According to Wikepedia, Brian David Josephson (born 4 January 1940; Cardiff, Wales) is a Welsh physicist, professor, and became a Nobel Prize laureate at 33-years-old with Leo Esaki and Ivar Giaever. He predicted the Josephson effect. As of autumn 2007, he is a retired professor at the University of Cambridge where he is the head of the mind-matter unification project in the Theory of Condensed Matter research group. He is also a fellow of Trinity College, Cambridge
http://en.wikipedia.org/wiki/Brian_David_Josephson

The following is the text of an article by Brian Josephson, published in the Times Higher Education Supplement, 12 Aug. 1994.

http://www.tcm.phy.cam.ac.uk/~bdj10/mm/articles/heretic.txt

For the last six weeks, BBC2 TV has been running a series called 'Heretic', detailing the responses of the scientific community to ideas generally considered unacceptable by scientists, and the treatment given to those advocating such ideas. Typical 'unacceptable' claims were the effectiveness of high doses of vitamin C, antigravity, and psychokinesis. In every case a similar story unfolded: dismissal of the claims as being nonsense or impossible, generally without any serious attempt to look at the evidence or the arguments; the non-materialisation of the honours, promotions, invitations to give public lectures and so on that such individuals might have been expected to receive given their past achievements; violent attacks by other scientists; and, for some, demotion or withdrawal of research facilities. The prestige of the individuals concerned and their continuing competence in other matters is seen as being of no moment: their unorthodox claims are perceived merely as instances of the failings to which all human beings are subject. The sense of self-superiority of the critics in many instances was in striking contrast to the humility, integrity and sincerity manifested by workers such as Robert Jahn (an expert in rocket engineering forced to resign his position as Dean of the Faculty of Engineering at Princeton University because of this unconventional side to his research interests and, for a time, not allowed to talk about that research).

Jahn became interested in psychokinesis because an undergraduate at Princeton asked if he could choose as a project the investigation of possible effects of mind on electronic circuits. Jahn assumed that there would be no such effects, but thought setting up an experiment to look for them would be a useful exercise in itself and agreed; to his considerable surprise the results were positive. These results held up under further investigation and since that time the phenomenon has been studied by Jahn and his associates in great detail and in a variety of ways. As in a number of the cases, finding

out the truth was more important for Jahn than whether others would accept his discoveries and whether work in the area would advance his career. Critics of his work have been numerous, but most have been armchair ones, who have not taken the trouble to find out what the experiment actually entailed.

There has been more serious discussion of the validity of the experiment in the scientific literature, but as far as I am aware the criticisms have not stood up to detailed analysis. A few years ago an aggressive critic from Jahn's own university, Nobel Laureate Philip Anderson, wrote an article in the journal _Physics Today_ containing a veiled attack on Jahn's work. To her credit the editor of Physics Today allowed continuing discussion of the subject in the journal's correspondence column (which is quite unusual for a journal read by mainstream scientists), and this led ultimately to Anderson having to beat a strategic retreat with a face-saving response, avoiding comment on the points at issue.

One saw the mind of the convinced sceptic at work in the interview with another physics Nobel Laureate, Steven Weinberg. Weinberg's attitude seems to be that the nature of the phenomenon is enough in itself to condemn the work as being wrong. And again (according to Weinberg), if such a thing as psychokinesis exists, we will have to throw away all we know in science and start all over again. Anderson made a similar comment in the Physics Today correspondence. But the point is not a convincing one.

There _have_ been major revolutions in science before, and so the fact that the existence of psychokinesis would lead to a revolution in science is not a good argument against its existence. But at the same time, these major revolutions have in general left the previous science very largely intact; so there would be no need to start science over again as Weinberg claims. In Jahn's words, what would be involved would not be an overturning of science, but an expansion to take consciousness into account. Jahn and others interested in expanding science beyond its present limits in this way believe that in such a science information (especially meaningful information), and processes in which subsystems share information to create new forms of organisation, will play a crucial role.

My scientific side was irritated by the fact that the matter of whether the heretical scientists that were portrayed in the series had a good case for their beliefs or not seemed to be very secondary compared to the matter of how heretical scientists are treated. This kind of thing happens frequently in science programs on television, whose producers often seem skilled in explaining the social principles of science, but who sometimes take an insufficiently broad scientific perspective. Programmes should see to it that inconsistencies are dealt with, and serious loose ends tied up. One gathered that Liam Hudson and Hans Eysenck disagreed over whether there was any evidence showing black people to have a lower IQ than whites in the scientific literature, but we did not learn of Eysenck's reaction to Hudson's assertion that there was none. Again, it would have been of interest to know on what grounds Jacques Benveniste asserted that the experiment published in the journal Nature, claiming to have obtained results different from those of Benveniste, were carried out in an incorrect manner, since that would have been crucial to his case. (Very recently Benveniste has given his reasons in a letter to Nature,

accompanied by an Editorial comment which largely ignores the details of Benveniste's argument).

A similarly inadequate scientific perspective was also manifest in the treatment of Laithwaite's attempts to generate levitation by means of gyroscopes. The usual tone of important work being unjustly criticised was maintained in this case, despite the fact that Laithwaite ultimately admitted himself that he had been quite wrong in his earlier ideas concerning gyroscopes and, implicitly, that his critics had been correct.

One gathered that he believes he has nevertheless been successful in his latest attempts to get levitation to work using contra-rotating gyroscopes. It is a pity that in the programme pretty graphics showing future space vehicles propelled by Laithwaitian antigravity devices took priority over showing demonstrations that might have convinced the viewer that antigravity has indeed been achieved by Laithwaite here and now on Earth. All I could see from watching the demonstrations given was that the readings on a scale in an experiment fluctuated (which I can achieve myself very easily by standing on a weighing machine while moving myself vertically), and that when Laithwaite turned a piece of apparatus about a vertical axis a spinning disc moved upwards, accompanied by excited shouts that levitation was occurring. I am not very impressed, either, by the fact that it seems to be much easier than one might think to raise a heavy spinning gyroscope in the air, because the spin of the gyroscope can supply most of the energy needed for such a lift. My conclusion from the programme is that Laithwaite seems still to have a limited understanding of Newtonian mechanics. However, while I am sceptical about the chances of his levitation device working I will not join those who say that it _cannot_ work and that he should stop his research.

The heretical theories of Linus Pauling as to the cure-all capabilities of vitamin C, generally rejected at the time, are now, it seems, being vindicated by research into anti-oxidants. Benveniste's experiments on homeopathic remedies are a more interesting case; perhaps in another ten or twenty years they will also be accepted as breakthrough research (or, again, perhaps not). Most scientists will tell you that according to science homeopathic remedies _cannot_ work, because they are so highly diluted that no molecules of the active source can be expected to be present in the solution. But this argument is invalid, because (as Benveniste suggests) water might have a memory of some kind, that would allow it to register the effects of past contact with biologically active molecules, in the same way that magnetic tape registers the effects of the magnetic fields generated by the recording head of a tape recorder after a recording has been completed.

There is a common but incorrect belief that water cannot have a memory, because movements of the molecules would cause any memory traces in the water to disappear very quickly. As a matter of principle this is not so: liquids are known to exist where there are mechanisms that regenerate some kinds of information pattern as fast as the information is lost by movement of molecules. But scientific opinion is fossilised: it has been generally agreed in the past that a phenomenon such as homeopathy is unscientific, and it is next to impossible to erase such a belief from the scientific consciousness.

The Benveniste homeopathy affair began when a worker in his laboratory asked if he could try out with homeopathically prepared samples a technique that Benveniste himself had devised, to see if there were any objectively measurable effects. Contrary to Benveniste's expectations the experiment was successful, and confirmed by further tests. He tried to get the research published in _Nature_ and was met with a series of demands for further checking. After he had conformed with the demands and the effect was still there the editor made the remarkable offer of agreeing to publish the paper if Benveniste agreed to have an investigation carried out _after_ publication. The sequel was a visit from a committee consisting of the editor of Nature, magician James Randi and a writer specialising in 'debunking'. When I read their report in Nature claiming that they had found Benveniste's experiments to be faulty I was not impressed; if I had been a referee for the report on Benveniste's work (which I believe was not refereed) I would have pointed out a number of defects in need of clarification. The editor of Nature seemed to have misunderstood (and still seems to misunderstand) the logic behind the rejection of samples that 'do not work'. Benveniste commented in the programme that the committee did not appear to have the technical qualifications required to get a difficult experiment in biology to work. The fact that the counting involved in the experiment was not done blind is a valid objection in principle, but later experiments in Benveniste's laboratory done with full double-blind methods are said to have reproduced the original results fully.

The cases dealt with in the programme reflect badly on science. The benefits of the most crucial discoveries could be unnecessarily lost to mankind if these ways of dealing with unusual results were the norm, as they indeed appear to be. What is it that causes such reactions? My model for what goes on is that science involves not only facts and theories but a collection of 'defence mechanisms', intended to maintain the 'purity' of science. Science is viewed as a good that can be threatened if adequate standards are not maintained. So far, so good, but problems start when scientists start to think of themselves as experts who know better than others what is true and what is in error. Experts do not need to go into details; they 'know' what is wrong with a field and become authorities that others can look up to to know what is the truth. At the level of detail, if the going gets bad in an argument one can always call upon the universal mantra 'extraordinary claims require extraordinary proof', to extricate oneself from further discussion, or the need to think.

Author's footnote: it has been pointed out to me by D.F. Gibbs that it is not in fact possible, according to Newton's laws, to utilise the energy of rotation of a gyroscope to lift its centre of mass. Thus one must seek an explanation elsewhere. Non-paranormal explanations are by no means ruled out.