

# Games Physicists Play

Now and then people ask me why physicists can't be more serious. Why, they wonder, are these people always joking? Why are they always committing *lèse majesté* against the great queen Science? They treat everything as if it's all so much fun. Do such insouciant types really think we're about to build them a \$5 billion toy, a Superconducting Super Collider to play with?

The answer is: Yes, they do, and no, they're not going to change. Their fanciful name games are just one example. When biologists or chemists name something, they use either Latin or a strange dialect in which upper- and lowercase Latin and Greek letters are jumbled together, and in which numbers and even commas are used as elements of spelling. I am totally illiterate in this jargon, and I don't propose to learn it. Physicists, in contrast, give things short, snappy and often funny names.

Frank Wilczek, of the University of California at Santa Barbara, deliberately named a particle "axion" after the preparation that promises to get stains out of your laundry. "Quark" supposedly comes from James Joyce's novel *Finnegan's Wake*. (These people are literate, too.)

You can get into trouble with this sometimes. Someone once proposed naming the unit of natural logarithms ( $e = 2.6 \dots$ ) the "nap" after 16th-century mathematician John Napier, who discovered logarithms, but the Swedish representative on the international committee objected that "nap" means "teat" in Swedish. A physicist of Central European origin used to object strongly to "quark," but never gave his reasons. Colleagues surmised that "quark" must mean something obscene in Hungarian.

I don't know what "quark" means in Hungarian, but in German it means "cream cheese." There is even something called *Quarkkuchen*, quark cake. A friend of mine ordered it in a Swiss restaurant and found that it was stuck all over with highly colored bits of candied fruit. "The chef must believe in a colored-quark-gluon theory," my friend remarked.

A couple of Italian astronomers discovered an X-ray source in the sky that looks like nothing anyone ever expected to find. So they called it Geminga, Milanese for "it doesn't exist." That one could have backfired. There have been discoveries in astronomy that turned out,

on second look, to be geminga, literally.

At times it can get close to the boundary of taste. Grand Unified Theories are universally known as GUTs, and the opportunities are endless. Some astronomers discussing blemishes in the smoothness of the universal background radiation called them zits, and then had the gall to talk about squeezing the data a little harder.

It's not for nothing that one of the founding conferences of particle physics was held at the Grossinger Hotel in the Catskills, which had heard generations of vaudeville shtick.

*"One can contemplate the world and laugh and cry at the same time."*

Can people like this be treated as adults, as sane even? I wonder sometimes myself, but I think the answer is yes. A rabbi once said: "When I contemplate the world, I can either laugh or cry. I choose to laugh." One can contemplate the world and laugh and cry at the same time. The life of a physicist is not without disappointments, frustrations, intractable problems and the usual human pains and sorrows. When priority, pensions or parking are on the agenda, the infighting can become vicious. But when things are going reasonably well, and even sometimes when they aren't, there's a tremendous sense of joy in the games physicists play. In my 30 years of association with them they have continually rekindled my enthusiasm.

We impinge here on a theological principle. (You knew I was coming to that when I brought in a rabbi, didn't you?) It is the idea of *deus ludens*, God at play. The notion is that God created the world for

the fun of it; it's all a great game in the mind of God, and it's for us to find out the rules if we can. That, I submit, is what physicists are about. Of course, it's not necessary to believe that the game has an author in order to play, but you have to believe in the game at least. The religious can say it's our sacred duty to study the rules; the nonreligious may say it is one of the highest evidences of our humanity. To say that a Super Collider is the modern equivalent of Chartres cathedral is not merely trite; it has a bit of truth in it.

The game is far from simple. At times it seems to come from the mind of Kafka. In the realm where matter seems less and less material, where time goes backwards and forward and touches eternity, where being and nonbeing depend on where you stand with respect to the light cone, it can all get a bit scary. At night one dreams of Rilke's terrifying angels from the *Duineser Elegien*. "God is subtle, but He is not malicious," said Albert Einstein, but then Einstein never really believed in quantum mechanics. I would say instead, God is not malicious, but He is certainly playful.

Some will ask how physicists can be so playful about a world in which there is so much evil and misery; the questioners frequently are biological and medical types, who have to face it day in and day out. To take just one example — one that avoids questions of free will versus determinism — predation seems built into the fabric of the world. You cannot fault the wolf for taking the lamb; it's necessary to the wolf's life. Yet, instinctively, without being too logical, we feel it's wrong. People have always dreamed of a world without predation (see Isaiah 65:17-25), and some have starved themselves to death trying to work it out in their own lives.

Of course the world is blemished. The beauty is gravely marred, the symmetry is broken. But underneath it, what a Jew or a Christian would call the original pattern may still be discerned. One of the joys of being a physicist is that one can turn one's head from the evil to contemplate a pattern that seems at first terribly abstract, but in the end may be more real than predation or cancer or nuclear war. I am thankful for all the good medical doctors and researchers in the world, but on the whole I prefer to be a physicist.

— Dietrick E. Thomsen