHNOLOGY.
  - We don't develop the new drugs, and we don't invent most of the new technology.

## CONCLUSIONS?

- Yes, academics and industry are an "odd couple," but they make great children!
- Including nearly every important new development in US medicine!
- Like any marriage, this one requires negotiation and adaptability.
- Maybe even some marriage counseling?

## **STA should lead:**

- The development of even stronger relationships between academic medicine and industry.
- A "reality-check" of the COI issue, which is compromising that relationship. *Discussion?*
- Development of standard procedures (algorithms, checklists?) for managing academic-industry relationships.
- *Put it in writing!*

*Hypothesis:* Other fields (e.g., aerospace) are managing this relationship better than we are.

## And Finally....

- Barker, Shander, Ramsey: "Evaluation of Continuous, Noninvasive Hemoglobin Monitoring and Its Role in Clinical Practice" – A & A Open Mind Paper in press.
- With Pro-Con debate on IP by Shelley & Barker.
- Published through efforts of Maxime Cannesson, Section Editor.
- Accompanied by an excellent editorial by Steve Shafer.
- *STA DOES IT AGAIN!* Makes the academic-industry partnership happen!

