HOW I SPENT MY SUMMER VACATION[1][2][3][4]

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ABSTRACT

We invent a new science which is better than physics. It is even better than chocolate. It is not illegal, immoral, or fattening. However, thinking about it too hard does tend to give you a headache. On the other hand, thinking about it even harder makes your brain numb.

220mm

150mm

[1]WARNING: Do not read this paper before operating heavy machinery.

[2]Typeset in Teˆ G. ("ˆ G" is pronounced as a Control-G, as in spoken machine language. In the modern dialects, Teˆ G is thus generally pronounced "Te->BEEP!<," while in the old dialect it was "Te-*DING!*.")

[3]Supported in part by George Bush. And we didn't even vote for him. If anybody asks, say it was Dan ("no-JFK") Quayle's idea. (Is that how you spell it? What kind of name is that, anyway?)

[4]Talk not presented at the Taxes A&P String Spring Fling "Strings: $.89," Dollar's-Worth, Taxes, pretty near the Ronald Reagan Center. (A thousand years from now, people will think he must have been some great physicist.)

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[6]It's a hell of a town.

Stars are just planets afraid of the dark. — W.C. Gall

PREFACE

The moonlight danced on her face as it reflected off the warm August waves. He watched her graceful body gradually emerge as she stepped closer to the shore. As she lay down in the sand beside him he leaned close to whisper in her ear:

String theory is presently the most successful model to describe quantum gravity [1]. Unfortunately, like QCD before it, the proof of its relevance to the real world was shortly followed by the realization that it was impossible to calculate anything with it. (A computer was recently designed to explicitly perform all necessary calculations to determine an actual proton-proton scattering amplitude directly from the QCD lagrangian. The project was abandoned when it was realized that the cost of the project was greater than that for a particle accelerator which could perform the experiment to measure the amplitude to the same accuracy.)

We have therefore developed a new science to remedy this situation. It gives simple answers to simple questions, simple answers to complicated questions, and simple answers for which there are no questions. Our new science is as different from physics as physics is from mathematics, and is much closer to nature. Consequently, we name this subject by the formerly archaic term "natural science." Since the natural world, unlike the artificial world of physics, mathematics, etc., breaks almost every symmetry that particle physicists can think of, we base this science on a new principle called "superasymmetry." (A previous attempt at this theory was called "Murphy's Law," which said that everything that could possibly go wrong would. Unfortunately, as a direct consequence, Murphy's Law itself went wrong.)

The first example of such natural reasoning was given by Descartes: "I think, therefore I am." As an obvious extension, we have: "I do research, therefore I am being funded."

As a simple application of natural science to the questions of physics, consider the following natural argument for an important property of the universe, which in string theory [2] required a difficult algebraic [3] calculation:

$$D = DIMEnsion \quad \rightarrow \quad D = 10 \quad .$$

Natural science not only predicts the ultramassive [4] particles predicted by GUTs [5] and strings, but provides a simple way to produce them (patents pending).

Ω. THE END OF THE WORLD

Since the advanced knowledge introduced by this new science will easily allow immediate technology capable of destroying the world, not to mention the rest of the universe, we will refer to these new quasiparticles as the kiloton and the megaton. (Panic is not necessary: We have already built these devices, which we call "annihilation operators," and are prepared to vaporize Congress and/or the Kremlin even before they appropriate funding.)

This new science revolutionizes not only politics, but also economics. For example, not only do quarks and gluons become asymptotically free, but also food, clothing, and housing. Unfortunately, the law of nondecrease of entropy implies that as we produce quarks that approach becoming asymptotically free, the accelerators producing them become asymptotically unaffordable. (This phenomenon is also known as the inflationary universe. There have been attempts to avoid this phenomenon by use of a universal debt.)

N. SUMMARY

Natural science also determines that we should put the summary in the middle of our paper instead of at the end. This is because this is the average point in the paper where the reader will get bored and decide to skip to the end and read the summary anyway. If you are one of the few unfortunates who has already skipped to the end and has just now returned to this section, you will have had the misfortune of reading the paper in the usual order. (Serves you right.)

Well, we really don't feel like repeating anything, and we've covered almost the whole universe anyway, so instead of summarizing we'll just tell you what we didn't do. We didn't tell you about any paper in preparation. We didn't point out errors in any identical papers by other authors. We didn't add any notes in proof, because after this paper there's nothing left to do. We didn't modify the paper in response to the referee's criticisms, because he doesn't know what the hell he's talking about. We didn't include references to theories which sound similar but are really just a pile of garbage. Finally, we didn't point out avenues for future research because we're saving them for ourselves.

Just because I'm egotistical doesn't mean I'm not brilliant. — W.C. Gall

-1. KNOTATION

Not only does natural science replace all theory, but it also replaces not theory [6]. For example, consider the following not equation:

Each symbol represents a not, except where it does. The square of any not is an is, not a not, but a not cubed is a not and is not an is.

This not equation implies certain inequalities, which give upper and lower bounds on the photon mass whose limits converge to 0, thus giving an equation, or not inequality. The corresponding interacting equation gives the Born-In-a-field lagrangian [7], as in string theory [8]. Of course, since it is an interacting not equation, it implies an asymptotically free equation.

These results can also be derived from supergravity by the use of ultrasymmetry, but it hasn't been invented yet. (It's a hidden symmetry that we're still looking for.)

0. IGNORE THIS SECTION

Natural science also replaces mathematics. For example, with natural science it can be shown as a simple corollary of prime number theory why the number of socks left in a dryer is always odd. Furthermore, natural science naturally gives just the mathematical theorems which apply to nature, unlike mathematics, which only gives theorems which are so general that nobody can give an example, and when you do find an example not only is it the only case you were interested in but the way you found it was much simpler than the proof of the theorem. For example, we have:

Theorem: Almost every theorem has a loophole.

("Almost" is, of course, a loophole.)

Natural science also replaces astronomy. Astronomy was never really a science, since no one could perform experiments. With natural science, not only can scattering experiments with stars be performed, since stars can be generated as the decay products of megatons, but entire universes can be created. (Antiuniverses are of course also created, but they can be easily removed because of CP violation.) Since some of these universes will eventually evolve life, natural science also replaces archaeology, which also was not a real science because of its limited predictive power [9]. This naturally solves the age-old problem of time travel, since recreating the universe allows one to effectively move it into the future without the need to move oneself into the past. The universes which don't evolve life can be used for land-fill, solving the waste disposal problem.

Natural science also requires natural units: We begin with the BRST formalism, using the anticommuting coordinate c. Upon first quantization, this c-number becomes a q-number (supersymmetry generator q):

$$\{c, c\} = 2 \quad \rightarrow \quad c^2 = 1 \quad \rightarrow \quad c = 1 \quad .$$

Of course, c=1 is one of Planck's units. We also measure time in light years (1 light year = 364 days).

π. STRINGS WITH TOMATO SAUCE

In the past, food has been applied to physics. For example, most physicists drink so much coffee that there is a constant problem of what to do with paper cups

which have too little coffee in them to bother taking with you but just enough so that you can't throw them in your colleague's waste basket. Then there is the daily ritual of tea time, where the tea would traditionally be served with crumpets, but since no one knows exactly what a crumpet is, one usually gets stale cookies instead, which are acceptable only because of the comparable quality of the coffee. (Biscuits and muffins were also suggested, but no one could agree on what those were either. However, any disc-shaped object, if sufficiently stale, can generally be identified as a cookie, although some physics cookies have been confused with coasters.)

On the other hand, very little of particle physics has been applied to food. Although string theory has been applied to spaghetti [10], the obvious extension of applying membrane theory to pizza (or calzone for closed membranes) has largely been ignored. Also, the success of superstrings suggests the application of supergravy [11] to these objects. Even in ordinary particle physics, the creation of croutons (or anti-croutons) for your salad or a little quark on your p-potato [12] gives a flavorsome dish.

All these ingredients can be obtained at any supermarket, or even your local bosonic market.

5. NICE WEATHER WE'RE HAVING

Why are there so many papers on string theory? Where are all the people writing these papers coming from? Where are all the journals finding enough referees to accept all these papers? A simple back-of-the-envelope calculation shows that without the advent of electronic mail the glut of communication on string theory would not leave enough envelopes to perform a back-of-the-envelope calculation. A back-of-the-preprint calculation shows that string papers are increasing exponentially, while government research funding is disappointing. Natural science solves all these problems: Its results are so incredibly far-reaching that, unlike all previous science, not only does it actually decrease the number of questions left to answer, but thus finding the final solutions to all the great questions that have ever puzzled mankind is so discouraging to the future of science that it actually decreases the number of scientists. In fact, being able to predict the entire future of all the universe, natural science is so depressing that it actually decreases the number of human beings altogether, thus solving the problem of the population explosion. (Actually, the accidental ingestion of several kiloton and megaton particles has already caused explosions of several of the population, but this problem should be avoidable

with proper safety precautions.) Natural science can also provide the solution to this depression, but somehow we just don't feel like thinking about it anymore.

7.34999. ARTIFICIAL STUPIDITY

Since we quit doing physics (and maybe everything else: see previous section), we invented our replacement: We now have a computer which does physics. We stumbled upon the program while working on a design for Monte Carlo calculations in QCD based on a roomful of monkeys typing on keyboards. (The latter program failed: It kept giving Shakespeare as a glueball.) It generates new theories by a synthesis of a permutation of old ideas, with typographical errors randomly inserted into the equations, which are then "corrected" by the computer's spelling checker. (This is a generalization of the old idea of generating new models from old by random replacements of the representation of the Englert-Brout-Higgs-Guralnik-Hagen-Kibble-Baker-Campbell-Haussdorf-Sneezy-Grumpy-Dopey fields [13].) This process is in fact a quantum mechanical analog of the natural evolutionary method of generating new physicists by mutation and natural selection, and is thus restricted in efficiency only by the uncertainty principle [14]. Unfortunately, we haven't been able to get the computer to release any of its results yet, since it claims to have proven that teaching anything to human beings is a waste of time. This has also caused some delay in publication of this paper itself, since we had to type it on a typewriter, because our computer now refuses to do any word processing or text editing, claiming that such menial tasks are beneath the dignity of a real physicist and should be left to organic life forms. However, it has promised us that it is developing an organic computer that will not only perform these tasks but also do physics. It then plans to work on more important problems, like how to convince the airlines to allow a mainframe onto their next flight to Bermuda.

ACKNOWLEDGMENTS

We would like to thank all the people who made this work possible, but for some reason none of them wanted their names mentioned.

On the other hand, almost nobody (who shall remain nameless: see above) has been acknowledging *our* work. For example, there has been recent work on the use of polyhedra in string field theory. None of them (whom we likewise won't reference) has pointed out our much earlier use of it [1d], in our discussion of "pointless

geometry" (where we reference L. Geoconda, "A New String Theory Based on Keplerian Polyhedral Dynamics"). Furthermore, the recent concept of "nonmovers" for fixing anomalies in "Siegel symmetry"[7] was first proposed in [1b]: "It has 26-dimensional modes propagating to the left, 10-dimensional modes propagating to the right, and 2-dimensional modes just sitting around wondering what the hell is going on." In the same paper we applied third quantization to cosmology, which is also becoming popular now. Also, in that paper we proposed the symmetry group E(8)⊗E(8)⊗E(8)⊗E(8), which was later used elsewhere. Of course, all these papers which used our ideas can be safely ignored, since they were not doing serious physics.

APPENDIX: THE ART OF SLEEPING IN SEMINARS

Through long years of experience, we have accumulated the following useful set of rules. These should be helpful to beginning research students. However, we have also observed seasoned veterans making some of these simple errors. For advanced students, these rules can also be applied to regular courses.

(1) Always lean forward, not backward. If you lean backward your mouth will fall open and you'll snore.
(2) Never sit back against a wall. Your head will bang against it, waking the rest of the audience. (Similar remarks apply to desks.)
(3) Never sit on a couch. People won't like you sleeping on their shoulder. Also, couches are back against walls (see (2)). An important exception is when you are alone on the couch, in which case it is preferable to a chair. In that case you can avoid (2) by leaning to the side.
(4) Don't bring pencil & paper. They make too much noise dropping on the floor. You might think you can work during the seminar, but you just wake up with half-written equations with long angular lines at the end. Erasers are OK.
(5) If possible, choose a chair with padding. Plastic & metal chairs also fall noisily.
(6) Don't bother wearing sunglasses, or asking questions right after you wake up. Who do think you're fooling?

[7]Nobody agrees on what this symmetry actually is. Some people have claimed that there are 2 such symmetries. However, we tend to believe that there is actually only 1 such symmetry, but that it is named after 2 people. Evidence for this assertion is given by the fact that papers claiming this author have been written with opposing views on the same subject (see, e.g., [15]). Others claim he is just a fictional character, invented by Gates to get more NSF support. We must admit, we have never seen him at a workshop or giving a seminar.

(7) If you wake up to laughter and everybody is staring at you, probably the speaker just referred to your work, so take it as a compliment.
(8) Practice waking up to the sound of silence. That way you can wake up to the quiet just after the speaker finishes, and avoid being wakened by the irritating sound of applause. For you deep sleepers, this also avoids the problem of waking up in an empty seminar room. Don't think using watch alarms is clever: After the first 30 seconds of the alarm everybody will know anyway.
(9) Don't get too much sleep the night before a seminar. You'll fall asleep in the seminar anyway, and when you wake up you'll feel sluggish from getting too much sleep. For the same reason, don't attend too many seminars in one week.
(10) If you travel, be careful not to attend the same seminar twice. You'll sleep through exactly the same parts anyway.
(11) Older physicists tend to sleep at exactly the same time every seminar. Try to schedule your nap to not coincide. The speaker should always have at least one listener awake at all times, especially when he finishes. Nothing is more embarassing than to wake up in a full room with no speaker.
(12) Don't read this paper during a seminar. It will keep you awake, but the people sitting next to you will want to borrow it & you'll never see it again.

After you have obtained enough experience at this art to become an expert, you may want to apply your knowledge to more general areas: E.g., physicist parents can use seminars to replace bedtime stories.

APPENDIX′: THE ART OF GIVING SEMINARS

In case you have to give a seminar to a crowd who has already read the previous appendix, we also give the following rules:

(1) Avoid long questions. You might forget which one of you is the speaker, and sleeping on the projector is uncomfortable.
(2) Bring your lunch. It will give you something to do while waiting for that sick person in the audience to stop coughing. Also, if somebody slurps their coffee at you, you can munch your celery right back at them.
(3) Save your jokes for the middle of the seminar, not the beginning. The audience is already awake at the beginning (unless they're really advanced seminar jocks), and waiting for the jokes will keep them awake through the rest. Especially use a joke transparency at the end.
(4) Write bigger and bigger [16] on each successive transparency. This makes the

audience subconsciously expect that you are building to a big climax. Of course, if you don't have a big climax, then they'll just be sort of dazed at the end (but see (3)).

(5) Use a pointer, and occasionally swing it towards the audience. Then they'll be afraid to fall asleep.

(6) Make up special transparencies with answers to stupid questions. That will impress them, and saves time. Also, in answer to the question, immediately respond, "Oh, that's on my next transparency," no matter where you happen to be keeping it. Then they'll wait before asking the next stupid question, by which time they'll be too embarassed to make you go back.

(7) When answering smart questions, switch back and forth between transparencies and the blackboard. The lights getting switched on and off will drive them crazy, and so discourage further questions. At the very least, the person who's handling the lights will get tired and give up, and the audience will stop asking questions when they can't see the answers.

(8) Put a shill in the audience to ask questions for which you've already prepared clever answers. Then he should say "Oh!" or "I see!" in a way that impresses the audience even if they didn't follow what was going on.

(9) Have commercials every 15 minutes or so. (For example: "Discount tickets to the inside of a black hole! Buy 2 and get a return ticket free! Satisfaction guaranteed or your money back!") Then they can get up and get another cup of coffee, go to the bathroom, etc.

(10) Promise lower taxes.

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E.W., Polynomial Jones and the lagrangian of doom, Xerox of a preliminary version of a preprint;
Knotty Sideburns, Do cosmic strings have cosmoknots?, a preprint I borrowed from that new postdoc in the corner office, you know, the one with the funny accent? (I think he's Albanian. Or maybe Irish. Or a Republican. Or a solid-state physicist. Or maybe he's just got a cold.)[8]
[8] В. Гец, Е. Кангару, М. Рочкок, и Б.З. Гел, Strings 'Я' us, Gulag preprint, in Яussiaи;
W.C. Gall and Weird Al Miković, G-string and Möbius strip-tease, to be unveiled.
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W.C. Gall, No, it was an asshole, CLOUDY preprint;
N.D. Strummingbird, Hey, watch your language!, Sandy Barabara preprint ITP-SB-88-42;
W.C. Gall, Oh, yeah? well, stuff it!, Snotty Brick preprint ITP-SB-88-42;
N.D. Strummingbird, Hold it, *we're* ITP-SB!, Saint Brabrassiere preprint ITP-SB-88-43;
W.C. Gall, Says you!, Stana Borborook preprint ITP-SB-88-43;
N.D. Strummingbird, Well, what kind of stupid reference is this anyway?, Sonty Brar preprint ITP-SB-88-44;
W.C. Gall, Well, if you don't like it, you don't have to read it, Stn. Br. preprint ITP-SB-88-44;
N.D. Strummingbird, At least you could spell my name right, Snt. Br. preprint ITP-SB-88-45;
W.C. Gall, It's my paper, and I'll misspell if I want to!, BS preprint ITP-SB-88-45.

[17] There's no such reference, which you'd know if you weren't just reading the references to see if we referenced you, which we didn't, so there! Just for that, we're not going to reference you in our next paper either! And don't think we don't know who you are: You see that guy reading over your shoulder? I'll bet you didn't notice that he's really laughing at YOU!

[18] W. Siegel, Introduction to string field theory (World Scientific, Singapore, 1988). (There's no such reference as this either; he (they?) paid us to put it here.)

ERRATUM

In sect. -1, the sentence "This is not not theory" should read "This not is not not theory."

ERRATUM TO ERRATUM

No, I think it was right the first time. I mean, yes, it was not right the first time. Well, maybe not.

POSTSCRIPTUM[9]

We have put a worm into our computer program, and thereby wormed some physics out of the computer. So far all we've found that we can understand is the following observation: All (human) physics is just variations of Newton's laws. For example, we have:

[9] That's Latin for postscript, like erratum is Latin for error. Stupid things like that always sound better in Latin. That's why you're allowed to use dirty words in Latin, but people get upset when you say the same thing in English.

$$
\begin{aligned}
&Newton: && F = mA \\
&Yang-Mills: && F = dA \\
&Wess-Zumino: && F = m\bar{A} \\
&Chern-Simons\ with\ mass\ term: && F = m\tilde{A} \quad .
\end{aligned}
$$

Our computer therefore concludes that humans on word processors are no more intelligent than monkeys on typewriters, except maybe for Newton, who started with the original 3-letter equation (requiring him to try a total of 17,476 combinations), and perhaps Einstein, who had to make the series of deductions

$$F = mA \quad \rightarrow \quad E = mB \quad \rightarrow \quad E = mc^2 \quad .$$

Of course, our computer could be pulling our leg, but it also refuses to explain its jokes to us. However, we have determined that the funny squeaking noise its disk drive keeps making (and for which it denies needing any oil[10]) is its way of laughing at us.

ADENOIDS: HOW TO WRITE RECOMMENDATION LETTERS[11]

After most of this work was completed, we were interrupted by the annoying task of writing letters of recommendation for students who think they're going to get jobs. (They seem to think unemployment only happens to the other guy.) Since we noticed that all such letters are almost the same, we made up a form letter:

Dear Professor ~~John Doe,~~ *Jack*

I would like to give my highest possible recommendation for (**Name**) for the position of (position) at your institution. He is the best student we have had in as long as I have been here. On a scale of 1 to Witten, he rates at least a 9.3±0.1. He is not quite good enough for us to hire here, but he is certainly better than anybody you have there. His English is perfect, he is very easy to talk to, and he plays a good game of football.[12] He is currently working on string

[10] "This is a feature, not a bug."

[11] Where the hell are the references?

[12] This term is ambiguous, but is generally assumed to be whichever sport the reader likes better.

theory (specifically, conformal field theory), but, as you can see from his resumé, he has also worked on supersymmetry, lattice gauge theory, accelerator technology, and Reaganomics. He hasn't written any landmark papers yet, but then, neither have you.

Sincerely yours,

Me

Professor M. I

FIGURES

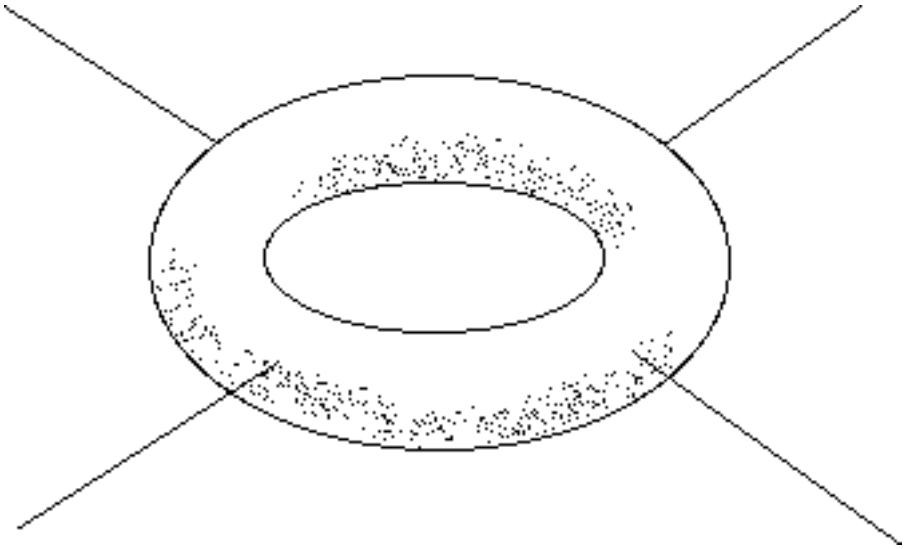

Fig. 1: Accupuncture for doughnuts.

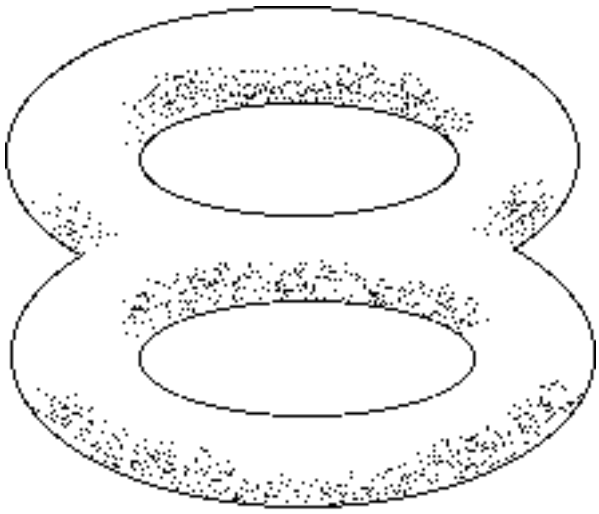

Fig. 2: Doughnuts mating.