

# **Neuroscience through the Headlines: Social and Ethical Issues in Communicating Brain Research**



**Daniela Ovadia**

**International School  
of Scientific Journalism  
and Communication**

**Erice, May 10th, 2010**



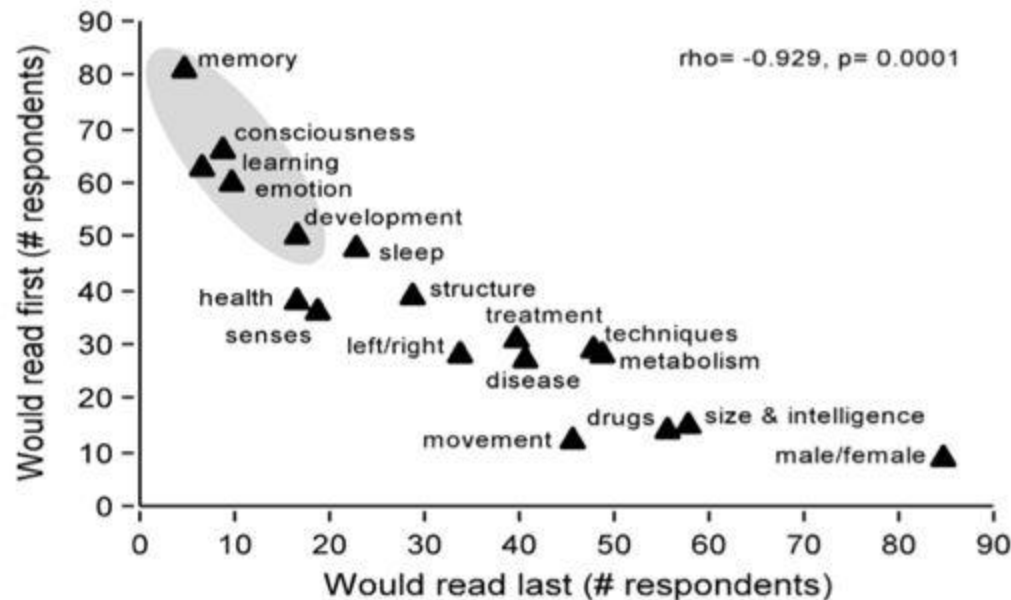


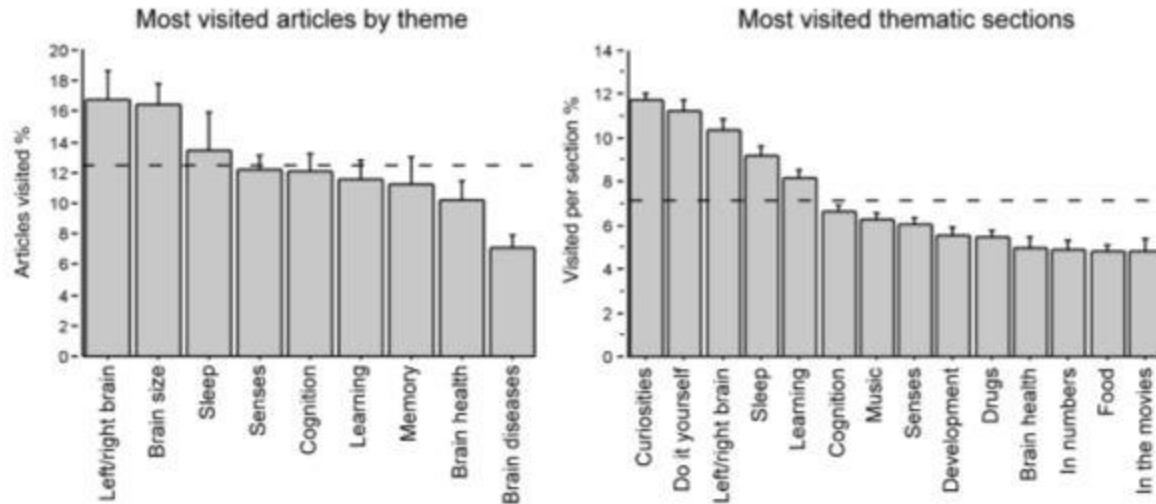


# What does the public want to know about the brain?

Suzana Herculano-Houzel

Departamento de Anatomia, Universidade Federal do Rio de Janeiro, 21941-590 Rio de Janeiro - RJ, Brazil





**Supplementary Fig. 1.** What does the public indeed seek to read when given the option?  
(a) Distribution of visits over a one-year period to each of 53 articles listed in the homepage by title, grouped for this analysis by theme ( $n = 59,858$  visits to all articles). (b) Distribution of visits to each of 14 thematic sections over a later six-month period ( $n = 54,465$  visits to all sections). Visits were tracked by a third-party free web traffic monitor ([www.hitboxcentral.com](http://www.hitboxcentral.com)). The dashed lines indicate the percentage of visits that each theme or section would receive if visitors had no preference for particular themes.



## Some very hot topics



- **Neuroimaging:** what do we really see when we look inside the brain?
- **Consciousness and coma:** is there anybody in there?
- **Deep brain stimulation:** is psychosurgery back?
- **Brain enhancement:** is it ethical to boost human cognitive skills with drugs or using brain computer interfaces?
- **Brain and law:**
  - can we look into the brain to seek the truth?
  - are we really responsible for our actions?



SCIENCE AND SOCIETY

## fMRI in the public eye

*Eric Racine, Ofek Bar-Ilan and Judy Illes*

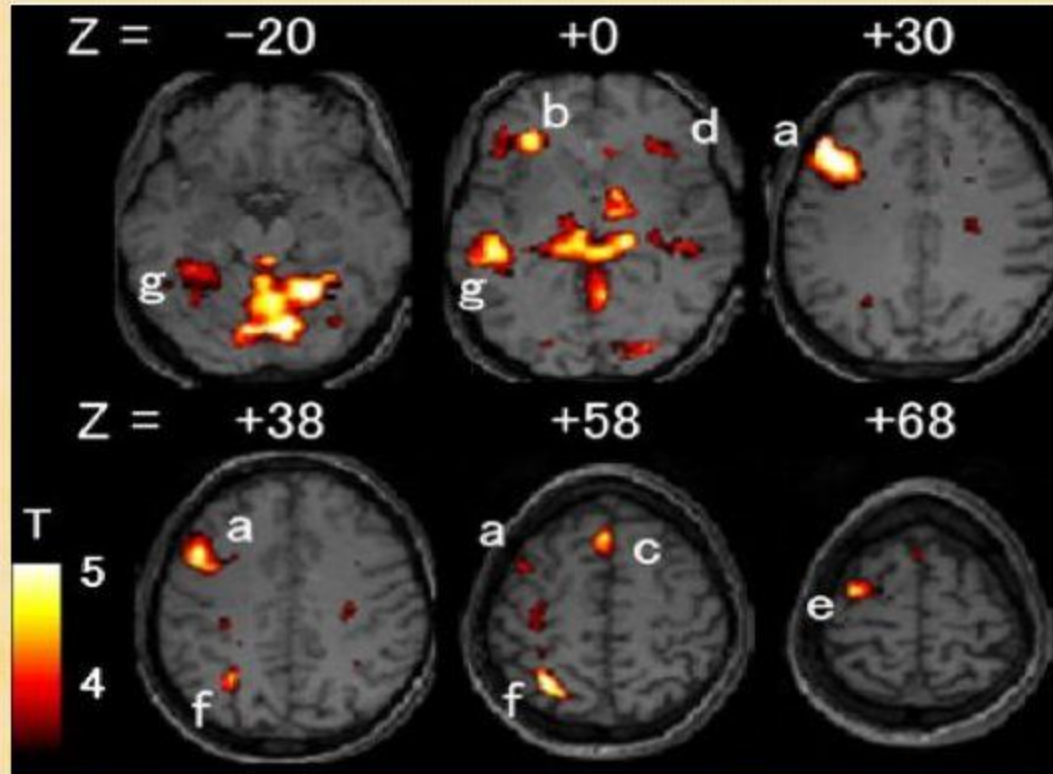
**Abstract** | The wide dissemination and expanding applications of functional MRI have not escaped the attention of the media or discussion in the wider public arena. From the bench to the bedside, this technology has introduced substantial ethical challenges. Are the boundaries of what it can and cannot achieve being communicated to the public? Are its limitations understood? And given the complexities that are inherent to neuroscience, are current avenues for communication adequate?

Functional neuroimaging techniques, such as functional MRI (fMRI) and positron emission tomography (PET), have evolved as key research approaches to studying both disease processes and the basic physiology of cognitive

phenomena in contemporary neuroscience. In the clinical domain, they carry hope for guiding neurosurgical mapping, monitoring drug development and providing new approaches to disease diagnosis and management at early, possibly even presymptomatic stages. However, issues relating to these capabilities, such as technical readiness and the possibility of disease screening in advance of effective therapeutic intervention, raise substantial ethical challenges for investigators, health care providers and patients alike. In basic neuroscience, increasing numbers of non-health-related fMRI studies that touch on our personal values and beliefs have also forced us to expand our ethical perspectives<sup>1</sup>. The wide dissemination of this research, growing applications of the technology and continuously



Please, can you provide me a picture of the brain areas involved in...







Available online at [www.sciencedirect.com](http://www.sciencedirect.com)



ScienceDirect

Cognition 107 (2008) 343–352

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COGNITION

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[www.elsevier.com/locate/COGNIT](http://www.elsevier.com/locate/COGNIT)

Brief article

# Seeing is believing: The effect of brain images on judgments of scientific reasoning ☆,☆☆

David P. McCabe <sup>a,\*</sup>, Alan D. Castel <sup>b</sup>

<sup>a</sup> *Department of Psychology, Colorado State University, Campus Box 1876,  
Fort Collins, CO 80523-1876, USA*

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CA 90095-1563, Los Angeles, USA*

Received 19 December 2006; revised 25 July 2007; accepted 25 July 2007

## ... A Particularly Persuasive Influence

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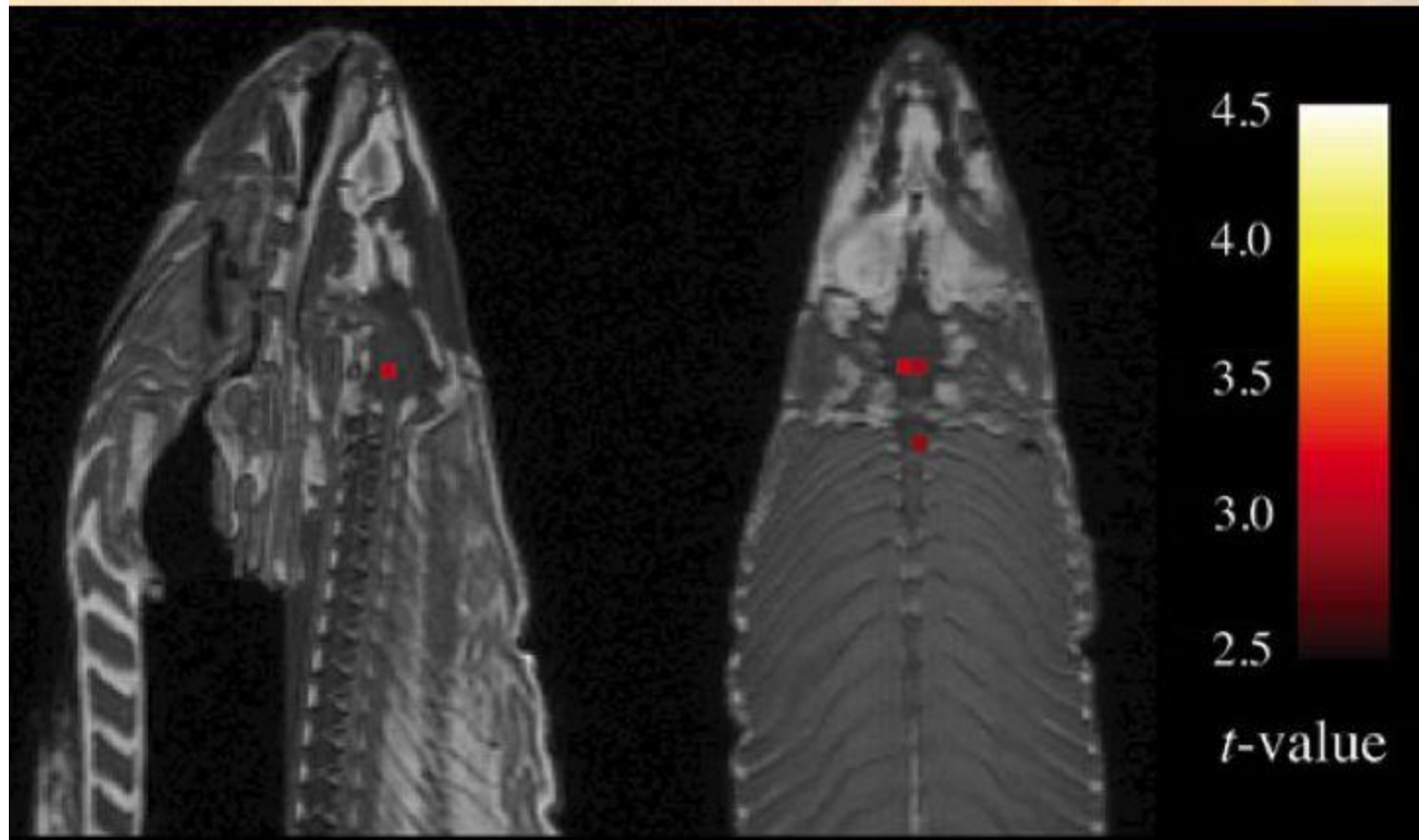
### Abstract

Brain images are believed to have a particularly persuasive influence on the public perception of research on cognition. Three experiments are reported showing that presenting brain images with articles summarizing cognitive neuroscience research resulted in higher ratings of scientific reasoning for arguments made in those articles, as compared to articles accompanied by bar graphs, a topographical map of brain activation, or no image. These data lend support to the notion that part of the fascination, and the credibility, of brain imaging research lies in the persuasive power of the actual brain images themselves. We argue that brain images are influential because they provide a physical basis for abstract cognitive processes, appealing to people's affinity for reductionistic explanations of cognitive phenomena. © 2007 Elsevier B.V. All rights reserved.

*Keywords:* Scientific communication; fMRI; Brain imaging; Persuasion; Cognitive neuroscience

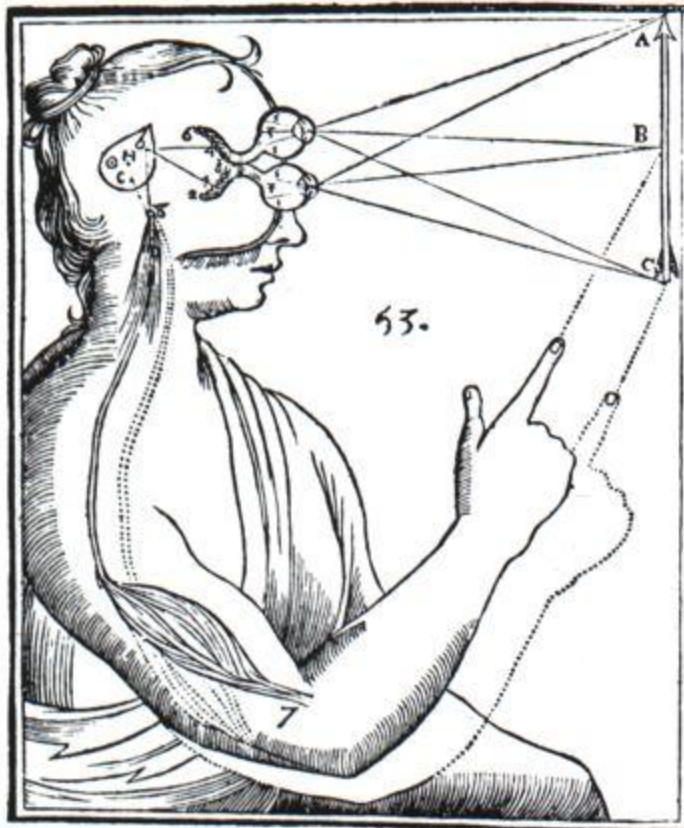
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## The dead salmon story



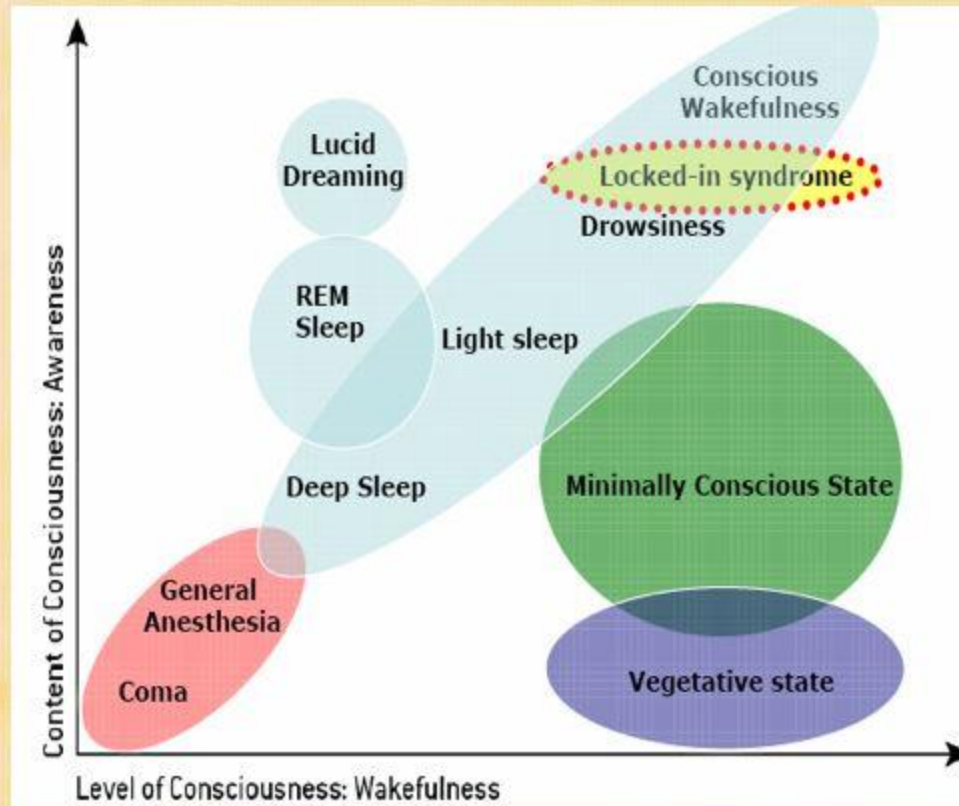


## Descartes dualism



Des Cartes

# Different levels of consciousness



Laureys, Trends in Cognitive Science 2005

## Media coverage of the persistent vegetative state and end-of-life decision-making



E. Racine, PhD  
R. Amaram  
M. Seidler  
M. Karczewska  
J. Illes, PhD

Address correspondence and  
reprint requests to Dr. Eric  
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### ABSTRACT

**Background:** Conflicting perspectives about the diagnosis and prognosis of the persistent vegetative state (PVS) as well as end-of-life (EOL) decision-making were disseminated in the Terri Schiavo case. This study examined print media coverage of these features of the case.

**Methods:** We retrieved print media coverage of the Schiavo case from the LexisNexis Academic database and used content analysis to examine headlines and text of articles describing Schiavo's neurologic condition, behavioral repertoire, prognosis, and withdrawal of life support. The accuracy of claims about PVS was assessed.

**Results:** Our search yielded 1,141 relevant articles published (1990-2005) in the four most prolific American newspapers for this case. The most frequent headline themes featured legal (31%), EOL (25%), and political (22%) aspects of the case. Of the articles analyzed, 21% reported that Schiavo "might improve" and 7% that she "might recover." Statements explicitly denying the PVS diagnosis were found in 6% of articles. Explanations of PVS and other chronic disorders of consciousness were rare ( $\leq 1\%$ ). Most frequently cited descriptions of behaviors were that the patient responds (10%), reacts (9%), is incapacitated (6%), smiles (5%), and laughs (5%). Withdrawal of life support was described as murder in 9% of articles.

**Conclusions:** Media coverage included refutations of the persistent vegetative state (PVS) diagnosis, attributed behaviors inconsistent with PVS, and used charged language to describe end of life decision-making. Strategies are needed to achieve better internal agreement within the professional community and effective communication with patient communities, families, the media, and stakeholders. *Neurology*® 2008;71:1027-1032





**Table 3** Description of Schiavo's neurologic condition in print media coverage

Description of neurologic condition	Affirmation (%)	Refutation (%)	Equivocal (%)
Persistent vegetative state	392 (34)	71 (6) <sup>1</sup>	28 (2)
Brain damage	316 (28)	0 (0)	0 (0)
Vegetative state	148 (13)	17 (1) <sup>2</sup>	5 (0)
Severe brain damage	145 (13)	1 (0)	1 (0)
Coma or coma-like*	106 (9)	18 (2)	0 (0)
Brain destroyed	82 (7)	7 (1)	0 (0)
Permanent vegetative state	26 (2)	8 (1) <sup>3</sup>	0 (0)
Brain is gone	23 (2)	2 (0)	0 (0)
Brain injury	23 (2)	0 (0)	0 (0)
Irreversible brain damage	20 (2)	2 (0)	1 (0)
Extensive brain damage	18 (2)	0 (0)	1 (0)
Brain death	12 (1) <sup>4</sup>	16 (1)	0 (0)
Minimally conscious state	10 (1) <sup>5</sup>	4 (0)	6 (1)
Irreversible vegetative state	9 (1)	2 (0)	1 (0)
Critical brain damage	5 (0)	0 (0)	0 (0)
Massive brain damage	4 (0)	0 (0)	1 (0)
Permanent unconsciousness	4 (0)	0 (0)	0 (0)
Devastating brain injury	3 (0)	0 (0)	0 (0)
Severe irreparable brain damage	3 (0)	0 (0)	0 (0)
Drastic brain damage	2 (0)	0 (0)	0 (0)
Irreversible coma*	1 (0)	0 (0)	0 (0)
Permanent brain damage	1 (0)	1 (0)	0 (0)
Persistent coma-like state*	1 (0)	1 (0)	0 (0)

**Figure**

**Description of Schiavo's behaviors in print media coverage and consistency with persistent vegetative state diagnosis**

Behavior	Affirmation (%)	Refutation (%)
Responds	117 (10) <sup>1</sup>	17 (1)
Reacts	104 (9) <sup>2</sup>	7 (1)
Incapacitated	63 (6)	0 (0)
Smiles	61 (5)*	10 (1)
Laughs	57 (5)*	7 (1)
Breathes	50 (4)	0 (0)
Moans	49 (4)*	7 (1)
Reflexes (has)	45 (4)	4 (0)
Cries	42 (4)*	6 (1)
Aware or alert	41 (4) <sup>3</sup>	56 (5)
Disabled	41 (4)*	2 (0)
Sees	40 (4) <sup>4</sup>	28 (2)
Moves purposefully	37 (3) <sup>5</sup>	54 (5)
Talks or pronounces words	30 (3)*	30 (3)
Communicates	28 (2) <sup>6</sup>	18 (2)
Hears	28 (2) <sup>7</sup>	5 (0)
Sleeps	25 (2)	0 (0)
Cognitive function (has)	19 (2) <sup>8</sup>	61 (5)
Conscious	18 (2) <sup>9</sup>	35 (3)
Discomfort (feels)	17 (1) <sup>10</sup>	5 (0)
Wakeful or awake	16 (1)	1 (0)
Grunts or groans	16 (1)*	2 (0)

Consistency with PVS diagnosis

- Inconsistent
- Consistent
- Equivocal (see text explanation)

\* Schindler party is most frequent source of affirmations for this equivocal statement.

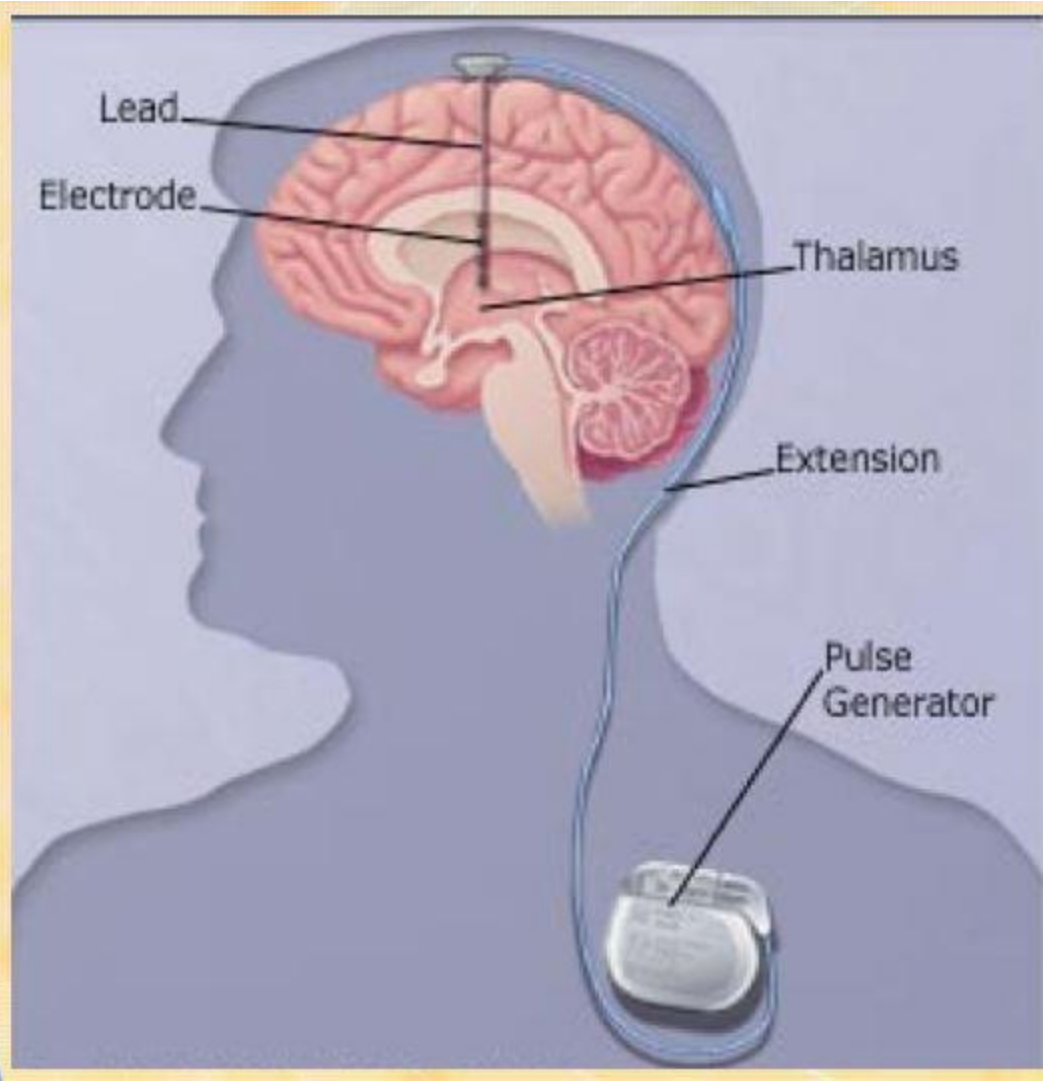
Most common sources of erroneous statements:

1. Schindler party (N=97); doctors w/o declared allegiance (N=13); politicians (N=8)
2. Schindler party (N=92); journalists (N=7); doctors w/o declared allegiance and members of the general public (N=2 each)
3. Schindler party (N=18); doctors w/o declared allegiance (N=9); journalists (N=5)
4. Schindler party (N=29); journalists (N=4); doctors w/o declared allegiance (N=4)
5. Schindler party (N=21); doctors w/o declared allegiance (N=7); journalists (N=4)
6. Schindler party (N=24)
7. Schindler party (N=22); journalists (N=2); politicians (N=2)
8. Schindler party (N=10); advocacy groups (N=4); doctors w/o declared allegiance and Schiavo party (N=2 each)
9. Schindler party (N=11); politicians (N=4); doctors w/o declared allegiance (N=2)
10. Politicians (N=12)



The evolution of the Schiavo case and the dissemination of information about it in the media shook the medical, legal, and bioethics communities. Analysis of a sample of American print media reveals that the public has been provided conflicting information about medical diagnosis and prognosis of PVS. Statements conveying false hopes for recovery were disseminated in a general absence of adequate critical examination and background information about PVS and CDCs. Since the media and other forms of public information<sup>27</sup> can shape expectations and beliefs about health, pervasive challenges in communication about the diagnosis and prognosis of CDCs are likely to persist in the post-Schiavo era. Indeed, the extensive media coverage in the months preceding Schiavo's death did not translate into concerted efforts by journalists and the media to educate about the diagnosis and prognosis of CDCs. Even if a few news articles conveyed some explanations and background information, much of the coverage focused on the controversial political and legal aspects of the case. Our results support the need for research into strategies that will lead to better internal agreement within the professional community and effective communication with patient communities, families, and stakeholders that the professional community serves.





**The good effect: control of Parkinson disease**

[http://www.youtube.com/watch?v=\\_OJ5qnErsTc](http://www.youtube.com/watch?v=_OJ5qnErsTc)

**The control of mind: the story of José Delgado**

[http://www.youtube.com/watch?v=Xk\\_7eTGF0N4](http://www.youtube.com/watch?v=Xk_7eTGF0N4)



Special Section: Technology and the Body:  
Linking Life and Technology

## *"Currents of Hope": Neurostimulation Techniques in U.S. and U.K. Print Media*

ERIC RACINE, SARAH WALDMAN, NICOLE PALMOUR,  
DAVID RISSE, and JUDY ILLES

*Cambridge Quarterly of Healthcare Ethics* (2007), 16, 312-316. Printed in the USA.  
Copyright © 2007 Cambridge University Press 0963-1801/07 \$20.00  
DOI: 10.1017/S096318010700351

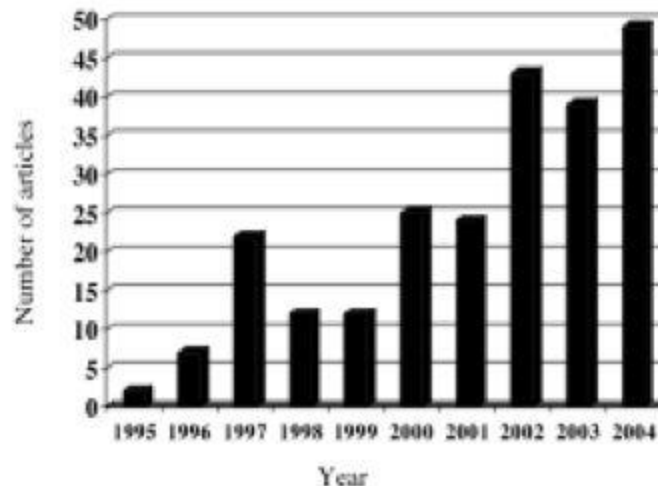


Figure 1. Print media coverage of neurostimulation techniques (1995-2004).



**Table 2.** Benefits and Issues in Print Media Coverage of Neurostimulation Techniques

Benefits and issues	Description	%
Clinical benefits	At least one clinical benefit-positive impact of research on	79
	Therapy and surgery	77
	Prevention	2
	Diagnosis	1
Nonclinical benefits	At least one nonclinical benefit-positive impact of research on	23
	Research and technology	12
	Personality	6
	Political	5
Scientific and medical issues	Economy	4
	At least one scientific or medical issue-risks and concerns related to	16
	Safety and side effects	15
	Validity	1
Ethical, legal, and social issues	At least one ethical, legal, or social issue-risks and concerns related to	14
	Consent and autonomy	5
	Commercialization and conflicts of interest	3
	Animal rights	2
	Meaning of research	2
	Justice and resource allocation	2
	Enhancement	2
	Dignity and integrity	1
	Privacy and confidentiality	1
	Recruitment of research subject, informed consent, and respect of patient preferences	5
	Patenting, conflicts of interest, and high costs of neurotechnology	3
	Animal rights and welfare	2
	Broad meaning of research	2
	Equal access to technology and healthcare as well as resource allocation	2
	The improvement of "normal" brain function	2
	Treating humans as mere means and not as ends in themselves	1
	Sharing of confidential information	1



**Table 1.** Sample Headlines for Print Media Coverage of Neurostimulation Articles

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New treatment headlines (41%)

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"The potential of brain pacemakers. Implanted devices may alter treatment of many disorders" (*The Washington Post* 6 Mar 2006)

"Currents of hope—A revolutionary device. An electrical pacemaker implanted in the brain gives welcome relief to people afflicted by the shakiness of Parkinson's disease" (*Buffalo News* 11 May 2002)

"Magnetic appeal. New therapy that fights depression sparks a current of optimism" (*The Seattle Times* 27 Mar 2001)

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Scientific breakthrough headlines (19%)

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"With tiny brain implants, just thinking may make it so" (*The New York Times* 13 Apr 2004)

"Are cyborg troops our future army?" (*The Times* 16 Nov 2003)

"Brain signals shown to move a robot's arm" (*The New York Times* 16 Nov 2000)

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## Brain research

- NIH, 2008: 5,2 billions for brain-related projects (20% of their budget)
- 2 billion people worldwide suffering from brain-related illness  
(*Neurotechnology Industry Report*, 2008)
- In 2008 more than 550 public and private companies in the USA participated in a neurotech industry
- Military has a hefty investment in research on neuroenhancers, brain-machine interfaces and neuroimaging





# Ready for Battle?

Supersoldiers could  
result from  
neurotechnology  
research



## Neuroethics is born

Neuroethics is a forum for interdisciplinary studies in ethics and related issues in the sciences of the mind.

The focus is on **ethical issues posed by new technologies developed via neuroscience**, such as psycho-pharmaceuticals and other ways of intervening in the mind; the practice of neuroscience itself, including problems posed by imaging work on research subjects; regulation of neuroscientific technologies, and ways in which the sciences of the mind illuminate traditional moral and philosophical problems, such as the nature of free will and moral responsibility, self-deception, weakness of the will and the nature of personhood.





# **Dr. Martha Farah, Penn Media Seminar on Neuroscience and Society**

<http://www.youtube.com/watch?v=GZbG0AxDx7c>





# PERSPECTIVES

SCIENCE AND SOCIETY

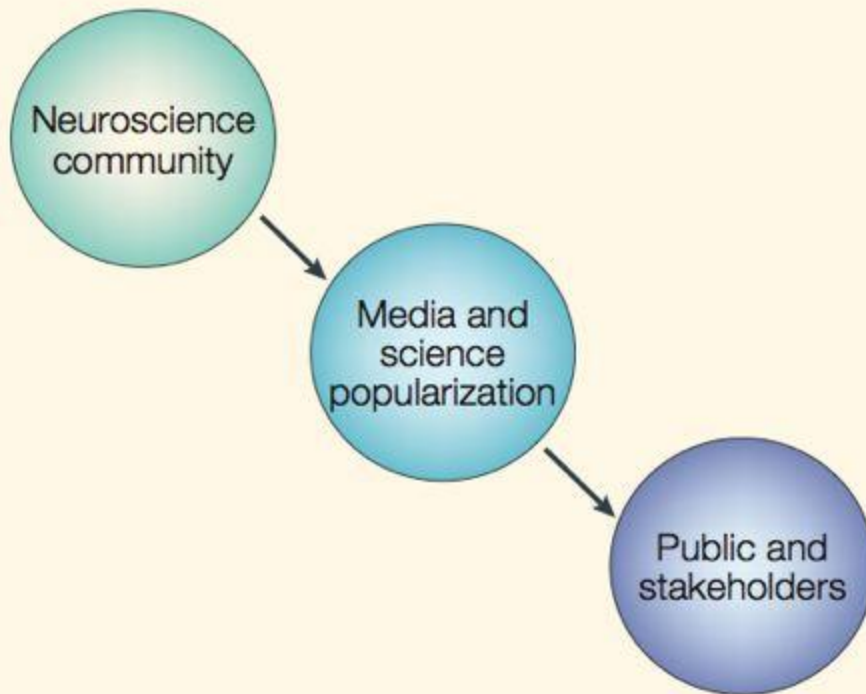
## International perspectives on engaging the public in neuroethics

*Judy Illes, Colin Blakemore, Mats G. Hansson, Takao K. Hensch,  
Alan Leshner, Gladys Maestre, Pierre Magistretti, Rémi Quirion and  
Piergiorgio Strata*

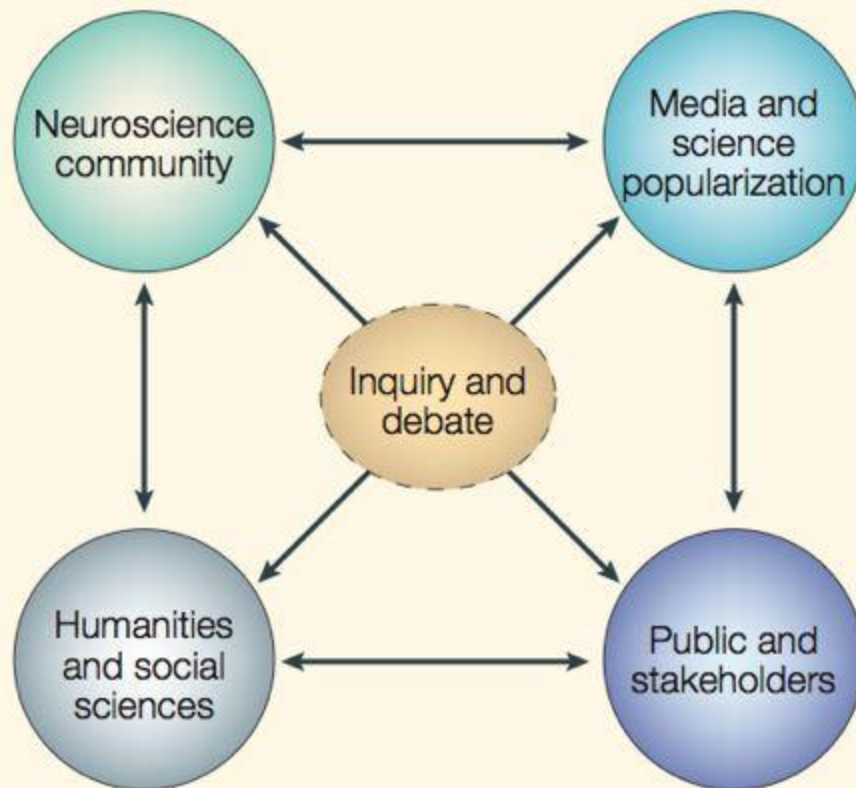
*Nature Reviews Neuroscience* **6**, 977-982 (December 2005) | doi:10.1038/nrn1808



# Unidirectional communication in neuroscience



# Multidirectional communication in neuroscience





## Neurotalk: improving the communication of neuroscience research

*Judy Illes, Mary Anne Moser, Jennifer B. McCormick, Eric Racine, Sandra Blakeslee, Arthur Caplan, Erika Check Hayden, Jay Ingram, Tiffany Lohwater, Peter McKnight, Christie Nicholson, Anthony Phillips, Kevin D. Sauvé, Elaine Snell and Samuel Weiss*

### Box 1 | Specific challenges for neuroscience communication

#### **Complexity of the brain**

Conveying information about intricate molecular pathways, their interactions and their impact as understanding about the brain continues to emerge from varied neuroscience subspecialties.

#### **Personal, philosophical and religious salience to mind and body**

Advancing scientific inquiry into brain function and biology-based causes of behaviour that challenges the nature of 'belief', leading to new definitions of normal behaviour, increased understanding of how humans think and learn, and potentially socially charged attributions of moral responsibility.

#### **Burden of CNS disease and impact on public health**

Addressing the overwhelming personal and societal impact of diseases of the CNS, which engenders high awareness of, unfettered hope for and unsubstantiated hype around neuroscientific discoveries relating to diagnoses, treatments and cures.

#### **Stigma of neurological and mental health disorders**

Navigating negative social perceptions that persist about the causes of, and reasons for, mental health disorders and make meaningful public discussions about these conditions difficult if not impossible.

## **Box 2 | Impact of recommendations on neuroscience communication**

The overall aim of these recommendations is to substantially improve the essential conversations between the public and neuroscientists about the science and the ethical, social and policy implications of ongoing research.

### **Promote a cultural shift**

- Investment and professional incentives that promote communication and engagement with the public.
- Interaction of neuroscientists at all career stages with the public.
- Venues and opportunities for the public to learn directly from neuroscientists and to share views about advances in neuroscience.

### **Create communication specialists**

- Neuroscience communication specialists who are skilled in engaging and interacting with the public.
- Legitimized efforts of neuroscientists who are keen to engage with the public.
- New partnerships between science journalists and public-relations professionals and the neuroscience community.

### **Enable research on neuroscience communication**

- New methods for communicating neuroscience to the public, based on empirical data.
- Identification of gaps in, and barriers to, neuroscience communication.
- Responsiveness to public desire and the need for knowledge based on scientific evidence.

## Neuroethics & Law Blog

An interdisciplinary forum for legal and ethical issues related to the mind and brain.

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Kevin Jon Heller

### Angels, demons and complaining creationists (Ryan)

I just saw Dan Brown's *Angels and Demons* on the big screen. Its OK, if you like that sort of thing, but I shouldn't rush. It mainly action adventure of course, but it is also about a clash of Science and Religion.

That theme has special relevance for me right at the moment, for I have recently been involved in a Science/Religious clash of my own.

I'm a psychiatrist with the University of Sydney and this year I was to give a new lecture called "Introduction to Mental Illness" to second year medical students. The brief was to try to get med students interested in and excited about psychiatry.

I decided it might be fun to provide an introduction to philosophy of mind, providing a sort of basic introduction to the science that might underlie our assumptions about our mental life.

The lecture was nothing special and simply ranged over a number of different approaches to the mind including dualism (which I gave reasonably short shrift), identity theory, functionalism and eliminative materialism. In introducing the final "ism" I followed a fairly well worn path of pointing out that adherents to eliminative materialism call our general understanding of human mental life, folk psychology and that they then question the likelihood of this folk theory surviving in the face of advancing science.

As many will know, eliminative materialists support their case by giving other examples of folk theories that have eventually been proved to be bankrupt, and I also took this tack. It is a fifty minute lecture, but it only took one utterance to provoke one of the students to launch a three page complaint to the sub-dean:

"In the past, say Eliminative Materialists, numerous folk theories have bitten the dust, under the advance of science: the celestial sphere theory of astronomy, the phlogiston theory of combustion, the demon theory of disease, the creationist theory of speciation. All were once seen as the truth; all are now historical relics."

It was that last example that was the offending one. My complainant did not appear to favour the demon theory of disease - which is reassuring in a trainee doctor, but she was outraged at my suggestion that the creation theory of speciation was dead. It may be relevant that the complainant was from North America.

The sub-dean took the complaint seriously (as he should) but there was (of course) no suggestion I should alter my lecture in the future.

Creationists have not had near the influence in Australia that they apparently have in the US. I had briefly thought this throw away line might provoke some response, but I did not anticipate the vituperative attack that it inspired.

I would love to hear, especially from US colleagues, who may have similar experiences.

Posted by Christopher Ryan on 06/12/2009 at 03:15 AM | [Permalink](#) | [Comments \(4\)](#) | [TrackBack \(0\)](#)



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## BRAINETHICS

Consequences of Brain Science

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### Readings in Neuroethics

This list collects academic writings on the topic of neuroethics. For those new to the field we recommend Martha Farah's two short papers as an introduction (Farah 2002 and 2005). The best single introduction to the various problems of neuroethics is Judy Illes (ed.), *Neuroethics* (Oxford University Press 2006). Volume 50, Issue 3, of *Brain and Cognition* deals specifically with ethical issues raised by neuroimaging.

The list is continuously updated. So, if you are familiar with any papers or books not presently on the list, please email us: [martins\\_AT\\_drcmr\\_DOT\\_dk](mailto:martins_AT_drcmr_DOT_dk).

Albert, M. (2002): Ethical challenges in Alzheimer's disease. In Marcus, S. (2002): *Neuroethics. Mapping the field*. New York: Dana Press.

Alper, J. (1998): Genes, free will, and criminal responsibility. *Social Science and Medicine* 46: 1599-1611.

Anand, S. & Hotson, J. (2002): Transcranial magnetic stimulation: Neurophysiological applications and safety. *Brain and Cognition* 50: 366-386.

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## Profile



Jonah Lehrer is a contributing editor at Wired. He's also written for The New Yorker, Seed, Nature, the Boston Globe and is a contributor to Radio Lab. He's the author of *Proust Was A Neuroscientist*. His new book is *How We Decide*.

## My Books

JUNE 12, 2009

## Home Field Advantage

The Lakers-Magic game last night was quite the thrill-ride: it's now the morning after, and my pulse has only begun to return to its resting rate. (Full disclosure: I'm a Lakers fan.) The game was played in Orlando and the big moment came when the Lakers' Derek Fisher nailed a three-pointer at the end of regulation. The loud Orlando crowd went totally silent; you could actually hear the collective intake of breath.

Why did this matter? Why was I suddenly (over)confident that the Lakers would win? Because home field advantage is a really big advantage (especially in the NBA) and it only takes a single shot to erase that edge. Here's a snippet from an [article](#) I wrote a while ago that tried to suss out the psychology of the home court/field/arena:

Home teams in the NBA have a 62 percent chance of winning, while those in Major League Baseball and the National Hockey League have a 53 percent chance of winning. (Football teams are somewhere in between, with annual ranges typically between 54 and 64 percent.) Although the effect has declined over time - in 1950, home teams in the NBA won 75 percent of all games - playing at home remains one of the most significant advantages in professional sports.

"Athletes spend so much time and energy looking for any kind of edge," says Albert Carron, a professor of kinesiology at the University of Western Ontario. "But nobody's found another edge this powerful."

Despite the magnitude of the effect, though, the source of the home-field advantage remains shrouded in mystery. [SNIP] Scientists, however, have begun to find clues. In research that has focused on sports as varied as cricket, figure skating, and field



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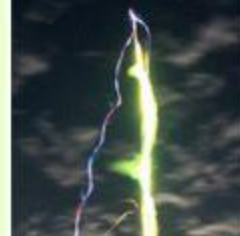
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**What Dana Does**

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**Dana Press Blog**

**In British Columbia, Brain Awareness Week features neuroethics**

POSTED ON THURSDAY, MAR 26, 2009

**Leaping from bench to business**

POSTED ON SATURDAY, NOV 15, 2008

**Truth telling on lie detection**

POSTED ON FRIDAY, NOV 14, 2008

**Illness as social change**

POSTED ON THURSDAY, NOV 13, 2008

**Your home for neural news**

POSTED ON THURSDAY, NOV 13, 2008

**Buyer beware**

POSTED ON WEDNESDAY, OCT 22, 2008

**Why talk about neuroethics?**

POSTED ON TUESDAY, OCT 07, 2008

**Neuroethics in the news**

POSTED ON MONDAY, SEP 29, 2008

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**Blog Roll**

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[ScienceDaily](#)

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[Victoria News Blog](#)



# Brain & Behavior



Photo by Flickr user  
woodleywonderworks.



June 11, 2009

## A BLOG AROUND THE CLOCK

[Archives](#) • [About](#) • [RSS](#)

**New and Exciting in PLoS ONE** There are 16 new articles in PLoS ONE today. As always, you should rate the articles, post notes and comments and send trackbacks when you blog about the papers. You can now also easily place articles on various social services...

## COGNITIVE DAILY

[Archives](#) • [About](#) • [RSS](#)

**Musical SNARC: Do we have a musical scale in our heads?** There's lots of research suggesting that we may have something like a "number line" in our head: The SNARC effect says that if you normally read numbers from left to right, you're faster to react to small numbers with your...

## GUILTY PLANET

[Archives](#) • [About](#) • [RSS](#)

**Is There Really a Debate over Seafood?** We need to give up seafood.

## THE FRONTAL CORTEX

[Archives](#) • [About](#) • [RSS](#)

**Emotional Perception Mo**, over at Neurophilosophy, has a fantastic summary of a new paper from scientists at the University of Toronto investigating the link between affective mood and visual perception. The basic moral is this: If you want to improve your peripheral...

June 10, 2009

## A BLOG AROUND THE CLOCK

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**New and Exciting in PLoS ONE** Sleep in humans; Obesity in rats' offspring; exercise in Drosophila.

## COGNITIVE DAILY

[Archives](#) • [About](#) • [RSS](#)

**Babies as young as six months prefer different toys based on sex** When Nora was born, Jim was just 19 months old, and still unable to communicate other than with the most basic words (ba-ba, da-da, na-na). But we could tell right away that while he liked his new sister, he was...

## GENE EXPRESSION

[Archives](#) • [About](#) • [RSS](#)

**MAOA and violence** The locus MAOA pops up every year or so in a study which attempts to correlate variation in these region with behavior. In particular, anti-social or pathological behavior. So another one is out, Monoamine oxidase A genotype is associated with...

## NOT EXACTLY ROCKET SCIENCE

[Archives](#) • [About](#) • [RSS](#)

**Sleeping on it - how REM sleep boosts creative problem-solving** Sleeping on a problem really can work. Our brains are better at integrating disparate pieces of information after a short bout of REM sleep, more easily forming connections between unrelated ideas.

[+ HOME le Scienze](#)

## ULTIMI POST

Dilemmi educativi

La disinformazione sulle staminali viaggia (anche) su Facebook

Aluti immateriali per i terremotati

Un dio che ama e uno che punisce (nella nostra testa)

Cervelli in dialogo

Un cervello molto antico

Lo psicologo sull'iPhone

Darwin cyberpunk

Se il blogger non ha parole

La banalità del male

## ULTIMI COMMENTI

Luigi Sabatini su Dilemmi educativi

Domenico Gentile su Dilemmi educativi

zoomx su Dilemmi educativi



## Mente e psiche di Daniela Ovadia

[« Contagiatemi di felicità »](#)

[Esercizi di felicità »](#)

### Doping cerebrale

Sono giorni che mi gira per la testa quanto ho letto lunedì su Nature: un [lungo articolo](#), firmato da alcuni neuroscienziati "di grido", tra cui Michael Gazzaniga e Martha Farah, che in sostanza chiede di liberalizzare l'uso dei farmaci che potenziano le capacità cognitive. Ne ha scritto anche Elena Dusi su [Repubblica](#).



Tutto nasce da un sondaggio online effettuato sempre da Nature qualche mese fa tra i suoi lettori, dal quale si evince che dal 7 al 25 per cento degli studenti USA assume o ha assunto sostanze per migliorare le proprie performance intellettuali (e con loro anche diversi docenti e ricercatori). I farmaci più gettonati sono il metilfenidato e i sali di amfetamina, ambedue nati per la terapia della sindrome da iperattività e deficit di attenzione nell'infanzia. Gira di straforo anche il modafinil, un farmaco registrato per la cura della narcolessia e degli effetti negativi del lavoro notturno. Oltre a questi, alcuni studi (tra cui quello di Lynch e Gall uscito su *Trend in Neuroscience* nel 2006) dimostrerebbero che i farmaci per l'Alzheimer, che agiscono sul sistema dell'acetilcolina, migliorano la memoria nei soggetti sani.

Questa sorta di doping cerebrale è illegale negli Stati Uniti come in Italia: i firmatari dell'appello su Nature chiedono ora di depenalizzarne l'uso, dal momento che, a loro avviso, l'umanità già pratica da lungo tempo il "potenziamento cerebrale", con l'educazione ma anche con l'ausilio delle tecnologie (computer, Internet eccetera). Quindi perché non i farmaci?

[RSS](#) [ISCRIVITI A QUESTO SITO](#)

## PAGINE

Cose interessanti (da leggere, da fare)

## ARCHIVI

maggio 2009

aprile 2009

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settembre 2008

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RÉPUBLIQUE FRANÇAISE

MINISTÈRE DE LA SANTÉ  
ET DES SPORTS

# 14 juin : Journée Mondiale du don du sang

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Organisation  
mondiale de la Santé

La Ministère Santé Sports

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Etudes recherches et statistiques

Inspection, contrôle, évaluation (IGAS)

**Les dossiers de A à Z de la santé**

**Alertes sanitaires**

[19 mai 2009] Prévention de l'hépatite E - recommandations aux consommateurs

[15 mai 2009] Mise en garde concernant les compléments alimentaires Hydroxycut™

S'abonner à DGS-Urgent

Médiers, concours, examens et

Inscrivez vous aux forums citoyens des états généraux de la bioéthique !

États généraux de la bioéthique

[11 juin 2009] Les états généraux de la bioéthique offrent une occasion unique de faire entendre sa voix sur des questions importantes telles que les mères porteuses, la recherche sur l'embryon, les tests génétiques, le don d'organes... Que doit-on autoriser, que doit-on interdire, et pourquoi ? Les trois forums citoyens ont lieu à Marseille (9 juin), Rennes (11 juin) et Strasbourg (16 juin). Vous avez également la possibilité de poser une ou plusieurs questions aux intervenants des forums via le site Internet des états généraux de la bioéthique.

• Second forum citoyen des États généraux de la bioéthique à Rennes le 11 juin

**Nouvelle grippe A/H1N1**

Consultez le dossier nouvelle Grippe A/H1N1

[10 juin 2009]

• Consultez le dernier bulletin épidémiologique

Grand public

Professionnels de santé

Voyageurs

Presse

De retour d'une zone où circule le virus, si vous présentez des symptômes grippaux, Appelez le 15 ou votre médecin traitant

Pour toute information

• Depuis la France : 0.825.302.302 (0.15€/min depuis un poste fixe en France, service ouvert du lundi au samedi (hors jours fériés), de 9h à 19h)

• En savoir plus

**Les grands chantiers**

• Campagne budgétaire 2009 des établissements de santé [mars 2009]

• Le projet de loi « Hôpital, patients, santé et territoires » [février 2009]

**Zoom sur**

**CHOSE SAINTE**

Derrière l'un des 500 000 internautes participant à la plus grande étude jamais réalisée sur les relations entre alimentation et santé.

• Canicule et chaleurs extrêmes [mai 2009]

• Nutrition - Programme National Nutrition Santé (PNNS) - Sommaire [mai 2009]



"The brain struggling to understand  
the brain is society trying to explain itself"

Colin Blakemore, *Mechanics of the Mind* 1977



brain imaging



brain devices



predictive medicine

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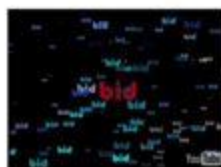
## about us

The Neuromedia Corner aims to share news and stimulate an effective dialogue about the state of the art of neuroscience technologies, their risks and benefits and the associated ethical and social issues.

The Neuromedia Corner is an idea of the bid - *Brains in Dialogue* project.

[\[read more\]](#)

## login

[>>](#)

May 2009

## bid goes YouTube

Neuromedia Corner launches its own dedicated channel on neuroscience technologies, with bid video footages and interviews as well as interesting videos from around the web. Check out the videos from the workshop "brains in dialogue on brain imaging".

[\[video interviews from the bid workshop\]](#)  
[\[neuromediacorner channel\]](#)



30 May 2009

## Role of mirror neurons may need a rethink

Doubt is being cast on the true role of brain neurons that are said to explain empathy, autism and even morality.

- source: *New Scientist*

[\[read more\]](#)

25 May 2009

## What do the coloured blobs really mean?

Jonathan Roiser, neuroscientist at the University College London (UK), explained the basis of brain imaging and much more during the bid-workshop "brains in dialogue on brain imaging".

[\[watch more\]](#)

## contact us

## editor's choice

### NEWS

#### Role of mirror neurons may need a rethink

Doubt is being cast on the true role of brain neurons that are said to explain empathy, autism and even morality.

### BID ON BRAIN IMAGING

#### Video interviews

Video interviews from the bid-workshop "brains in dialogue on brain imaging".

### BID ON BRAIN IMAGING

#### Early AD diagnosis: who cares?

The bid-round table "Imagine the mind" focused on the new applications of neuroimaging.

### EVENTS

**Gene Expression to Neurobiology and Behaviour: human brain development and developmental disorders**

facebook

Ricerca



Suggerisci agli amici

Welcome to the Center for Neuroscience and Society.

#### Informazioni

Creata:  
July 2009

Piace a 141 persone.



Thomas  
Nadelhof  
fer



Meg  
Ahern



Andrew  
Bate



Benjamin  
Blatt



Daniela  
Ovadia



Jordan  
Kaplan

## Penn Center for Neuroscience and Society

Bacheca

Info

Foto

Eventi

Discussioni

Scrivi qualcosa...

Allega:   

Condividi

Penn Center for Neuroscience and Society + altri

Penn Center for Neuroscience and Society Solo altri



**Penn Center for Neuroscience and Society** Penn CNS Director Martha Farah issues statement on cognitive enhancement and student use of Adderall after 60 Minutes airs segment on "Boosting Brain Power". Please follow the link to read Dr. Farah's statement on these important neuroethical issues.

[neuroethics.upenn.edu](http://neuroethics.upenn.edu)  
[neuroethics.upenn.edu](http://neuroethics.upenn.edu)

 27 aprile alle ore 23.13 · Commenta · Mi piace · Condividi



**Penn Center for Neuroscience and Society** \*\*60 Minutes highlights neuroethics of "Boosting Brain Power" with Penn CNS Director\*\*

The growing phenomenon of cognitive enhancement by college students and others was the topic of a recent 60 Minutes feature reported by Katie Couric. The show includes her interview with Martha Farah on the neuroethics of cognitive e...

Mostra tutto



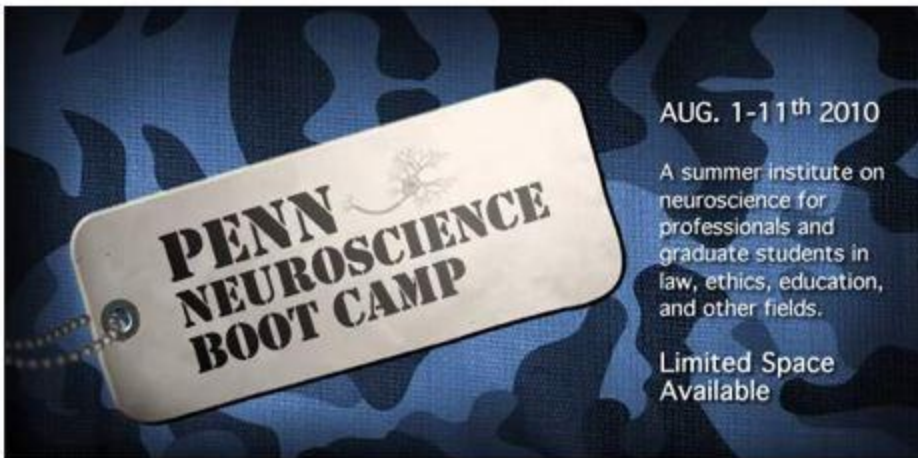
## Center for Neuroscience & Society

UNIVERSITY of PENNSYLVANIA

formerly the Penn Neuroethics Program

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### Neuroscience Boot Camp



**PENN  
NEUROSCIENCE  
BOOT CAMP**

**AUG. 1-11<sup>th</sup> 2010**

A summer institute on neuroscience for professionals and graduate students in law, ethics, education, and other fields.

**Limited Space Available**

☐ Why Neuroscience Boot Camp?

☐ What happens at Neuroscience Boot Camp?

Stay Connected



#### BOOT CAMP MAILING LIST

If you would like to be updated on upcoming Boot Camp, please join our mailing list.

Anti-Spam: What is 1 + 2?

Name:

Email:

#### TESTIMONIALS

"The lecturers were outstanding, and they presented basic concepts of neuroscience in ways accessible to non-scientists. In addition, informal discussions with an incredible array of expert attendees refined my understanding of neuroscience and its many applications in criminal justice, public policy,



## Café Scientifique



Café Scientifique ("Aperitivo neuroscientifico") is a place where, for the price of a cup of coffee or a glass of wine, anyone can come to explore the latest ideas in neuroscience.

Aperitivi neuroscientifici are a tradition imported from France, they are public forums in which scientific issues are discussed informally, involving scientists and non-scientists alike, aiming to inform, to entertain, and to provoke debate..to create a relationship between science and society.

They consist of meetings open to the public where the audience is free to discuss with an expert on the most current topics in neuroscience. The objective is to entertain, amuse, inform and create a debate, to make the science more comprehensible and therefore closer to society. For this the aperitivi neuroscientifici are targeted mostly towards young people and their natural curiosity.

Communication of science to the public is a very important aspect of scientific research. The CIMEC is active in proposing initiatives that may favor and increase the diffusion of scientific culture, by promoting the image of science, its role and content relevance in everyday lives, emphasizing its great cultural and social value.

CIMEC Aperitivi neuroscientifici are organized by CIMEC with the support of Fondazione Cassa di Risparmio di Trento e Rovereto.

Moderator: Nicla Panciera

Organizers: Alessia La Micela, Nicla Panciera

Caffetteria "Le Arti" - Mart  
C.so Bettini n. 43 - Rovereto (TN)

**Free entry, buffet hosted by CIMEC - at 6pm**

## Upcoming events

7th may 2009  
OLIVIERO STOCK - esperto di interfacce umane intelligenti  
**Computer persuasivi**  
Tecnologie cognitive e della comunicazione

### CONTACTS

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Cell. +39 346 4737933  
Fax +39 0464 80 8654  
[nicla.panciera@unin.it](mailto:nicla.panciera@unin.it)

### DOWNLOAD

- 7 maggio 2009 - Aperitivo neuroscientifico con Oliviero Stock  
(comunicato stampa) (57 KB)
- Scientific Café - Postcard  
- II series (990 KB)
- Scientific Café - Poster -  
II series (948 KB)

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# Programs



## Education

### AAAS Mass Media Science & Engineering Fellows Program

Increasing public understanding of science and technology is a principal goal of AAAS, so it only makes sense that it recognizes the need for scientists who are well versed in communicating complex ideas to a general audience. Enter the AAAS Mass Media Science & Engineering Fellows program, which has thrived in this endeavor for more than 30 years.

The 10-week summer program places graduate and post-graduate level science, engineering and mathematics students at media organizations nationwide. Fellows have worked as reporters, editors, researchers and production assistants at such media outlets as the *Chicago Tribune*, *Los Angeles Times*, National Public Radio, *Sacramento Bee*, and *Scientific American*. Participants come in knowing the importance of translating their work for the public, but they leave with the tools and the know-how to accomplish this important goal.



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