

## Imaginative Names

### Illustration

The claim was that engineers tend to be a bit unimaginative in naming new things while scientists/ physicists are often quite creative in coming up with good names. They also like to use good scientific names for unscientific purposes. I'll give you examples in this link.

### Big Bang

The Big Bang theory is still *the* mainstream model for cosmology, the description of how our universe came into being and what it did in early childhood and adolescence. According to the Big Bang theory, the Universe was born as an extremely hot, small and thus dense state which expanded rapidly. That is the description of a humongous explosion - a big bang!

The Big Bang occurred approximately 1 billion years ago; this much is as certain as can be. Whatever happened seems to be also quite clear - but vague doubts are creeping in more recently. It takes very mysterious things like "dark matter" and "dark energy" to keep the Big Bang model working and, maybe, something is not quite right in the basic axioms?

The expression "Big Bang", however, incites the imagination far more than, let's say, "wimpy whisper".

- The well-known while very controversial astronomer or astrophysicist Fred Hoyle is credited with coining the term Big Bang during a 1949 radio broadcast. Hoyle, who favored the alternative "steady state" cosmological model, seemed to have intended this as a joke. He denies this, however, and claims that it was just a striking image meant to highlight the difference between the two models.

### Black Holes

You know black holes from many movies and untold books and articles. They are out there somewhere between the stars and gobble up everything, including light, if it gets too close. Nothing will ever get out of a black hole, including light, and that's why they are black.

- Well, almost. Stephen Hawking's fame comes from his insight that something seems to come out of a black hole on occasion - but I won't go into that. Anyway, the name is pure genius since it catches the attention of people who are otherwise not so interested in the intricacies of Einstein's general theory of relativity, the place where black holes really dwell.

Einstein did not come up with black holes as a possible solution to his arcane equations either. John Wheeler, an extremely well-known physicist, is usually credited with coining the phrase during a lecture in 1967. John, however, insists that it was suggested to him by somebody else. Indeed, the first recorded use of the term is in a 1964 letter by Anne Ewing to the American Association for the Advancement of Science. But it was after John Wheeler's lecture that the term stuck and became prominent.

### Gluon

*Gluons* are complementing quarks - they are the little devils that "glue" quarks together so hard that you can never take them apart. That provides for a logical paradox. If there are quarks (and no physicist or other supreme being doubts that there are), you can never see them individually because you can never isolate them.

- I don't know who came up with that name but it sure sticks.

### Quark

The physicist **Murray Gell-Mann** (and others) suggested around 1961 that the really fundamental building blocks of matter would be (so far unknown) elementary particles with rather weird properties. Gell-Mann christened them "quarks" and this name has stuck. A independent co-inventor (George Zweig) of the quark model would have preferred the name "ace" but that term didn't make it.

Quarks, by the way, have been found experimentally in the meantime. There are many different ones, distinguished by qualifiers like "naked bottom quark" - a term certain to produce giggles in teenage physics classes.

- Gell-Mann ran across this term in **James Joyce's** book "**Finnegans Wake**". If you haven't heard of *Finnegans Wake*: it is one of the most famous books in English literature that nobody has ever read. Here is the relevant page 383:

— *Three quarks for Muster Mark!*  
*Sure he hasn't got much of a bark*  
*And sure any he has it's all beside the mark.*  
*But O, Wrennagle Almighty, wouldn't un be a sky of a lark*  
5 *To see that old buzzard whooping about for uns shirt in the dark*  
*And he hunting round for uns speckled trousers around by Palmer-*  
*stown Park?*  
*Hohohoho, moulted Mark!*  
10 *You're the rummest old rooster ever flopped out of a Noah's ark*  
*And you think you're cock of the wark.*  
*Fowls, up! Tristy's the spry young spark*  
*That'll tread her and wed her and bed her and red her*  
*Without ever winking the tail of a feather*  
15 *And that's how that chap's going to make his money and mark!*  
*Overhoved, shrillgleescreaming. That song sang seaswans.*  
*The winging ones. Seahawk, seagull, curlew and plover, kestrel*  
*and capercallie. All the birds of the sea they trolled out rightbold*  
*when they smacked the big kuss of Trustan with Usolde.*  
20 *And there they were too, when it was dark, whilest the wild-*  
*caps was circling, as slow their ship, the winds aslight, upborne*  
*the fates, the wardorse moved, by courtesy of Mr Deaubaleau*  
*Downbellow Kaempersally, listening in, as hard as they could, in*  
*Dubbeldorp, the donker, by the tourneyold of the watterfalls,*  
*with their vuoxens and they kem in so hattajocky (only a*  
383

The German translation goes:

- Drei Quarks für Münster Mark!

Sein Gekläff war wohl eher karg,

Und sein Besitz ist unter der Mark.

Doch O, Allmächt'ger SpatzenAdler, flöge man lerchenstark

Und säh, AltBussad ruft nächstens uns arg

Und haschte nach uns TipfelHosen hirrum am Palmerstown Park?

Hohohoho mausernder mark!

usw.

Now you know why nobody (sane) has ever read it. Which is a pity because Finnegans Wake contain [good advise](#) about how to deal with iron and steel.

My edition of Finnegans Wake (Zweitausendundeins (2002); German translation by Dieter H. Stündel) has 13 comments for that page in the margins - but "quark" isn't mentioned. No English dictionary, including the ones caring about slang and dirty words, knows the word "Quark". German dictionaries, however, provide help: Quark is a kind of curd or milk cheese, and in a second meaning something outdated, nonsense. The way it is pronounced it rhymes with "mark" and "bark", as in Joyce's poem above.

Joyce knew some German; about Murray Gell-Mann I don't know. Could it be that Murray named these elusive elementary particles "quarks" to be able to claim that it was, as everybody could see, just a joke if it went wrong? We will never know because quarks are real, their name is commonly accepted, and Murray got the Nobel prize. Here is how Murray Gell-Mann recounts his encounter with quarkiness:

"In 1963, when I assigned the name "quark" to the fundamental constituents of the nucleon, I had the sound first, without the spelling, which could have been "kwork". Then, in one of my occasional perusals of Finnegans Wake, by James Joyce, I came across the word "quark" in the phrase "Three quarks for Muster Mark". Since "quark" (meaning, for one thing, the cry of the gull) was clearly intended to rhyme with "Mark", as well as "bark" and other such words, I had to find an excuse to pronounce it as "kwork". But the book represents the dream of a publican named Humphrey Chimpden Earwicker. Words in the text are typically drawn from several sources at once, like the "portmanteau" words in "Through the Looking-Glass". From time to time, phrases occur in the book that are partially determined by calls for drinks at the bar. I argued, therefore, that perhaps one of the multiple sources of the cry "Three quarks for Muster Mark" might be "Three quarts for Mister Mark", in which case the pronunciation "kwork" would not be totally unjustified. In any case, the number three fitted perfectly the way quarks occur in nature."

Source: Murray Gell-Mann's book "The Quark and the Jaguar"

## Wormholes

A wormhole is a theoretical shortcut through the (bend) spacetime at the heat of Einstein's general relativity, just as a real wormhole might be a shortcut for things that travel on an apple. **John Archibald Wheeler** an eminent physicist with a sense of humor, coined the term in 1957. Wormhole theory, however, is older. The German mathematician Hermann Weyl had proposed it in 1921

space-time that could create shortcuts for long journeys across the universe. Wormholes are predicted by the theory of general relativity. But be wary: wormholes bring with them the dangers of sudden collapse, high radiation and dangerous contact with exotic matter. Wormhole theory In 1935, physicists Albert Einstein and Nathan Rosen used the theory of general relativity to propose the existence of "bridges" through space-time. These paths, called Einstein-Rosen bridges or wormholes, connect two different points in space-time, theoretically creating a shortcut that could reduce travel time and distance.

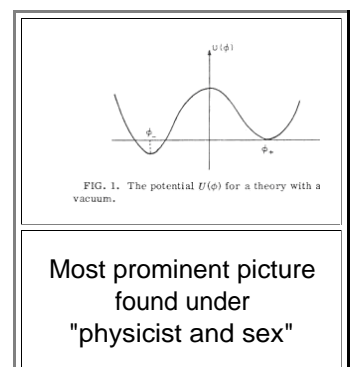
- Wormholes are possible within the math of general relativity. They would, maybe, allow to travel around the galaxy in style and with not much time lost. This assumption (not justified by theory) has created a big boost to science fiction literature and movies  
However, not everything that is possible within a theory is possible in reality. Theoretically you could be a supermodel with three Nobel prizes in Science, living in Des Moines, Iowa. Now look at yourself.  
I'm rather sure that nobody will travel via wormhole in the foreseeable future and I am absolutely sure that all my physics colleagues hold the same opinion.

## Physics and Sex

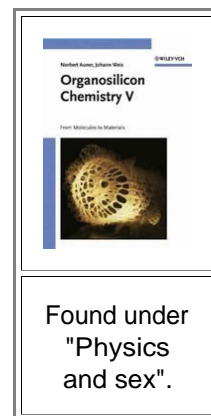
### The dirty mind of physicists

"An electron will recombine with a hole deep in the valence band, emitting a photon if it is a direct transition" Sara, peeking over my shoulder, was reading out loud from the Hypertext I was just composing. "Little did I know that you scientists have such a dirty mind when you do your thing" she announced, "are you perhaps meeting little cute holes too, somewhere deep in a valence band?"

- Now who has a dirty mind here? While the juxtaposition of physicists and sex is not exactly an oxymoron (after all, we do reproduce), physicists have better things to do than to chase females (so we believe). Mathematicians now, they have a dirty mind, not to mention chemists. On second thoughts, forget the chemists. If you don't believe about the mathematicians, just look up the adventures of little convergent Polynomia, and her encounter with the operator Curly Pi. It's just disgusting how he integrated her up to the asymptotic limit.
- Only civil engineers, perhaps, are purer in mind (if not body) than physicists. That insight comes straight from pondering what kind of engineer the designer of the human body might have been. One might guess it was a mechanical engineer, considering all the joints, or possibly an electrical engineer, appreciating the zillions of electric connections of the nervous system. But only a civil engineer would be capable to run a toxic waste pipeline through a recreational area, so that solves that question.
- Sara actually knows her engineers and physicists. One day, when I came home quite late with a torn shirt, hair messed up, and generally looking like hell, she wanted to know why? "Well" I said, "after I quit work for the day, a few friends and I went out to the bar for a few drinks. We met up with some rather good-looking young women, and started to drink to excess; things just kept happening, as you can well see. I sobered up enough to note how late it was, so I rushed home." What did she reply? "You liar!!!" she said, "You were in the lab again and coming home you fell off your bike. Weren't you???!!!!"
- So Sara really knows her personal physicist. She also knows that there is no such thing as a generic physicist when it comes to sex. I mean there are theoretical quantum physicists who do it with uncertainty, and there are the astrophysicists who do it with a big bang. Not to mention the Astronomers, who do it all night on mountain tops, or the mathematical physicists, who understand the theory of how to do it, but have difficulty obtaining practical results. Electron microscopists, of course, do it in the dark.



- It's not that our minds don't stray off the eclectic joys of physics every now and then, even if it is more than now. But even then there is no reason to give up physics entirely for that. Dirty minds and pure physics are easily reconciled, just consider for example our colleague Micro Farad, who decided to get a cute little coil to discharge him. Attracted by Millie Amps characteristic curves, he approximated her asymptotically and took her for a spin on his megacycle. They crossed the Wheatstone bridge with plenty of momentum, and still had sufficient kinetic energy left to oscillate their wave functions a few times before they made a transition, emitting some fully coherent photons. Their matrix elements increased exponentially, and soon he had her fully excited, approaching the inversion condition. He connected her to ground potential, lowered her resistance, raised her frequency, and finally started to increase the generation rate.
- Well, by now they were far off equilibrium. A large entropy current was flowing freely, heating up her her shunts, which were getting pretty hot. A bifurcation opened up and the transition to chaos was imminent. They started swirling around a strange attractor, and if they haven't renormalized by now, they might even reverse polarity and blow each other's fuses.
- See what I mean? Only problem is that while those electrons and holes might have fun at recombining, they also have a distinct advantage to real physicists: They always come in pairs. That cannot be said of real physicists - they almost exclusively come as unpaired males. Why physics is not attractive to females in general, and to attractive females in particular, is totally incomprehensible and counts among the major unsolved mysteries of physics. For some females, their dislike of physics even extends to a dislike of physicists, which might be just as well, because in all (unfortunately severely limited) experimental experience, these ladies cannot carry on a prolonged conversation about interesting items like dark matter, super nova explosion, charm quarks, the newest electron microscopes, or high temperature superconductors. So dates tend to be dull, because what can you do all that time? (physicists also do it with the speed of light). There are a few ladies who can carry on an intelligent conversation, but their attractors, unfortunately, usually tend to be on the strange side everywhere, not just in phase space.
- "Aha", Sara said (again peeking over my shoulder), "I see. But what exactly did you find out about the inadequacies of, what's you call it, strange attractors in female form? And how about those hot shunts? Hmmm - I wonder, how it feels to be inverted?"



So excuse me now. I've got this sudden urge to increase the generation rate, and that's easier while the shunts are hot.