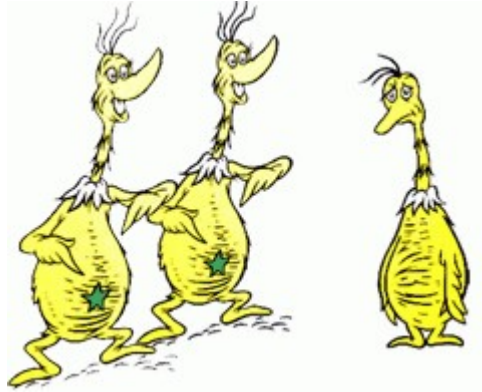


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# Hadronization



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I put the title above in Seussian font because you simply have to study this subject with a sense of humor. Either that or go mad. I only wrote this paper with the prodding of one of my best readers, who is convinced the subject has to be addressed one way or the other. Although I suppose he is right, my first response to him was that there wasn't even enough mainstream theory here to tear apart. What exists in books and on the internet already acts as its own refutation and its own satire, and I am not sure I can make it look any worse than it already looks. My reader replied that was exactly why I should include a paper about it: he said it was like "scoring in an open goal." A typical analogy from a northern European.

I hope you won't mind if I lead with his comments, since they start us off pretty well.

The Wiki introduction mentions: "postulated color confinement", "spontaneously created from the vacuum to form hadrons", "are not yet fully understood". "In particle detectors, jets are observed rather than quarks, whose existence must be inferred". Come on, how many more hedges do they need? You are right, the articles only discuss modeling, theoretical content is about nil.

But let's look a little closer at this article at Wikipedia he quotes from. I have to think that if you were looking for the most pathetic science article at Wiki, this one on Hadronization would be very hard to beat.

**In particle physics, hadronization is the process of the formation of hadrons out of quarks and gluons.**

That is sentence one.

**The tight cone of particles created by the hadronization of a single quark is called a jet.**

That is sentence six.

As you see, they haven't even settled on a definition of hadronization. Either that or they have forgotten the fundamental rules of language. If hadronization is the process of forming hadrons out of quarks, then the term “hadronization of a single quark” has no meaning. You can't make a hadron out of a single quark, because if you could, a hadron would be a quark. Beyond that, sentence six is basically illegible. In it, we have a tight cone of particles created by a single quark, and we call that cone a jet. Why not call it a quark? Well, because we haven't seen single quarks, we are told. Then what is the difference between the quark and the jet? Have we seen single jets? A jet is a quark that has been hadronized, apparently. But what do you do to a quark to hadronize it? I thought hadronizing quarks had been defined as forming them into hadrons. Now we are being told that hadronizing a quark is turning it into a cone of particles. And what are those particles? Whatever they are, it would appear the hadron is really made of *them*, not quarks. Can we see those particles? If not, how do we know the cone is composed of them? If so, then why not base hadron composition on them, instead of quarks or gluons? The whole paragraph reads like gibberish, purposely garbled in order to turn your mind to mush.

Here is sentence four:

**In the Standard Model they combine with quarks and antiquarks spontaneously created from the vacuum to form hadrons.**

So hadronization is really a form of miracle, not a form of physics. Physics would be composing known structures from known particles, but in the Standard model they just pull everything out of the vacuum by a conjuring. We have no evidence for either quarks or antiquarks—they are just conjured. This conjuring has precisely the same status as religious people claiming God created everything from darkness and light. He pulled the opposites out of the vacuum, thus creating all matter. The only difference is that the Standard model has no conjurer. In the Standard model, the particles create themselves. The conjuring is “spontaneous.” I am not sure why physicists think this skirts the “creationism” they think is a myth, and take such violent exception to. It is not the *something-from-nothing* that bothers them, obviously, nor the conjuring. It is only the invisible hand. As long as it is *their own* invisible hands that are conjuring the particles from the vacuum, instead of God's or gods', they think they are doing physics.

Let me just take a moment to confirm that I am not apologizing for creationism here. I am not a proponent of creationism, and this paper is obviously not supporting it. I am ridiculing this closet creationism in physics, so I could hardly be accused of arguing in favor of it. The point of this set of paragraphs is to argue for physics, and in physics we attempt to compose particles without these sorts of cheats. If we wanted to allow this cheat of pulling things out of the vacuum, we could have quit physics centuries ago. There is not a great deal of difference in pulling quarks out of the vacuum and pulling the Earth out of the void. If quarks and antiquarks can jump out of the void and compose a hadron, what is to stop Earths and antiEarths from jumping out of the void to create stars? Both processes are equally slippery.

I will be told that any particle composition at this fundamental level will require such extreme measures, but I have shown that is false. [I have composed my hadrons](#) from photons with simple spin mechanics, and we already know about photons. They are not confined, they are not virtual, they are

not from the Dirac or Higgs sea, and they are not spontaneously created. [They are recycled and channeled.](#)

But let us return to the Wiki satire:

**Hadronization is a very important component of Monte Carlo simulation. After the Particle shower has terminated, partons with virtualities on the order of the cut off scale remain. From this point on, the parton is in the low momentum transfer, long-distance regime in which non-perturbative effects become important. The most dominant of these effects is hadronization, which converts partons into observable hadrons. No exact theory for hadronization is known but there are two successful models for parameterization.**

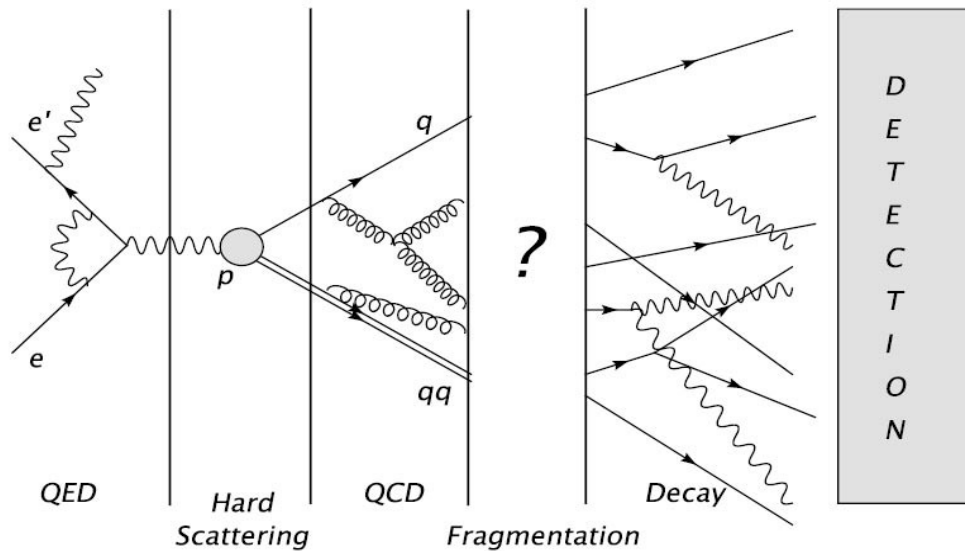
Quarks are now partons, notice. Why two terms for the same thing? To add to the confusion and to bring Feynman back in as ballast. Feynman invented partons while Gell-Mann invented quarks. But Feynman was always more popular, so contemporary physicists use his terms as doublings to bring in all his fans. He was the best salesman of all this crap—the premier conjurer of the past half-century—so they think that by using his terms his old magic will stick to the failed theory. Another sign of desperation, in other words.

Partons can have “virtualities.” If their virtualities are near the cut-off scale, they remain after the shower has stopped. All just a conjuring. “Partons with virtualities.” Conjured nouns and conjured characteristics, with no conjured definitions. What is a virtuality? Does it have any definition beyond “anything you wish it to be”? How do we know that any partons have virtualities on the order of the cut-off scale? Because we *wish* them to, so that they *remain*. They have conjured the cut-off scale and then conjured the virtualities to match it.

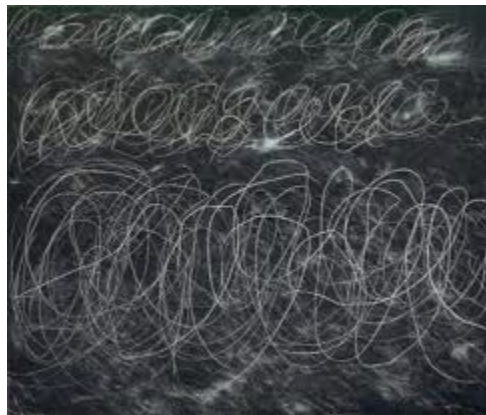
I really don't understand why scientists think that giving conjured entities scientific names makes them scientific. Calling a unicorn a *unicornus mythicus* doesn't make it more real. Publishing a conjured theory in a textbook or on Wikipedia doesn't make it into physics.

The same can be said for the Monte Carlo simulation, which they are no longer too embarrassed to admit to. As I have said before, using Monte Carlo simulations is a clear sign of desperation, and any old mathematician would have seen this as an admission of failure. In the old days, you only used tricks like Monte Carlo when all physics had failed. When you have no physics, no mechanics, and no theory, you apply Monte Carlo to the data, to try to force something from it. It basically means you know absolutely nothing about your field and you are flying by the seat of your pants. If QCD had any value as a theory, you wouldn't need Monte Carlo to prop it up. The very fact that they are using Monte Carlo is an implicit admission of failure, and in such a state of affairs they should be *begging* for help from people like me, who can visualize these fundamental fields.

In going beyond Wikipedia, we can look at [the 2006 Ghent meeting of particle physicists](#), where we get this lovely diagram:



Looks sort of like a Jackson Pollock painting, or maybe a Cy Twombly:



You may think only the fourth subdivision is a problem, since we get a big ? there. But if they were honest, they could put a big ? in every subdivision. In subdivision 3, they have quarks labeled, but no quarks have ever been seen. Since quarks are never detected, all subdivisions between “p” and “detection” are conjured. And the last subdivision is the most mysterious of all. It is labeled “decay”, but what are the quarks decaying into? Strange how they take such pains to hide that from you. Could it be . . . photons? As it turns out, yes. Photons, neutrinos (which are [photonic waves](#)), electrons/positrons, and various mesons. None of the middle steps labeled QCD, fragmentation, or decay are *ever* seen. They are proposed and drawn only to sell the current theory, but there has never been the tiniest bit of real evidence of them. All we know for sure is that in something like beta decay, a neutron is “decaying” into a proton and an electron. That is the pre-detection and the post-detection. So the evidence for QCD, fragmentation, and decay is zero. They say the existence of quarks is *inferred*, but an inference is required to be logical. As we see, quarks aren't inferred, they are conjured. Some guys now famous conjured them in the 1960's and 1970's, and that is the only reason you still read about them. No inference was involved.

[I have proved previously](#) that the *logical* inference from detections of things like beta decay is that the

neutron isn't decaying at all. It is getting hit. The resulting electron doesn't *come out* of the neutron, it is simply an un-predicted positron that has flipped over in the hit. The neutron also has its outer spin reversed, *becoming* a proton. That inference simplifies all the mechanics (while *giving* us mechanics instead of conjuring), and immediately jettisons all this claptrap about quarks and confinement and spontaneous creation out of the vacuum.

We see another big problem with current theory if we study the [Lund University page on Hadronization](#). Lund is the University in Sweden where we get the Lund string model as well as the parameterization models in quark theory. Anyway, they tell us in slide 3, part 7 of the presentation that photons cannot interact with each other. Why not? Because this would contradict their gauge math, in which the photon has zero mass and radius. More importantly, the photons can't interact. . . because if they could, we would have a simple alternative to QED and QCD, as in my theory. They don't want that, because it would destroy all their work for the past fifteen decades. They have ignored the photon as a field particle since the time of Faraday, and to bring the photon in now would crash the greater part of modern physics. They can't have that, so they simply forbid photon interaction. The rule doesn't come from experiment or evidence, since they have no evidence photons don't interact and they have reams of evidence they *do* interact. So the rule is just another rule by fiat. It is a rule contrary to all evidence. It is once again theory-protection posing as science.

What evidence? Well, let's see, just off the top of my head, [the MOKE effect](#), [the Faraday effect](#), the Kerr effect, the Zeeman effect, the Voigt effect, the Cotton-Mouton effect, the QMR effect, [Rayleigh scattering](#), [magnetic reconnection](#), [over-unity albedo](#), [through-charge in Iron](#), and [all of magnetism](#). Basically all of quantum mechanics since 1900 and all of E/M experimentation since 1800 is clear proof of photon interaction, but since [Maxwell left his displacement field un-assigned](#) in the 1860's and [Bohr mistakenly assigned quantization to the electron instead of the photon](#) in the 1920's, this has been buried for more than a century. Contemporary physicists are keen to keep it buried.

The mainstream even admits it in [this more recent announcement](#) from Princeton in 2014, where we are told photons are interacting strongly. These guys can't seem to keep their theory straight from year to year. In 2013, photons don't interact. In 2014, they do.

For more proof there is no mainstream theory in QCD, we may go to [this recent paper at ArXiv](#). There, we find this:

**Thus, hadronization is not yet calculable from QCD first principles and one has to resort to phenomenological models. While this may seem an inconvenient limitation, still much can be learned from these models about QCD in the confinement regime. Indeed, if they are able to effectively describe the essential features of the actual physical process, they give us relevant information about the characteristics of the fundamental theory.**

Of course, the reason hadronization cannot be calculated from QCD first principles is that QCD has no first principles. QCD has been back-engineered from data from the beginning, using cutesy names to fill any holes. When new data comes in, the list of names and manipulations is then extended by a further naming and fudging. No *theory* has ever been involved in QCD. The amount of real mechanics in QCD is zero, and although the D in QCD stands for dynamics, there is no dynamics either. Dynamics is a part of mechanics, and it requires looking at the *causes* of motion by forces or other physical means. As we have seen, nothing in QCD is dynamical. Dynamics requires real particles acting upon another by physical means, but in QCD all the important interactions take place between

virtual particles, ghost fields, borrowed quantities, and spontaneous (uncaused) motions. No physics, all conjuring.

Our author claims that hadronization resorts to “phenomenological models,” but that isn't true, either. Phenomenological models would be subjective models, and these QCD models aren't subjective. They are simply manufactured from nothing. A subjective model could be rigorous, scientific, consistent, and supported by empirical data. A philosopher would just say that such a model exists only in the mind, and cannot be definitely connected to reality. Even the connection between the model and data would be in the mind, according to the definition of phenomenology—but *even then* the mind could require that connection to be consistent, logical, scientific, and so on, by all the old definitions of those words. The problem here isn't that QCD is subjective, the problem is that QCD doesn't obey any of the rules of science, subjective or objective.

For instance, pulling particles out of the void is neither subjective nor objective. It is just an idea, and could be either subjective or objective. If it only exists in the mind, it is subjective. If the idea happens to match some real world, it is objective. But even if we can't finally prove it matches some real world, we can still require that the idea makes sense in the mind, by a definition of sense we create in the mind. My point is that QCD doesn't even do that. Allowing particles to pop out of the void to suit theorists doesn't fit any of the old definitions of science or physics, and it can't match *any possible* consistent definition of physics, in any mind that is trying to maintain rigor. The question isn't one of phenomenology versus noumenology, it is one of sense versus nonsense. In other words, QCD isn't “phenomenological”, it is slop. They use these big words to make you think they aren't just fudging. If they call their slop “phenomenological,” they may fool you into thinking it isn't slop.

As a sort of conclusion, I will return to my reader, who sent me back to Wikipedia for a final laugh. On the page for the strong force, we find:

**The failure of all experiments that have searched for free quarks is considered to be evidence for this phenomenon.**

My reader commented: “Hilarious! This is like saying the grass in my garden grows because invisible gnomes pull it out of the ground: the fact that I never managed to see one while the grass still grows is *proof* it was gnomes!”

Yes, *lack* of detection is now used as proof for a theory. “Well, we also proposed that our proposed particles would never be detected, so we are proved correct!” Looks like the Christians, Jews, Muslims, and Hindus just need to propose that their God or gods are subject to this same “confinement.” They could then use Richard Dawkins' or Christopher Hitchens' failure to detect this God as proof of his existence.

So despite the fact that QCD has no physical content whatsoever, we have seen decades of promotion of it. We see it sold on hundreds of prominent websites, including all the university websites in the world. We see it sold in all the professional and popular magazines. Why? Has no one in the mainstream noticed that the theory is not really a theory? Has no one noticed it contains no physics, no mechanics, no dynamics, and no logic? Has no one in science noticed that this famous theory depends on conjuring particles out of the void, and that it relies on other conjuring like symmetry breaking, virtuality, confinement, asymptotic freedom, ghost fields, renormalization, and a giant bag of other

mathematical tricks? Has the entire field simply caved to slick salesmanship, peer pressure, and institutionalized mysticism promoted as physics? It would appear so.

Rank-and-file physicists (and engineers and other scientists) had better wake up and start the revolution before their field is completely destroyed. Hawking told them in 1988 that they were a decade away from omniscience. But I warn them that they are less than a decade away from barren ground. The fertility of physics has been ruined by a century of unscientific thinking and by the rabid promotion of anti-science. As in the field of art, all the “conventions” of physics and science have been purposely jettisoned, and no one is left at the top of either field but *poseurs*. And, again as in art, those at the top of the field are trying to control it by intimidation, browbeating, breastbeating, and by spending huge sums of money on PR. It is working, but it is working only because the greater field of physics is allowing itself to be snowed. As in any con, it takes two to complete the con. It takes the conman and it takes the mark. I only wonder when scientists are going to quit being marks. It occurs to me that they are being paid well to act as marks, and that they may prefer the paycheck of a mark to the non-paycheck of a true scientist. It looks to me like the love of money has trumped the love of science. We see a lot of people in the world who claim to love art and science, but few whose actions verify that claim. When it comes right down to it, they are willing to sell out both fields for the promise of a career.