

Science Communication

What Every Scientist Can Do & a Physicist's Experience

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Science Communication (*scicomm*)

- (1) Funding and organized effort from government and learning societies
- (2) Engagement of scientists as individuals
- (3) Participation of the public
- (4) Development of scicomm as a research discipline, by scholars and students

My Background

● Education

B.S., University of Hong Kong

M.S., University of British Columbia, Canada

Ph.D., Columbia University, USA

● Research

First in condensed matter physics

Later in nonlinear physics and complex systems

● Career

Published over 150 research papers and 11 books

Physics professor, San Jose State University, California

Guest professor, Chinese Academy of Sciences (CAS)

and China Association for Science and Technology (CAST)

● Scicomm history

1994, gave talk “Nonlinear Physics Is for Everybody” in Mexico City, Mexico

Since then, doing physics research and scicomm simultaneously (trying to combine and synthesize the creative activities in these two endeavors)

1. What Every Science Professor/Teacher Can Do

Integrate popular science books into science teaching

● How

Since 1999, I gave extra credits to students who would buy a popular science (popsci) book, read it and write up a report. (See *The Pantaneto Forum*, 2005)

The instructor does not teach the books, and thus will not increase teaching load.

● Why

Broaden the knowledge base of the students.

Show them the availability and varieties of popsci books in their local book stores.

Encourage them to buy and read one popsci book per year for the rest of their life.

Students become science-informed citizens—a voter and perhaps a legislator who is science friendly.

● Effects

Adopting this practice in large scale will fundamentally improve the science level of our future citizens.

In a few short months, all popsci books in every bookstore will be wiped out.

The popsci book market will be drastically improved, attracting more skillful writers into the popsci books profession.

What every science professor/teacher can do: Adopt this approach in their teaching.

2. What Every Science Professor Can Do (I)

*Inject popular science talks in departmental seminars
or set up a separate popsci seminar series in the department*

- Since 1994, I have given general talks on science, history and religion, starting with a title the audience interest in and leading them to the topics (such as the scientific method) that I really want them to learn.

- The titles include:

Wu Chien-Shiung: The First Woman President of American Physical Society

Does God Exist?

The Real World

The Birth of a Physics Project: What Happened to My New Book?

Why the World Is So Complex

How to Model History and Predict the Future

What every science professor can do:

Insert popsci talks into their departmental seminar series.

A separate popsci seminar series can be set up separately, if the regular departmental seminar does not allow it.

3. What Every Science Professor Can Do (II)

Set up a popular science lecture series in the university

- In Dec. 1999, I established a public lecture series “God, Science, Scientists” at San Jose State University.
- The first three speakers:



Michael Shermer



Eugenie Scott



Charles Townes (Nobelist)

What every science professor can do:

Set up a popsci lecture series in their university (which will be highly appreciated by the administrator).

It is not that difficult to do (if you limit yourself to one speaker per semester).

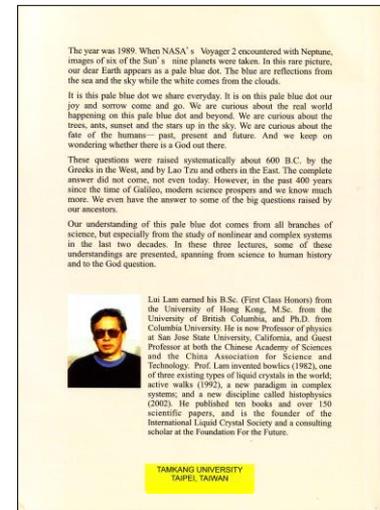
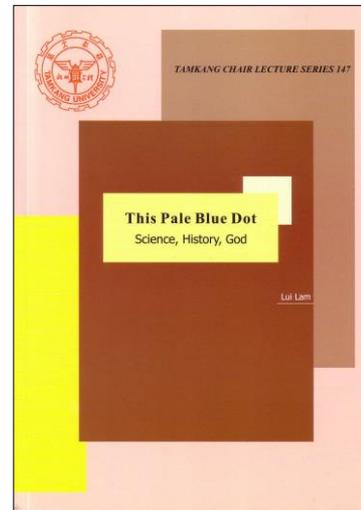
4. What Every Scientist Can Do

Give popular science talks everywhere

- For the past 11 years, I gave popular science talks in various high schools, universities and TV interviews in Mexico, the United States, Taiwan, and Hong Kong.

- A chain reaction:

- 2000 (Michael Shermer, San Jose & Beijing)
- 2000 (an article in *Skeptical*)
- 2001 (Future worship, Seattle)
- 2002 (E.T. workshop, Paris)
- 2003 (Tamkang Chair Lectures, Taiwan)



What every scientist can do:

Not every science professor is good at giving popsci talks, but every one can try and be successful. (Just keep practicing, giving the same talk many times and modifying it with the help of PowerPoint.)

It gains you many new friends, from all walks of life.

5. What Some Scientists Can Do But All Can Try

Contribute to scicomm as an emerging discipline

● Science communication is an emerging discipline of study.

China has a lead here (there are already degree programs in scicomm in at least four universities, and a research institute on popsci, under CAST).

Contribution of working scientists is much needed in making scicomm a mature discipline (e.g., they can provide different perspectives and help to clarify science issues).

● My contributions:

“Why there are no professional popular science book authors in China,”
International Conference on Science Knowledge and Cultural Diversity, Barcelona, Spain,
June 3-6, 2004 (with Daquang Li and Xujie Yang). (See *The Pantaneto Forum*, Issue 18.)

“New concepts for science museums”, *ScienceTimes*, Beijing, Aug. 27, 2004.

“Research on the history of science in China: Getting hotter”, *ScienceTimes*, Beijing,
Aug. 20, 2004 (with Xuejue Yang).

What some scientists can do but all can try:

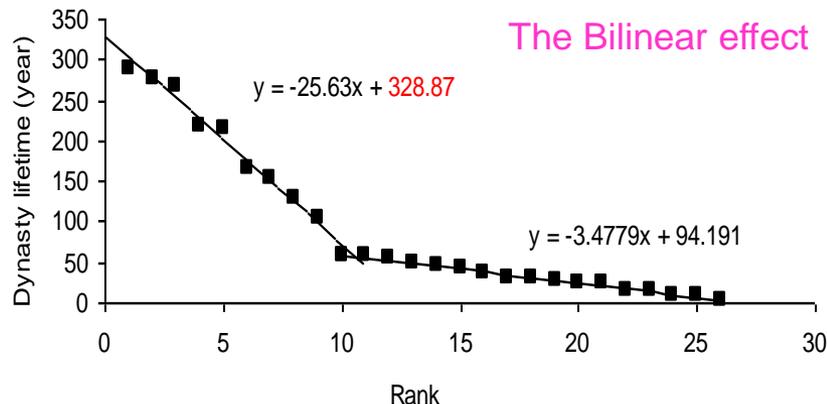
Treat scicomm as a research discipline and join as a professional.

6. What Some Science Professors Can Do

Merging science with humanities

- **Science and the humanities** are considered by some as “two cultures” (Snow, 1998). But in fact, humanities are about humans, which is nothing but a (biological) material system of *Homo sapiens*. Thus, humanities could be a part of the natural sciences, which is about **all** material systems.

- **Histophysics** (physics of human history —a new discipline, 2002)



The “curse of history”, as Chinese dynasties are concerned, does exist.

A quantitative law: A Chinese dynasty can survive every 3.5 years if it lasts less than 59 years; beyond that, every 25.6 years (dynasty lifetime is discrete, or “quantized”).

A quantitative prediction: Any dynasty after Qing, if exists, will either (1) last 290 years or less and fall on the two lines, or (2) end definitely and exactly in its year 329.

What some science professors can do:

Keep their eyes open, interact with colleagues from other disciplines (easily met in scicomm activities), and help bridge the gap between science and humanities.

Conclusion

- There are many things scientists can do in scicomm, as individuals, without funding.
- Six of these are recommended here, with the first four suitable even for untenured professors.
- Scicomm is fun, adventurous, and enables one to meet interesting new friends/colleagues beyond their own discipline, or even helps one's research career.

As an important Chinese leader advocated:

When faced with a daunting task, learn from the ants.

Mobilize the masses and trust them.

It worked for China, and will work for scicomm.