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News

Fusion verdict: misconduct

Purdue committee upholds two charges.

Eugenie Samuel Reich

Nuclear engineer Rusi Taleyarkhan falsified the circumstances of high-profile experiments on bubble fusion, according to a Purdue University report released last week. The report by a Purdue committee that includes scientists from other institutes upheld two charges of research misconduct.

Taleyarkhan's work has been a source of controversy since 2002, when he claimed to have triggered nuclear fusion reactions by passing sound waves into a cell filled with deuterated acetone^{1 (#B1)}. His work has been the subject of at least two inquiries by Purdue, which is based in West Lafayette, Indiana. But the latest one was run with oversight from a government agency, the Office of Naval Research (ONR) in Arlington, Virginia, which funded some of the research under question.

The report finds Taleyarkhan guilty of misconduct for citing a paper by junior researchers in his lab as if their work was an "independent" replication of his own findings. He is also found guilty of adding the name of a student who had not contributed to the paper as an author, apparently in order to counter a reviewer's comment that the replication effort seemed to lack witnesses.

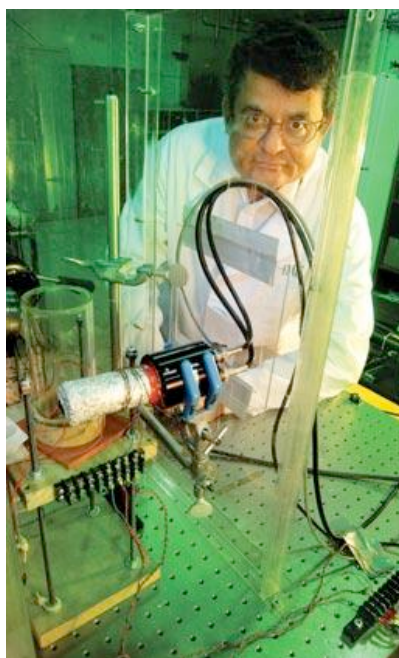
The report stresses that corroborative information should be conveyed honestly, because reproducibility of results by independent experimenters is a crucial component of the scientific method.

Although the report's conclusion echoes concerns expressed^{2 (#B2)} by Purdue faculty in 2006, it leaves others unaddressed. The committee of six scientists, chaired by Purdue biochemist Mark Hermodson, notes in its report that it was not sent allegations (from an earlier inquiry) of "intentional data fabrication" relating to the possibility that Taleyarkhan's fusion signal might have come from a radioactive lab source. Two scientists told *Nature* last week that evidence they gave Purdue does not seem to have been considered either. Purdue has not released its charge to the committee; this is a key document that would reveal the questions officials asked investigators to examine.

"The committee clearly documents that there has never been any successful replication except when Taleyarkhan is present or supervising."

C. K. Gunsalus of the University of Illinois at Urbana-Champaign, who is an attorney and an expert in research misconduct, says that it is good practice for a university to turn over all of its material to an investigation panel and to set a broad charge. "Their findings of fact are rigorous, but the committee clearly documents that there's never been any successful replication except when [Taleyarkhan] is present or supervising, and they don't explore the implications of that," she says.

In a letter released by Purdue, the ONR inspector general Holly Adams calls Purdue's investigation "prompt,



Rusi Taleyarkhan: found guilty of misconduct
L. Freeny/US Dept. Energy

thorough and objective", but says she is still waiting to hear what corrective action the university will take. Unusually, Purdue floated news of the misconduct finding while Taleyarkhan still has 30 days to appeal. Taleyarkhan did not respond to *Nature's* request for an interview, but in a statement released on 18 July, his attorney, John Lewis of Lewis and Wilkins in Indianapolis, Indiana, said that all charges except two had been "resoundingly" resolved in Taleyarkhan's favour.

References

1. Taleyarkhan, R. P. *et al. Science* **295**, 1868–1873 (2002).
2. *Nature* doi:10.1038/news060306-2 (2006).

Comments

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Posted by: **Shi Liu** | 22 Jul, 2008

Congratulations to Nature for bursting another Science bubble. However, it would be much better if Science has retracted this irreproducible "discovery" earlier so that taxpayers' money would not be wasted on this pseudo-science. -----Shi V. Liu (SVL@logibio.com; <http://im1.biz>; <http://blog.sina.com.cn/im1>)

Posted by: **Shi Liu** | 22 Jul, 2008

Persistency pays off! Truth and justice will prevail eventually!!! See details in a 2006 Scientific Ethics publication (http://im1.biz/albums/userpics/10001/SE2006V1N1A20_DogFusion.htm OR http://im1.biz/albums/userpics/10001/SE2006V1N1A20_DogFusion.pdf)!!! -----Shi V. Liu (SVL@logibio.com; <http://im1.biz>; <http://blog.sina.com.cn/im1>)

Posted by: **Shi Liu** | 22 Jul, 2008

Digging deeper!"...the committee clearly documents that there's never been any successful replication except when [Taleyarkhan] is present or supervising, and they don't explore the implications of that ...". Why not explore these deeper level implications!!!-----Shi V. Liu (SVL@logibio.com; <http://im1.biz>; <http://blog.sina.com.cn/im1>)

Posted by: **Shi Liu** | 22 Jul, 2008

Mercy for severe misconduct???---Taleyarkhan did not respond to Nature's request for an interview, but in a statement released on 18 July, his attorney, John Lewis of Lewis and Wilkins in Indianapolis, Indiana, said that all charges except two had been "resoundingly" resolved in Taleyarkhan's favour.--- Where is the favour for the public trust and ethical values for the good science and the benefit recovery for the lost taxpayers' money on this non-sense "discovery"????!-----Shi V. Liu (SVL@logibio.com; <http://im1.biz>; <http://blog.sina.com.cn/im1>)

Posted by: **Shi Liu** | 22 Jul, 2008

What will Science do with this fusion paper???The previous Editor-in-Chief made a "tough" decision to publish this controversial paper by overcoming the resistance and an even "tougher" decision to keep this widely suspected "discovery" from retraction. Now, some misconduct in the "confirmation" process of this "discovery" has been exposed but the integrity of the "ground-breaking" data has left untouched. So should Science retract this others' irreproducible "discovery" or give more time for the authors to make self-"confirmation"?-----Shi V. Liu (SVL@logibio.com; <http://im1.biz>; <http://blog.sina.com.cn/im1>)

Posted by: **Shi Liu** | 22 Jul, 2008

This comment has been removed by the moderator

Posted by: **Shi Liu** | 22 Jul, 2008

"The committee clearly documents that there has never been any successful replication except when Taleyarkhan is present or supervising." --- What does this mean? Could Taleyarkhan be a factor in the experimentation? If so what would be an appropriate negative control?? How to evaluate all of the experiments (truly independent and false independent) together???-----Shi V. Liu (SVL@logibio.com; <http://im1.biz>; <http://blog.sina.com.cn/im1>)

Posted by: **Shi Liu** | 22 Jul, 2008

Bubble fusion and iPS cells --- So far all evidence reported on iPS cells can be explained by the mechanisms of selecting transformed pre-existing stem cells as the iPS cells, not the widely claimed "induction" of terminally differentiated adult cells into much undifferentiated embryonic stem cells. Some experiments aimed at showing true direct reprogramming, i.e., reprogramming at the transcriptional level without dependency on the DNA replication and cell reproduction, also failed at showing any "direct" reprogramming (see many publications at <http://im1.biz/Cloning.htm>). However, a few research labs still insist on the much hyped claims of inducing iPS cells from (terminally) differentiated cells. "Top" journals still ignore many criticism published in various forms, including a peer-reviewed Review published in a mainstream journal - Stem Cells and Development (17: 391-397, 2008; <http://www.liebertonline.com/doi/pdf/10.1089/scd.2008.0062>). Will this final burst of the bubble fusion teach us some real lesson how to recognize genuine science from pseudo-science???-----Shi V. Liu (SVL@logibio.com; <http://im1.biz>; <http://blog.sina.com.cn/im1>)

Posted by: **Shi Liu** | 22 Jul, 2008

Have you actually read through the report? A detailed account will show you that the data that Dr. Taleyarkhan omitted from his paper was justified, and if you are even remotely familiar with science research, you will know that justified data omission is perfectly acceptable (not to mention common practice) and in no way indicates misconduct.

Posted by: **Randy Starline** | 22 Jul, 2008

As to the issue of irreproducibility, again, research the topic of Dr. Taleyarkhan's research. You will find that this is a process that is EXTREMELY difficult to set in motion, and has been for humans since the dawn of time. Even facilities out in CA that specialize in fusion research can attest to that. As to this case with Dr. Taleyarkhan, the people trying to replicate his work had quite possibly been doing so using faulty instruments and incorrect procedures. Don't forget that the work has been reproduced in his lab numerous times in front of VERY respectable scientists and researchers, who for once, were proficient in Dr. Taleyarkhan's field of study. Just because an experiment cannot be reproduced on-demand does not indicate fraud. The journal "SCIENCE" would not have even considered publishing his work if it was not done of utmost quality, and considering Dr. Taleyarkhan's stellar reputation before this charade brought on by detractors, that was just the case: stellar work. That there is just one indication that the wrong people are being accused of misconduct.

Posted by: **Randy Starline** | 22 Jul, 2008

As to the issue of irreproducibility, again, research the topic of Dr. Taleyarkhan's research. You will find that this is a process that is EXTREMELY difficult to set in motion, and has been for humans since the dawn of time. Even facilities out in CA that specialize in fusion research can attest to that. As to this case with Dr. Taleyarkhan, the people trying to replicate his work had quite possibly been doing so using faulty instruments and incorrect procedures. Don't forget that the work has been reproduced in his lab numerous times in front of VERY respectable scientists and researchers, who for once, were proficient in Dr. Taleyarkhan's field of study. Just because an experiment cannot be reproduced on-demand does not indicate fraud. The journal "SCIENCE" would not have even considered publishing his work if it was not done of utmost quality, and considering Dr. Taleyarkhan's stellar reputation before this charade brought on by detractors, that was just the case: stellar work. That there is just one indication that the wrong people are being accused of misconduct.

Posted by: **Randy Starline** | 22 Jul, 2008

Citation misconduct further exposed! Here I wish to take the opportunity of the broaden definition on misconduct to expose a very severe citation misconduct. I should remind the moderator that continuous conversion of this kind of exposure of misconduct into "hidden" will only prevent justice from serving and thus further encouragement of misconduct./// This severe citation misconduct happened in the research area of studying bacterial/cell aging. In many "high impact" publications in "top" journals the authors ignored my ground-breaking studies and pioneer publications in the various forms (see list at <http://im1.biz/Aging.htm>). These authors refused to publish any notice to overcome their citation deficiency and even continued their ignorance in later publications./// Many efforts have been made to inform the respective journals and to plea them to pay respect to the true history of a scientific

discipline. However, none of these journals have taken any action./// For the various actual cases, please read individual publications in Scientific Ethics (<http://im1.biz>)./// Finally I take all the legal responsibility for the accuracy of the above statement and invite any one to make counter-argument./// -----Shi V. Liu (SVL@logibio.com; <http://im1.biz>; <http://blog.sina.com.cn/im1>)

Posted by: **Shi Liu** | 22 Jul, 2008

Another point to bring up (again, I'm going to have to ask that you look at this case more closely): the "panel" at Purdue that deemed Dr. Taleyarkhan guilty of misconduct was made up of folks whose expertise alone would in any other institution, automatically throw them out of the running for panelists in the case. The fellow quoted here does not have an inkling of what fusion even IS, being a BIOCHEMIST. Not to mention that the people who made up the panel were reportedly objected to strongly by colleagues from both sides as being not only inept, but also egregiously biased against not only Dr. Taleyarkhan personally, but also against the work he does. The public only sees the icing on the cake: i.e., the verdict as guilty of misconduct. What they do NOT see is the numerous interior layers that lie within. And that interior here in this case reeks of unethical behavior on the part of the PANELISTS. Believe me, the wrong party is being accused of gross misconduct.

Posted by: **Randy Starline** | 22 Jul, 2008

There is also the issue of that student whose name had been reportedly put on the paper without his being involved in the work. I recall a very big newspaper article a while back in which this very same student, was pictured working on Dr. Taleyarkhan's fusion studies, and even giving presentations on the work. It was even written in the local paper of his involvement in the research. On the contrary to his claims now, he was very much involved in the work. Putting the name of the student whose work brought on those positive results (that too, UNDER SUPERVISION OF ANOTHER SCIENTIST--NOT Dr. Taleyarkhan) does not constitute misconduct, and is common practice, especially since that student's contributions to the paper were extensive. I am shocked and disgusted at the student for allowing such lies to compound into allegations of misconduct of his own mentor.

Posted by: **Randy Starline** | 22 Jul, 2008

A very good start!!! Now we not only saw the "icing" on the cake but also the "interior layers". The "icing" part of a "wrong" verdict of misconduct by Dr. Taleyarkhan may be melted away or eaten out. Would the "interior layers" of a "correct" verdict of misconduct by the PANELISTS be firm up? Let's us wait and see. I beg Nature does not unplug this very useful blogging which provides a lifeline to the almost dead mode of scientific publishing. -----Shi V. Liu (SVL@logibio.com; <http://im1.biz>; <http://blog.sina.com.cn/im1>)

Posted by: **Shi Liu** | 22 Jul, 2008

Difficult discovery does not need to be difficult to reproduce!!! As a true pioneer I know very well that the original discovery is very difficult to make. However, I have not seen many cases that a true discovery is so difficult to reproduce.///If a scientist can claim irreproducibility as a result of others' failure in following his "successful" example, then his/her communication of how his/her discovery was made is somehow insufficient or even misleading.///Since Dr. Taleyarkhan's "discovery" can be reproduced in his lab with his instrument and under his presence (along with other witness) would it be logical to think that either his instrument is magic or his hands are magic? Then we would face a great scientific loss when that instrument is broken or when he leaves us.///-----Shi V. Liu (SVL@logibio.com; <http://im1.biz>; <http://blog.sina.com.cn/im1>)

Posted by: **Shi Liu** | 22 Jul, 2008

Please do not confuse APPLE with ORANGE!!! The citation "misconduct" reached by the Purdue University was not TOTALLY based on the ground that a student's name was added to the paper. The KEY point is that the papers were cited as "INDEPENDENT" replication when they were not. However, I must to say, Purdue's verdict is truly tough considering the fact that much severe negative citation misconduct has been well tolerated in today's "scientific" communities. But Dr. Taleyarkhan was apparently much happy to accept this "wrong" verdict than the other likely alternatives. -----Shi V. Liu (SVL@logibio.com; <http://im1.biz>; <http://blog.sina.com.cn/im1>)

Posted by: **Shi Liu** | 22 Jul, 2008

As the Editor-in-Chief of Scientific Ethics and the president of Truthfinding Cyberpress I wish to make this public demand that Purdue University will continue its investigation on the two charges of RESEARCH misconduct. As stated by Gunsalus, it is a good practice to turn over ALL material to the investigation panel. Since some evidence given to Purdue university seemed not have been considered it is important to start another inquiry which includes a

broad charge./// As the public money has been paid for this INDEPENDENTLY irreproducible "discovery" the public has a right to know if the high-impact "discovery" is true or not./// Compared with this high order of demand, it is trivial whether or not Dr. Taleyarkhan has been too generous to share his credit with others, whether deserved or undeserved./// If giving undeserved credit to the others is a misconduct (which I believe so) then those credit-robbing citation misconduct should be condemned first.///-----Shi V. Liu (SVL@logibio.com; <http://im1.biz>; <http://blog.sina.com.cn/im1>)

Posted by: **Shi Liu** | 22 Jul, 2008

This comment has been removed by the moderator

Posted by: **Shi Liu** | 23 Jul, 2008

There is probably enough fraud and misconduct in science for everyone to share. I would remind the scientific community that: "People who live in glass houses should not throw stones."

Posted by: **Oliver Manuel** | 23 Jul, 2008

It is quite obvious that the previous writers, Shi Liu and Randy Starline, have some specific history and involvement with the events discussed in the article. In the interests of honest discussion, I ask each of you to give an open disclosure of your exact relationship to Dr. Taleyarkhan and the work in his lab.

Posted by: **Neal King** | 23 Jul, 2008

This is an unnecessary witch hunt. Misconduct here or not, one wouldn't be surprised if the hot-fusion lobby is behind it all. It is hot-fusion research that stands guilty of most such charges as in the above case. Low-energy nuclear reactions occur in nature all the time. It is the so-called sustainable hot fusion that's a nonevent even in the Sun. In this regard - and in the light of disturbing lab reports from a closely related field - three simple and down-to-earth questions were raised by me with the seven ITER participant team leaders: (1) Are you quite certain of the stability of fuel particles, deuterium and tritium, up to or near temperatures where they are expected to fuse? (2) If yes: Does any literature anywhere carry this empirical verification for these two specific particles? (3) If no: How is it even ethical then to build the ITER before unequivocally confirming that these particles will be there at all, intact at around a hundred million degrees Celsius, to fuse and produce the energy - especially in view of conflicting findings in a closely related field? Only the US ITER project manager had the greatness of mind and of heart to respond. DOE and the White House perhaps also got the message; and the US team today is practically out of the ITER. Please see www.sittampalam.net/ITER.Test.htm for details. Thank you.

Posted by: **Eugene Sittampalam** | 24 Jul, 2008

Neal King has suspected that "Shi Liu and Randy Starline, have some specific history and involvement with the events discussed in the article" and specifically asked me "to give an open disclosure of your exact relationship to Dr. Taleyarkhan and the work in his lab"./// Here is my brief but still full disclosure./// I am a biologist and have never worked in a research field that is even remotely close to the specialty of any fusions. I once worked in the Oak Ridge National Laboratory and published a Science paper from my work there but I did not know who Dr. Taleyarkhan was when he was there too./// I have no contact with Dr. Taleyarkhan and know his events only from reading PUBLIC information as scientific papers and news./// As a true pioneer in several important biological research areas such as aging, evolution, and even cancer biology, I do have a long history of observing various "scientists" who are "sub-normal" in their behaviors. Also as a true pioneer in revolutionizing scientific publishing by establishing the world-first open access and open review journal Logical Biology and the world-only journal on scientific ethics Scientific Ethics, I do have many cases of various flavors of misconduct reported to the public./// If you read the publications by the Truthfinding Cyberpress (<http://im1.biz>), then you should know who I am and what I stand for. If you have any more questions and concerns, just contact me directly./// Shi V. Liu (SVL@logibio.com; <http://im1.biz>; <http://blog.sina.com.cn/im1>)

Posted by: **Shi Liu** | 24 Jul, 2008

I am a former fusion researcher who was acquainted with Dr. Taleyarkhan's work through his research regarding variable velocity bullets. Since the first SCIENCE paper was published, I have been keeping up with any and all news, media attention, scientific papers, etc that have anything to do with this case. Based on all of that information, I agree with Eugene Sittampalam's opinion that all this is nothing but "an unnecessary witch hunt." Don't forget that Dr. Taleyarkhan was already charged with "misconduct" previously, and the then-panel from Purdue had exonerated him of all charges.

Posted by: **Randy Starline** | 24 Jul, 2008

Oliver Manuel's remark is really appropriate for the current state of science. "People who live in glass houses should not throw stones." But should scientists live in an easy-to-shatter glass house or a bullet-proof stone house? Shi V. Liu (SVL@logibio.com; <http://im1.biz>; <http://blog.sina.com.cn/im1>)

Posted by: **Shi Liu** | 25 Jul, 2008

The following quoted paragraph was the first Comment that I posted in the first position of this news comment section. But it is later removed by Nature:/// "Finally, the rope for rounding misconduct reached out of the limit set by the boundary of laboratory notebook! A great breakthrough in fighting high-level misconduct!! A giant victory for truth-finding scientists!!!"/// Nature did not give me any reason for its removal. I couldn't figure out what is wrong with this, either./// As a matter of fact, in today's News of the Week, Science published "SCIENTIFIC MISCONDUCT: New Purdue Panel Faults Bubble Fusion Pioneer" which clearly stated that the inappropriate citation practice of Taleyarkhan "is a research misconduct"./// So unless Nature can give a clear and convincing reason for removing my Comment above, I would characterize Nature's action as a PUBLISHING MISCONDUCT and a DISCRIMINATION against a truth-seeking scientist. ///Shi V. Liu (SVL@logibio.com; <http://im1.biz>; <http://blog.sina.com.cn/im1>)

Posted by: **Shi Liu** | 25 Jul, 2008

I am grateful to Nature and to E. S. Reich for pointing the spotlight on an issue that may be correctly described as a "witch hunt." Unfortunately, modern-day science is now plagued by an on-going conflict between the well-known noun (TRUTH) and the adjectives used to describe it: _A._ The absolute ("God-given") definition of TRUTH and UNTRUTH; _B._ The scientific ("NAS-given") definition of ACCEPTABLE and UNACCEPTABLE; and more recently _C._ Al Gore's political definition of CONVENIENT and INCONVENIENT. This unholy mixture of science with tax funds and politics has made it almost impossible to distinguish TRUTH from UNTRUTH. With that in mind, I offer my profile [<http://myprofile.cos.com/manueloo9>] and my personal opinions on this and a few related issues. _1._ NAS and most of the research agencies it controls have made it clear that cold fusion is UNACCEPTABLE. In view of the large number of reports and independent observations of cold fusion, it is still possible that cold fusion is really just an UNACCEPTABLE and INCONVENIENT TRUTH. _2._ Al Gore labeled Global Warming as an INCONVENIENT TRUTH. NAS President Ralph Cicerone told the U.S. Senate (20 July 2005) SEE: <http://tinyurl.com/62fggj> or http://www7.nationalacademies.org/ocga/testimony/Global_Climate_Change_Policy_and_Budget_Review.asp a similar story. My studies suggest that Al Gore's INCONVENIENT TRUTH is in fact a CONVENIENT UNTRUTH for politicians. Here are a few more of current INCONVENIENT and UNACCEPTABLE TRUTHS: _3._ The Sun is heated mostly by repulsive forces between neutrons in the solar core. Hydrogen-fusion generates ~35% of solar energy. <http://www.omatumr.com/abstracts/jfeinterbetnuc.pdf> <http://www.omatumr.com/lpsc.prn.pdf> http://www.omatumr.com/abstracts2001/nuc_sym3.pdf <http://www.omatumr.com/abstracts2005/IsotopesTellSunsOriginOperation.pdf> _4._ The Sun is made mostly of Iron (Fe), not Hydrogen (H). <http://www.omatumr.com/archive/SolarAbundances.pdf> <http://arxiv.org/pdf/astro-ph/0410569> <http://www.omatumr.com/abstracts/ACM-2002.pdf> <http://www.omatumr.com/abstracts2005/Fko1.pdf> <http://arxiv.org/pdf/astro-ph/0609509v3> <http://www.omatumr.com/abstracts2005/IsotopesTellSunsOriginOperation.pdf> _5._ Despite the strongest wishes of NAS, NASA and DOE, solar neutrinos do not oscillate away to avoid our neutrino detectors! <http://arxiv.org/pdf/astro-ph/0410460> <http://www.omatumr.com/abstracts2004/anti-neutrinos.pdf> Again, I deeply appreciate the assistance of Nature and E. S. Reich for allowing a discussion of the ethical issues currently facing the scientific community. - Oliver K. Manuel, <http://www.omatumr.com>. <http://www.ballofiron.com>

Posted by: **Oliver Manuel** | 25 Jul, 2008

This comment has been removed by the moderator

Posted by: **Shi Liu** | 29 Jul, 2008

The New York Times and several other publications have reported some of the details behind the decision of an appeals committee at Purdue University to uphold findings of misconduct on the part of Professor Rusi P. Taleyarkhan: http://www.nytimes.com/2008/08/28/science/28purdue.html?_r=1&ref=education&oref=slogin <http://space.newscientist.com/article/dn14621-misconduct-verdict-for-fusion-researcher-upheld.html> <http://newenergytimes.com/BubbleTrouble/2008MizeDarlaJ.AffadavitFeb2.pdf> Regardless of the eventual outcome of this specific case, this is a very sad state of affairs for the entire scientific community. This morass is the culmination of decades of unbridled greed and selfishness on the part of scientists and manipulation on the part of the National Academy of Sciences in directing the flow of federal research funds to those who would provide the

answers NAS wanted. At the same time, exciting new research findings continue to come from Purdue [See: "Evidence for correlations between nuclear decay rates and Earth-Sun distance"] <http://arxiv.org/abs/0808.3283> or <http://arxiv.org/pdf/0808.3283v1> Despite all our disappointments in the scientific community, knowledge seems to continue to increase as the universe unfolds. With kind regards, Oliver K. Manuel
<http://myprofile.cos.com/manuelo09>

Posted by: **Oliver Manuel** | 28 Aug, 2008

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