The Road to Equity: Marching Toward a Just Treatment of Mental Illness and Addiction in America

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American Psychiatric Association
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Never Discuss Floods With Noah In the Audience
Stick to stuff you know something about!
I’ve become obsessed with the science-society relationship

- Overlays the science base for mental illness and addiction understanding, stigma and treatment
  - And reimbursement issues
Why do we have science anyway?

- To provide natural explanations of the nature and workings of the natural world
  - Whether we like the answers or not!
- To improve the human condition
Baseline truism:

Science and technology are ever-more imbedded in every aspect of modern life!
Corollaries:

- For people to prosper in modern society, they need fundamental understanding and comfort with S&T
- For science to prosper, the science-society relationship must be positive and strong
We have a problem

- The science-society relationship is experiencing significant tension
  - Is beginning to erode
- Neuroscience is not immune
As Charles Dickens would say…..

- We’re living in the best of times
- And the worst of times
On the one hand

_We’re living in the best of scientific times_
Advances in science are coming at a fantastic pace

- The rate of incremental advance is accelerating
- New technologies are enabling quantum jumps in understanding
  - With great practical significance
Functional MRI of a "normal" subject writing a talk

Generating words (left brain dominant)

Chang, et al.
Dynamic mapping of human cortical development during childhood through early adulthood

Lesser brain activation in adolescents compared to adults in anticipation of monetary reward


Figure 3. Age difference in gain anticipation activation. Voxel-wise t-tests of age group differences in event-related regression coefficients were performed in regions of interest. Adolescents showed decreased gain anticipation activation compared with adults in the right ventral striatum. For illustrative purposes, maps were thresholded at $p < 0.05$ with exclusion of noncontiguous voxels and clusters $< 1000 \mu l$. The group difference map depicts this activation deficit in adolescents, where voxel-wise group differences are graded on the basis of uncorrected $p$ values, and the groups differ at a Bonferroni-corrected $p < 0.05$ in voxels centered at $9, 17, and -2$. 
That’s why 12 year-olds and 18 year-olds feel like different species

- Their brains are different
Mind and Body are Inseparable

Descartes
Dopamine Transporter Loss After Heavy Methamphetamine Use

Mental Disorders and Addiction are Brain Diseases
So, scientific progress is going great!!

- With all its implications for understanding, prevention and treatment
- For stigma
- For reimbursement
On the other hand....
Other issues *within* science are not going so well...and negatively affect the broader (societal) context for science

- Incidents of scientific misconduct
- Human subjects concerns
- Animal welfare issues
- Conflict of interest problems
These are factors *internal* to science

- There are problematic *external* factors as well
People generally still respect science and technology....
US public’s view of scientific research

- **Benefits of scientific research outweigh harmful results**
- **Benefits about equal to harmful results**
- **Harmful results of scientific research outweigh benefits**

Data from National Science Board, *Science and Engineering Indicators - 2002*
They have little understanding of what is and is not science

- 60% of Americans believe in extrasensory perception
- 41% think astrology is somewhat scientific
- 47% still do not answer “true” to the statement: “Human beings developed from earlier species of animals”

Science and Engineering Indicators, 2004
Some Americans have reservations about science

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<thead>
<tr>
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<th>Agree</th>
<th>Disagree</th>
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<tr>
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<td>enough on faith</td>
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Science and Engineering Indicators, 2006
There’s a lesson here!
People need to know more about science as an *enterprise*

- What makes something scientific?
- The limits of scientific investigation
  - Natural explanations of the natural world
Much science-society tension results from conflicts between scientific findings and

- Political/economic expediency
- Core human values
One political (economic) example…

- Is there global warming?
Changes in Temperature, Sea Level, and Northern Hemisphere Snow Cover

(a) Global mean temperature

(b) Global average sea level

(c) Northern hemisphere snow cover

Source: IPCC, 2007
FIGURE SPM.1. Atmospheric concentrations of carbon dioxide, methane and nitrous oxide over the last 10,000 years (large panels) and since 1750 (inset panels). Measurements are shown from ice cores (symbols with different colours for different studies) and atmospheric samples (red lines). The corresponding radiative forcings are shown on the right hand axes of the large panels. (Figure 6.4)
Science-society tension results from conflicts between scientific findings and

- Political/economic expediency
- Core human values
Scientific issues abut against values:

- Embryonic stem cell research
- Studying “personal” topics
  - Sex
  - Genetics of behavior
- “Intelligent Design” versus evolution in science classrooms and science museums
Many neuroscience issues abut against human values

- The nature of the mind
  - Mind-body-soul concepts
  - Free will vs. determinism
- The ability for anyone to look into your brain and watch your mind in action
  - Darkest secret thoughts
  - Lie detecting
Neuroscience issues that abut against human values (cont.)

- How to relate to brain disordered individuals
  - Personal responsibility for your brain diseased behavior

Society’s views on this continue to have an enormous impact on parity issues

- When and how to intervene in brain-mind function
The emergence of *neuroethics* as a field/enterprise
Two prominent values-related examples

- Embryonic stem cell research
- Evolution vs intelligent design
The embryonic stem cell issue

- Whether or not human embryos can be destroyed to produce (and grow) pluripotent stem cells for research directed at potential therapies
Objections are not based on skepticism about the potential for developing therapies

- Most people agree there is significant potential
Objections have more to do with how the issue intersects with one’s religious/moral beliefs
Stem cells and religion

- Different religious groups have differing ethical perspectives on using embryonic stem cells for research purposes
  - When does life begin?
    - Fertilization
    - During gestation
    - Birth
Intelligent design
Intelligent design claims to believe, like evolution, in gradual change

- But a supernatural being guided the process
- Claims to be a scientific alternative to evolution
Advocates want intelligent design taught in science classrooms as an alternative to evolution
TEACH BOTH THEORIES... LET THE KIDS DECIDE.

CHEMISTRY

ALCHEMY

PHRENOLOGY

NEUROLOGY

MAGIC

E = MC²

ASTROLOGY

ASTRONOMY

PHYSICS

8-4-05 THE PHILADELPHIA INQUIRER. UNIVERSAL PRESS SYNDICATE.
Scientists argue that ID is not science

- Science is restricted to the natural world
  - ID posits a supernatural “designer”
  - And supernatural is not science
- Keep non-science out of science classrooms
Public acceptance of evolution in 34 countries, 2005.

= “Intelligent design” initiative eruption
Overlay of values is having serious consequences for the whole science-society relationship

- Society wants to influence science
  - Rather than just the reverse
- Creating a divide between science and the rest of society
What to do?

- How to improve the science-society relationship?
We can’t just “educate” our way out of it

- The problem is not just lack of understanding
  - People do understand much of what we’re saying or want to do
  - They don’t like it
    - Conflict with their core values trumps their view of societal benefits
    - Only scientists must “stick to the science”
What can we do?

- Continue protesting/lamenting the situation
- Adopt a more assertive strategy
  - Engage with the public on the issues
  - Try to find common ground
One can’t deal with

● Evangelical fundamentalists
● Evangelical atheists
● Militant agnostics
One can work with

- Undecideds
- Rational middle
We need to change not only the style and content but also the *intent* of the conversation:

Communicating to the public  →  Communicating with the public
We need to listen to the public about:

- **Their** concerns about science and technology and their concomitants
- **Their** priorities among research areas
- Questions **they** would like or need us to answer
  - Help frame the research agenda
Formal dialogues in the United States:

- NIH/NHGRI’s “Ethical, Legal and Social Implications” (ELSI) Program
- AAAS’s Dialogue on Science, Ethics and Religion
- Johns Hopkins Univ. Genetics and Public Policy Center
In genetics:

- What values and priorities should genetic research and its application seek to uphold?
- Where does the public draw the line on an acceptable level of risk?
Neuroscience needs to go out to the public in a similar way

- Stigma
- Personal responsibility for brain diseased behavior
- Criminal justice policies related to addicted individuals
- Reimbursement for mental disorders and addiction treatment
AAAS Public Engagement Programs

- Science center/museum collaborations
- *Science Update* – radio show
- Array of publications
- Dialogue on Science, Ethics and Religion (DoSER)
- Center for Public Engagement with Science and Technology
AAAS Center for Public Engagement
with Science and Technology

- Town meetings
- Family science days
- Topical public workshops
- Meet the scientists events
- Broadcast opportunities
- Partnerships with science museum and centers
- Active outreach
  - Clubs
  - Residential communities
  - Religious institutions
AAAS “Glocal” strategy
Working with local opinion leaders and resources

- Local media and op-eds
- Clergy
- School officials
- Local government leaders/politicians
- Science museums and centers
- Community groups
- Town meetings
70

= “Intelligent design” initiative eruption

= AAAS intervention
The Dover trial local op-ed strategy
As we move through this difficult era for science and society

Donald Kennedy, *Science*, April 8, 2005
We Need to Restore Equilibrium to the Science-Society Relationship
Public sentiment is everything. With public sentiment, nothing can fail; without it, nothing can succeed.

Abraham Lincoln
Who’s going to do it?
We All Need to be a Part of the Effort!