

A Rational and Moral and Spiritual Dilemma

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Abstract. A nightmarish situation that can still be hoped to be averted by communication-in-time in the scientific community is drawn attention to. Only a few weeks remain to find out whether the danger is for real or nothing but a mirage. After this time window is closed, it will take years until we know whether or not we are doomed. The story line has all the features of a best-selling novel. The reader is asked to contribute constructively; May 20 '08.

Introduction

A surreal situation is described as being presently in charge: the greatest conceivable danger – the end of both history and future. The present author still stands almost alone with a few hard results that completely change the status of a currently running public endeavor. Even though the last safety report is 5 years old, the chances for an update-in-time are minuscule. What can and must rationally be done in what order?

The most economic way would be to find out where the *error* lies in the perceived new danger. Since time is running out, the help of other scientists needs to be solicited. This proves not easy. The two major science journals refuse to publish but equally steadfastly refuse to give a scientific reason for their verdict. The unwillingness of the scientific community to falsify the danger takes the public hostage. This remains true even if the whole danger is only a mirage. To publicize the danger because time is running out is a big decision. The legal term for doing something like this is “instigation of irrational panic.“ Can anyone take this on his or her shoulders?

Most likely, of course, the silent scientific establishment is well-advised to ignore the danger. Nevertheless a younger-generation Nobel laureate in physics recently suggested I should go on – even CERN would profit from the publicity. But so at the expense of many ordinary citizens being unnecessarily scared to death, I added.

All I suggest to do is to convene an independent safety conference within the remaining four to ten weeks time. This is very little to ask, but exactly this bit is being refused. Why? It looks as if my scientific proposals are so far-off that anyone who ever had a physics course grasps this immediately while everyone else is deeply impressed by the arguments. Or is this just a crime story made up to boost the publishing rights of an unnamed person?

The Rational Dilemma

The scenario looks unbelievable enough: that a prestigious group of ten thousand mostly young and enthusiastic scientists should unwittingly prepare the greatest conceivable risk to the planet. Both “Trinity“ and “Eniwetak“ – the two previous Russian-roulette feats of our species – would be dwarfed by this third instance, without the protagonists‘ noticing.

You will have realized by now that I do not have a 100-percent proof to offer – just probabilities. The latter can be summed up in 7 points. Those points I have put into the

Appendix for conciseness. Here let me at last say what we are talking about. The experiment in question is called the LHC (“Large Hadron Collider“) and is the most expensive and prestigious non-military scientific endeavor ever. Hadrons (protons) are to be hauled against each other at 14 times the power of the previous generation of accelerators and 7 times the maximum energy ever achieved (2.000 Giga-electron-Volts).

The experiment at CERN is completely normal science as far as an understanding of every single element is concerned. Only the implications are unusual for once since an unexplained natural threshold (called the electro-weak unification barrier) will be surpassed for the first time. This excites string theorists – the perhaps most sophisticated brand of theoretical physicists – since they have a way to predict that even these minuscule energies (compared to the Planck energy thought necessary before) will be sufficient. *Miniblack-holes* could then arise for the first time in history.

Now my group has discovered that black holes possess a new property (lack of evaporation). The two possibilities – that string theorists are right and that we are right – taken together make for a volatile mixture. In such a case it is the most rational thing of the world to convene a scientific conference to discuss the joint implications before the experiment is allowed to become overcritical.

If this plea is heeded, everything is going to be alright. For we will then all know how the leading experts of the world sum up both their mutual consensus and their currently unresolvable dissentings. In either case everyone will see clearly what is the most reasonable response to take. Since rationality will be back, no dilemma remains.

This statement concludes the rational dimension. What about the two other dimensions?

The Moral Dilemma

This second aspect arises because of the following fact: If anyone points out the rational danger that apparently exists as we saw, he or she cannot possibly know what this information will entail in the longer run. People could be misled into panicking, for example. But so, one expects, of course only if the experiment will be made overcritical *before* a scientific consensus has been achieved (our current situation unless a miracle happens). Or else *after* it has been done with the dreaded outcome so that the catastrophe takes its course.

Unexpectedly, there exists a *third* dismal possibility: that the experiment proceeds and no miniblack holes are found. This profoundly distinguishes the present situation from Trinity and Eniwetak (the first atomic fission and fusion explosions which fortunately did not engage the atmosphere). While the probability of a dismal outcome is perhaps no greater this time than it was in the previous instances (“1 percent“), it will not be possible to return to business as usual after the event, this time around: the danger will *not* be over once the scientists declare that their attempt to produce miniblack holes has failed since they found no trace of them. For *if* miniblack holes do not evaporate as predicted, they also leave no decipherable sign of their existence – at first. So a negative and a positive outcome are indistinguishable.

This difference to its predecessors makes the current experiment a guaranteed success: at causing an unprecedented amount of human suffering. For there will be no way to explain to anyone that he or she is safe or to apologize for the suffering to expect. The rational fear unavoidably caused can only be made go away by convening a post-facto scientific world conference that proclaims absolute safety. Unfortunately, every scientist who would not

agree with this preassigned verdict would act irresponsibly. Since this will be obvious, no one would ever again believe a single word from a scientist. Antiscientific fundamentalism would have won – even if the experiment proves innocuous in hindsight.

Hysterical irrational responses from the part of the up until now uninformed majority of persons and countries on the planet would be pre-programmed for years to come. This medieval *angst* is a danger almost as great as the experiment itself. No one will be astonished in retrospect that 10.000 scientifically trained minds were unable to anticipate this predictable consequence since this rational deduction belongs, not to the realm of the natural sciences but rather to that of the humanities and arts. The oversight would nonetheless not be forgiven. This *second catastrophe* can only be avoided through rapid action – the very safety conference already proposed above.

The Spiritual Dilemma

The third dilemma is the most disturbing, perhaps. The experiment started operation on April the first 2008 (end of official countdown) and is currently in the process of being booted-up in a step-by-step manner to reach a planned 70 percent performance level in the summer of 2008: 10.000 GeV (or five times beyond the threshold of danger). Suppose for a moment that this way of proceeding took place, not to date but at any earlier time in history. Spiritual questions would then inevitably have posed themselves.

To date, even thinking of this possibility (“sin“?) sounds crazy. Indeed, no spiritual world leader – pope, emperor, helmsman – was or is ready to speak up on behalf of their worldly and spiritual constituencies despite the fact that they were informed in time. Why is this so?

There is an intelligible reason for this third phenomenon, too: It is nothing but *probabilities* that are at stake here. To decide on such matters is traditionally entrusted to the military – this is what they have been hired to deal with in the first place: sandbox games. Only Gorbachev and Raissa deviated from this preformed path once. Their example illustrates the danger we are presently in: They realized that the equilibrium of deterrence implied a remaining finite risk of bilateral annihilation, but no one currently appreciates their decision. This shows in a nutshell that humankind is no longer able even to notice when it is rescued: *Kindynagnosia* – inability to recognize danger – is a collective disturbance caused by mental synchronisation. Human beings are still, or once more, the proverbial lambs of the spiritual. Who would not love them for their innocence?

An Enlightened Response Is Called For

The spiritual dimension goes still farther. Everyone knows to date that for the first time in history we possess the tools to do away with the cruelest inequalities on the planet (those that inevitably cause cursing). The computer and the Internet have made this miracle possible: Work done once can be multiplied and transported free of charge. Information has become cost-free. Nevertheless project *Lampsacus* remains unknown for 14 years (Google and Wikipedia which implement elements of it notwithstanding). In a historical parallel, the computer-facilitated medical revolution is increasingly withheld from the less well-to-do public even in privileged countries while student fees are re-imposed in defiance of a UNO decision without protest. No one seems to feel his own human rights any more and hence also not those of his neighbor. The notion of cruelty – something that must never happen in the universe – has slipped from public consciousness. Most everybody agrees that someone who rescues people from drowning (like Elias Bierdel) is a “Schlepper.“

If the notion of dignity (for what is killed by cruelty is dignity) has miraculously slipped from public consciousness: why should anyone be expected to stand up for the future of his neighbor's children since his own children and their future are no longer on his mind? Showing love (standing-in) is almost a taboo topic. But it is the young child – the toddler – who invents benevolence out of nothing because no one in the cosmos is wiser or greater. Possessing benevolence and being a person are one and the same thing.

Make the test and ask your child whether the LHC emperor has any clothes on. He/she will ask you back to explain what you mean since Hans-Christian Andersen is no longer well known. The returned question will enable you to tell the truth: “Darling, no one seems to know for sure – only after a scientific conference will anyone be able to say something.” Then your child will ask you what you did to make this conference happen. Will you reply: “Darling, I am not a scientist“?

To conclude, I ask your forgiving for my stirring up your waking day. Buddha would do the same thing (now I am crazy!) and Jacob and Martin Luther. Notwithstanding the fact that most hopefully – knock on wood – the danger does not exist. The Appendix demonstrates that we still can find out in time. A petition inviting every parent to sign is on the Internet (just google “Honey, I shrunk the earth!“).

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Appendix:

Seven Reasons for Demanding an LHC Safety Conference

- 1) Black holes *cannot evaporate* because their horizon is effectively infinitely far away in spacetime according to a new theorem in the Schwarzschild metric (“ \mathfrak{R} -theorem“) [1].
- 2) Black holes are effectively *uncharged* because of the \mathfrak{R} -theorem [1]. Therefore, charged elementary particles cannot at the same time be black holes (or point-shaped). Hence non-pointshaped mini-objects exist already. This makes miniblack holes much more likely.
- 3) Miniblack holes grow *exponentially* rather than linearly inside the earth: “miniquasar principle“ [2]. Hence the time needed by a resident miniblack hole to eat the earth is maximally shortened – perhaps down to “50 months.“ This contrasts with the “50 million years“ obtained assuming *linear* growth by BBC-Horizon [3] and CERN's analogous “5 billion years“ [4].
- 4) CERN [4,5] counters that *if* the hoped-for miniblack holes are stable as claimed [1], equal stable particles must arise naturally by ultra-fast cosmic-ray protons colliding with planet-bound protons. This is correct. However, there remains a fundamental *difference*: only the man-made ones are “symmetrically generated“ and hence dangerous. For they alone are slow enough with respect to the earth that one of them (at less than 11 km/sec) can take residence – in contrast to the almost-luminal speeds of their natural cousins.

- 5) CERN's counterargument could still hold true for more compact celestial bodies than the earth – such that their lifetimes would be drastically reduced in defiance of observation if miniblack holes exist. A quantitative bound can be derived from this argument: Take *white dwarfs* first. They are 10^5 times denser than earth while being the same size. Hence their cross-section for a miniblack hole passing-through is by a factor of 10^5 greater than earth's. They remain safe if no more than 10^4 eating-type collisions with a quark await a fast natural miniblack hole entering them (so it can pass through). Why? Because the energy of 14.000 GeV pumped into two colliding protons at CERN is 14.000 times the rest mass of a proton (1 GeV). Therefore a miniblack hole born of two quarks (one from each proton) likewise has about 14.000 times the rest mass of a quark. Hence by momentum conservation, only about 14.000 (10^4) collisions with a resident quark can be survived by a fast natural miniblack hole of the LHC energy without losing its almost-luminal speed. If this bound applies to white dwarfs, no more than about 0.1 collisions must await a CERN miniblack hole on its first passage through the earth. This estimate appears plausible.
- 6) The just-obtained number presupposes that the nonlinear growth process of point (3) is inapplicable if very dense matter is passed through at almost-luminal speeds. The by very many orders of magnitude shorter collision intervals let this prediction appear justified.
- 7) Finally, *neutron stars* have a by another factor of 10^9 greater density than white dwarfs. Since they are a thousand times smaller, they are a million times more susceptible. But they are protected by quantum coherence effects of the superfluidity type: so miniblack holes can pass without friction. The superfluidity extends to the “inner crust” [6].

In order to exclude that human-made miniblack holes endanger the earth, it will be necessary to falsify the first of the 7 points, or if this is not possible the second, and so forth. Until this task has been solved, *no one* can shoulder the responsibility to give the “green light” to the LHC's crossing the 2.000 GeV barrier, as this is currently planned to do within a few weeks. It thus appears that only an immediate safety conference can save the LHC experiment.

References

- [1] O.E. Rossler, “Abraham-like return to constant c in general relativity: \mathfrak{R} -theorem derived in Schwarzschild metric.“ *Chaos, Solitons and Fractals* (in press). Preprint on: www.wissensnavigator.com/documents/ottoroesslerminiblackhole.pdf
- [2] O.E. Rossler, “Abraham-solution to Schwarzschild metric implies that CERN miniblack holes pose a planetary risk“ (submitted on September 27, 2007). Also on the above URL.
- [3] www.BBC.co.uk/sn/tvradio/programmes/horizon/broadband/tx/universe/VOTE/
- [4] M. Mangano, in: interview with Michael Liebe, [golem.de](http://golem.de/0802157477.html) (in German), www.golem.de/0802157477.html
- [5] R. Landua, in: interview with Andreas Séché, pm-magazin.de (in German), www.youtube.com/watch?v=_TjYobXKebM
- [6] G. Colò, “A microscopic quantal calculation of the superfluidity of the inner crust of neutron stars“ (Abstract). www.mi.infn.it/~colo/TRENTO/Abstracts/gori.txt .