Fostering Responsible Conduct of Research Beyond Boundary Collaboration

Ovid J. L. Tzeng
Academician, Academia Sinica
Chancellor, University System of Taiwan

Photo: http://www.williamlong.info/google/archives/771.html
Once upon a time.....
Fig. 1. Chimpanzees in a social group.
Shared Intention: The Key to Human Evolution

Cooperation: The Necessity for Future Survival

Globalization: Cross languages, Cross Disciplines, Cross Universities and Research Institutions, Cross countries and continents
Best Countries in Science: SA’s Global Science Scorecard
WITHIN: Plot includes internal collaborations in the 10 nations with the highest science output. U.S. researchers work with one another more than with outsiders.
State of The World’s Science
<table>
<thead>
<tr>
<th>RESEARCH PAPERS</th>
<th>PATENTS ISSUED</th>
<th>EXPENDITURE</th>
<th>HIGHER EDUCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score, on a 100-point scale, based on science papers in top journals (Digital Science, 2011)</td>
<td>Number of patents (U.S. Patent and Trademark Office, 2011)</td>
<td>Gross domestic expenditure on research and development (2009*)</td>
<td>Number of science and engineering doctoral degrees awarded (2009*)</td>
</tr>
<tr>
<td>2. Germany</td>
<td>2. Japan</td>
<td>2. China</td>
<td>2. Germany</td>
</tr>
<tr>
<td>5. U.K.</td>
<td>5. France</td>
<td>5. France</td>
<td>5. France</td>
</tr>
<tr>
<td>6. France</td>
<td>6. Italy</td>
<td>6. Italy</td>
<td>6. Italy</td>
</tr>
<tr>
<td>8. South Korea</td>
<td>8. Italy</td>
<td>8. Canada</td>
<td>8. Canada</td>
</tr>
<tr>
<td>10. Spain</td>
<td>10. Australia</td>
<td>10. Australia</td>
<td>10. Australia</td>
</tr>
<tr>
<td>15. Taiwan</td>
<td>15. Austria</td>
<td>15. Turkey</td>
<td>15. Turkey</td>
</tr>
<tr>
<td>23. Hong Kong</td>
<td>23. Poland</td>
<td>23. Finland</td>
<td>23. Finland</td>
</tr>
</tbody>
</table>

* Data set is primarily limited to Organization for Economic Co-operation and Development (OECD) member countries. Some values are from 2007 or 2008.
† Country is not a part of the OECD data set for research and development and/or doctorates.
‡ Countries in gray do not rank among the top 25 for research papers.
The World’s Best Countries in Science

What makes one country better than another in science? It’s not an easy thing to measure. Publishing research papers is a good way to get a head on basic research, but it doesn’t say much about whether a nation is taking advantage of those good ideas. For this, other metrics come into play. Patents give a clue as to how well a country is converting its ideas for commercial gain. What a nation spends on R&D captures not only what universities and government research programs do but also the contribution from industry. How many students a nation educates in science and technology disciplines is a key metric, but little data are available.

The rankings of the top 35 nations that make through the middle of these two pages are based on preliminary data from Digital Science, a sister company to Nature Publishing Group (which owns Scientific American). It has assembled a database of research papers published in highly reviewed journals around the world and has organized them by nation of origin. The table at the left shows the rankings for this metric and others—patents, R&D expenditures and doctoral candidates produced. For more information, visit ScientificAmerican.com/dec2012/global-science.

—The Editors
“The leading countries of Asia are focused on an even more challenging goal: building universities that can compete with the finest in the world. The governments of China, India, Singapore, South Korea and (Taiwan) are explicitly seeking to elevate some of their universities to this exalted status because they recognize the important role that university-based scientific research has played in driving economic growth in the United States, Europe and Japan.”

Prof. Richard C. Levin, President, Yale University.
The Rise of Asia’s Universities
Feb. 1, 2010

• In the Gulf States, hundreds of millions of dollars are being spent to open branches of top U.S. and European universities such as Cornell in Qatar and the Sorbonne in Abu Dhabi.
• This past autumn, the new King Abdullah University of Science and Technology opened in Saudi Arabia. Its $10 billion endowment exceeds that of all but five American universities.
• In Singapore, planning is underway to build a new public university of Technology and Design, and a new American-style liberal arts college affiliated with the National University.
• In China, the nine universities that receive the most supplemental government funding to enhance their global competitiveness recently self-identified as the C9 – China’s Ivy League.
• In India, the Education Ministry recently announced its intention to build 14 new comprehensive universities of “world-class” stature.

• In Taiwan, where I came from, MOE just declared another five-year term of funding for excellent universities and researcher centers, with flexible salary scale for recruiting top researchers.
Philippines

- University of the East
- Centro Escolar University
- Far Eastern University
- Ateneo de Manila University
- University of the Philippines
- De la Salle University
- University of Santo Tomas
Singapore

National University of Singapore
Malaysia

Universiti Sains Malaysia

Universiti Teknologi Petronas

Universiti Malaysia Sabah

Universiti Utara Malaysia

University of Malaya

Universiti Teknologi Malaysia
Hong Kong

HKU, CUHK, HKUST,
Changing World

• Global Connections on the ground via High Speed Rails

  Pan Asia Rail System
  Silk Roads in the 21st Century

Around the world in 80 days?  WRONG!
in 40 hours, at most, or jet travelers!
2011年2月20日，京滬高鐵上海段試跑時速400公里高速列車。
中國推動開建泛亞高鐵
貫通中南半島

泛亞高鐵期待「香港元素」

中國技術領先 高鐵造價省半

source: 文匯報
泛亞高鐵「東南亞走廊」

跨越中國、越南、柬埔寨、寮國、緬甸、泰國、馬來西亞、新加坡共八國，預計2020年完工，從昆明到新加坡僅需10小時。

- 中國不必經過美國擁有制海權的麻六甲海峽，可以從中東和非洲地區進口原油。
- 加速以中國為核心的亞洲經濟融合，擴大和東南亞國家之間的貿易規模。
泛亚铁路

1991年至今，中国和东盟的关系从消除顾虑、建立对话，到确立睦邻互信和战略伙伴关系，互利合作不断丰富和深化，双方关系已进入历史上最好的发展时期
馬來西亞與印度尼西亞在馬六甲海峽最近只有三十八公里
通過海底隧道的高速鐵路，從韓國首都首爾出發，2個小時就可以到中國，4個小時就可以到北京。此為中韓海底隧道專案的韓方總負責人趙應來描繪了韓國政府構想的「現代海上絲綢之路」藍圖。在韓國總統李明博的主持下，討論級別由地方政府上升到中央政府。但目前的中韓海底隧道專案還僅僅停留在地方政府機關和民間構建的研究協商機構的討論層面，兩國政府間還沒有進行正式討論（2011年1月）(China-Korea Underground HSR)
The Changing World

• Global connections in the cloud via internet

• The new generation of digital natives

• x-informatics (Agriculture-, Bio-, Climate, ... Socio-, etc.)
Global Partnership

Shared Intention: The Key to Human Evolution

Cooperation: The Necessity for Future Survival

Globalization: Cross languages
              Cross Disciplines
              Cross Universities and Research Institutions
              Cross Culture
              Cross countries and continents
Scientific Research for Solving the Biggest Challenge of Humanity

- Literacy divide
- Knowledge divide
- Economy divide
- Medicare divide
- Intellectual divide
- Life Expectancy Divide
The Threats of RI Due to the Rapid Changing Contexts for Science in Society

The followings are modified version from Pugwash conference announcement

1. High-tech “knowledge societies” and the socio-economic divide between the rich and the poor. The rich comes suddenly and the divide widens quickly without gradual evolution.

2. Capacity of science and technology to intervene adversely in various dimensions of human life—including its origin, ending, and its physical and social environment. Powerful Scientists are regarded as Knowing everything.

3. Political context for doing science has changed—privatization and stronger governmental control, research ethic and integrity are issues to be seriously examined and discussed.

4. Information society—www and role of media, a new network browsing generation. Concept of and attitude toward Plagiarism changed, depending on context.
The Threat of Research Integrity in the Net-Browsing Generation: When There is Nothing Left to Plagiarize.

- Social Networking
- Virtual Reality
- Deception: Role Playing for Fun
- Twitter or Twister
- Facebook or Fakebooking or Fakingbook
- Cut and paste becomes mentally justifiable writing habit
- Avataars alert

Ovid’s invited speech on RI at 2012 AAAS Meeting, Washington, D.C.
By Artist and photographer: Martin Liebscher
Example cases of RI violations:

- You have been Dupe'd: Data so nice, you see them twice or many times.
- Wikipedia page reincarnated as paper: Authors plagiarized paper on reincarnation
- Nutrition journal accidentally publishes spice paper twice
- The Karolinska Institute University incidence caused the resignation of the President, the Dean, and Secretary General of the Nobel Prize Assembly
- Ring of the falsified Peer Reviewers
- 2014 ORI finding results in retraction of cancer paper with manipulated images.
- JACS imaging paper under editorial review
- Journal retract nanoparticles article(s) for duplicating figures.
- More and more and more

http://retractionwatch.com/
The Inaugural

“Research Integrity in Asia and the Pacific Rim” Meeting at the
San Diego Hilton in Harbor Island
February 24-26, 2016

In view of RI violations in recent years, evidenced in the report of the increasing number of paper retractions in major scientific journals, I urge the immediate establishment of the Asia Pacific Research Integrity (APRI) Network at the end of the San Diego meeting.
Pressure from Society

- Number 1 syndrome
- Nobel syndrome
- Large crowd but very narrow gate
- Make it or perish: A constant state of fear
- Winners take all
Challenges for those individuals who are honest but, because of …

• National goals,
• Being in the limelight,
• Peer pressure or
• Other factors,

… are tempted to take liberties with results, falsify or fabricate data, plagiarize, etc.
Burj Dubai
Sep. 13, 2007 – 555.3 m
Suggested height – 818m 2008

Taipei 101 – 509 m

Petronas Tower in Kuala Lumpur, Malaysia – 452m
Challenge: National Goals

Example Korea

“What do you need to do to get a Nobel Prize?”
Hwang-gate: Lessons for Science Governance

Herbert Gottweis [Department of Political Science/Life Science Governance Research Institute, University of Vienna]

RESEARCH INTEGRITY ISSUES IN CHINA-MAINLAND

World Conference on Research Integrity
Lisbon, Portugal, September 17-19, 2007

A stunning report (43 out of 48 retraced papers were from China and the effort to eliminate misconduct is very real and hopefully effective

Zero Tolerance
Ethical and societal dimensions of converging technology for the improvement of human health and performances
It is important to have Trusted Partners Everywhere
Excellence with a Soul
Value is the Foundation of Humanity

• Just before he was assassinated, President John F. Kennedy captured the essence of the humanities in a speech at Amherst College. He spoke about poetry, but his idea applies to all the creative disciplines.

• When power leads man toward arrogance, poetry reminds him of his limitations. When power narrows the areas of man’s concerns, poetry reminds him of the richness and diversity of his existence. When Power corrupts, poetry cleanses, for art establishes the basic human truths, which must serve as the touchstone of our judgment.
On the conduct of science

• Conduct his or her work with HONESTY AND INTEGRITY

• Methods and results are reported in an ACCURATE, ORDERLY, AND OPEN fashion

• IMPARTIAL AND FAIR in assessing both their own work and that of colleagues

• Be RESPECTFUL AND CONSIDERATE particularly where human subjects or animals are involved

• My own humble expectation from a student, (undergraduate, postgraduate, postdoctoral students) graduated from UST: He/she is a DECENT man/woman.
The **University System of Taiwan** is a consortium of four top research universities in Taiwan.

<table>
<thead>
<tr>
<th>Member</th>
<th>National Central University</th>
<th>National Chiao Tung University</th>
<th>National Tsing Hua University</th>
<th>National Yang-Ming University</th>
<th>University System of Taiwan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students</td>
<td>11,864</td>
<td>14,141</td>
<td>12,291</td>
<td>4,431</td>
<td>42,727</td>
</tr>
<tr>
<td>Faculty</td>
<td>606</td>
<td>712</td>
<td>667</td>
<td>393</td>
<td>2,378</td>
</tr>
<tr>
<td>Specialty</td>
<td>Earth Science, Space Science and Optoelectronics</td>
<td>Information Technology and Engineering</td>
<td>Science, Engineering and Social Sciences</td>
<td>Biomedical Sciences</td>
<td></td>
</tr>
</tbody>
</table>

54
• **Topics**: conflict of interest issues, integrity in scientific publications, research integrity education and medical ethics.

• **Target population**: researchers and faculty of universities and research institute in Taiwan

• **Impacts**: promoting and orienting to construct the code of institute for the universities and research institutes in Taiwan
• **International connection:**
  ✓ U. S. A. Office of Research Integrity (U. S. A.)
  ✓ European Science Foundation (European)
  ✓ COPE Committee on Publication Ethics (U. K.)
  ✓ ICSU International Council for Science
  ✓ The Center for Ethic in Science and Technology of UCSD (U. S. A.)
Taiwan as Trusted Partner
• Formation of Social Partnership for the sound Development of Science: From Sibling Rivalries to Kissing Cousins
Internationalization: We are All in the Same Family

• Competition for the best
• Cooperation for excellence
• Exchange graduate students and postdoc researchers
• Mentoring younger researchers from each other’s laboratories
• Big global problems, Big data, and Big solutions from Big Family with Big Brothers and Sisters.
• Change attitude from sibling rivalries to kissing cousins
“Many people say that is the intellect which makes a great scientist.
They are wrong: it is character”

Albert Einstein
Intellectually, socially, and spiritually,

We all then live and work together happily with TRUST
Welcome!
Thank You!

TAIPEI, TAIWAN