

List of Messages in Alphabetical Order:

Carl Bender  
Vineer Bhansali  
David Campbell  
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Boris Kayser  
Stanley Mandelstam  
Jeffrey Mandula  
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Yuval Ne'eman  
David Politzer  
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Lee Smolin  
Robert Socolow  
Paul Steinhardt  
Geoffrey West  
Nino Zichichi  
Bruno Zumino

Information Sheet  
Quantum Field Theory and QCD  
March 18 (afternoon) and March 19, 2005

Please RETURN ASAP (by FAX if possible) to  
Barbara Drauschke  
Department of Physics, Harvard University  
17 Oxford Street, Cambridge, MA 02138

Voice: 617-495-4320

Fax: 617-495-2895

Name: Carl M. Bender

Email Address:

Home Telephone:

Office Telephone:

Fax:

*I am sorry that  
I will not be able  
to attend. I ask you  
to convey my best wishes  
and warmest regards to Sid.  
Carl Bender*

I will attend the banquet and musical event on Friday, March 18: Yes \_\_\_ No X  
(please indicate number attending if more than one)

Banquet seating is limited and will be given on a first come, first served basis.

To make a banquet reservation, please mail a check in the amount of \$55 per person, payable to  
Physics Department, Harvard University as a subvention toward the cost of the dinner.  
Checks will be deposited only when a dinner reservation is confirmed.

For OUT OF TOWN Guests:

**HOTEL INFORMATION:** We have reserved some blocks of rooms. These rooms are available on a first come, first served basis.

1. The Mary Prentiss Inn, 6 Prentiss Street, Cambridge, MA 02140. You may contact the Inn directly at (617) 661-2929, and ask for rooms reserved for the Harvard Physics Department or Barbara Drauschke, by March 1, 2005, at the latest.

2. The Inn at Harvard, 1201 Massachusetts Avenue, Cambridge, MA 02138 (on the site of the old Harvard Square Gulf station). Please contact Barbara Drauschke directly, by February 18, 2005, at the latest, if you wish to reserve a room there.

**OTHER POSSIBLE HOTELS THAT HAVE NOT BEEN BLOCKED:**

Charles Hotel, 617-864-1200  
Sheraton Commander, 617-547-4800  
Harvard Square Hotel, 617-864-5200  
Irving House, 617-547-4600  
Friendly Inn (B&B), 617-547-7851  
Marriott Cambridge (near MIT), 617-494-6600

Carl M. Bender  
Department of Physics  
Washington University  
St. Louis, MO 63130

Subject: Thanks for the invitation  
Date: Mon, 21 Mar 2005 08:45:38 -0800  
From: "Bhansali, Vineer" <Vineer.Bhansali@pimco.com>  
To: <jaffe@math.harvard.edu>  
X-OriginalArrivalTime: 21 Mar 2005 16:45:54.0068 (UTC)  
FILETIME=[7298AD40:01C52E35]

Arthur: it was an amazing and moving event.  
Some thoughts I wanted to share with my friends in finance here....

**Concert of Theoretical Physics Rock Stars  
Cambridge, March 17, 18 2005**

Imagine two days with your favorite rock-stars at close quarters; two days where they talk about their past hits, their current composition, and what they are going to be singing tomorrow- the new sounds you will hear; imagine them telling you how and when and why they wrote it, and how all the riffs came to be - the little details that get left out in the CD. All the outtakes...

Arthur Jaffe invited some, but all attended to pay homage to Sidney Coleman. Science Center B was packed with no room to spare (400+ people?). The next day Jefferson 250 was packed. The density of talent was immense. I counted at least ten Nobel prize winners, but there were probably many more in the audience, many prize winners, many not, but all unique and important minds. Many others who are simply legends of our times. You cannot give the Nobel to everyone - but you can recognize the importance of the work that they have done by using their names to describe natural phenomena. When Witten spoke at the end of the last day there was not an inch (on the stairwell, by the door, on the floor) to spare. Was this a rock concert or what? The roster of speakers rolls off your tongue, if you ever did theoretical physics, as naturally as the name of Newton.

Some talked about the past ('tHooft) - about how he met the American "gangsters" (Sidney and Shelly Glashow), which led to some of the most creative ideas of today's physics. Some (David Gross) talked about the future (25 most important questions). Murray Gell-Mann reminisced about the eightfold way and the fact that "Sidney did not have any problem getting his PhD". Shelly reminisced about his time in Europe with Coleman and spreading the Gell-Mann doctrine. Steve Weinberg outlined his current research, and that he wished "times were better so he could ask Sidney how to make further progress", reprimanding Steinhardt for not including him in the list of Sidney's students.

Imagine Mick Jagger introducing John Lennon when Ken Wilson introduced Steve Weinberg. Or imagine Bono introducing Clapton when Leon cooper introduces Paul Steinhardt, or Norman Ramsey introduces Gross, or Georgi introduces Glashow, or Seiberg introduces Gerard 't Hooft; or when Guth listens to Erick Weinberg play "inflation". I think they were all brought together by the sense of how precious it is to have a creative mind that can create. Hordes of postdocs working on fashionable

problems or tenure seekers cannot do what one person like Coleman can do. Maybe that's why these rock-star theorists *act* like rock stars. Once a species, a mind, becomes extinct, it is gone forever. When I sensed Steve Weinberg's voice shaking, I sensed that he really *needed* to find solutions to his problem, and Sidney was no longer available to help. How long would we have had to wait if Feynman did not invent the diagrams or Einstein did not write down his equations?

When I briefly saw Coleman (who now has advanced Parkinson's), I could see information mostly going in and sometimes coming out. The man who prized nothing but his mind and his wit is now becoming a Black Hole, the horizon quickly contracting - I sat down with him by myself for four minutes (taking my turn in the lineup to say hello to him at dinner); he saw my badge and said, "Oh! Vineer Bhansali, I thought we had lost you to the woods of finance". I said I would like to bring the clarity of Sidney to finance where I now make my living, and he said - "I don't know how to respond to that". I don't know if he meant that he did not want to say what he thought, or whether he could not think what to say. This will remain a mystery for me to figure out - I just wish we could still radiate some useful physics knowledge out of the Black Hole. I spent many years having him help my silly research problems, as did so many others. I was his teaching fellow for field theory and remember many late nights grading exams with him (we started at 10 pm and usually finished at 6 am), having to grade and re-grade every exam because he wanted the students to really know where their logic was faulty. I remember the young ones who took them (Eva Silverstein, Shamit Kachru, Andy and Dan Lee), rock-stars all. Rare brains and rock stars, and carrying on the legacy of the clear mind who taught them how to think. They are off playing their own gigs. I feel I was a groupie at Woodstock. But hey, maybe Jimi Hendrix sort of remembers me...

Vineer Bhansali  
March 21, 2005

**Subject:** Fwd: Words for Sidney  
**From:** Arthur Jaffe <jaffe@math.harvard.edu>  
**Date:** Sun, 20 Mar 2005 00:45:43 -0500  
**To:** Barbara Drauschke <drauschk@math.harvard.edu>

Date: Sat, 19 Mar 2005 09:25:29 -0500  
From: Curtis Callan <ccallan@Princeton.EDU>  
User-Agent: Mozilla/5.0 (Windows; U; Windows NT 5.1; en-US; rv:1.7.3) Gecko/20040910  
X-Accept-Language: en-us, en  
To: jaffe@physics.harvard.edu  
Subject: Words for Sidney  
X-HELO-Mismatch: postoffice01.princeton.edu (Princeton.EDU) [128.112.129.75]

Dear Sidney,

I am very sorry that I am not able to come to your party. But I do want to add my own contribution to the many testimonials of affection and respect that you will be hearing today. I had the great good fortune to spend several years in your orbit when I was starting out in physics and you did a number of things for me for which I am eternally grateful. First of all, you taught me what quantum field theory was all about and inspired me, and many of my contemporaries, to hope that it could be used to explain real particle physics. And history showed that you were right! Second, you were unfailingly generous with your own ideas as well as in helping me make the most of my own occasional glimmers of insight. Your intellectual generosity to your younger colleagues was way out of the ordinary and something that we all appreciated deeply. Third, you were a great friend and companion: we had many good meals and adventures together, either in Cambridge or in some far-flung corner of the physics world, not to speak of countless hours of entertaining conversation over a glass of cognac. You created around you an atmosphere of intellectual excitement and personal friendship which I have carried with me ever since as my ideal of what a life in science should be. Thank you for everything!

Curt Callan

Curtis Callan <ccallan@princeton.edu>

# Boston University

One Sherborn Street  
Boston, Massachusetts 02215

Office of the Provost



February 16, 2005

Dr. John Huth  
Office of the Chair  
Jefferson Physical Laboratory  
Harvard University  
17 Oxford Street  
Cambridge, MA 02138

Dear John,

Thank you so much for the invitation to the talks on March 18 and 19 on "QFT & QCD: Past, Present and Future," dedicated to Sidney Coleman. Unfortunately I will be out of town that weekend and am unable to change my plans.

Please accept my regrets and do convey my best wishes to Sidney. I am sorry to miss such a tribute to our friend and colleague.

With best wishes,

Sincerely,

A handwritten signature in black ink, appearing to read "D. Campbell".

David K. Campbell  
Provost *ad interim*

**Subject:** for folder  
**From:** Arthur Jaffe <jaffe@math.harvard.edu>  
**Date:** Fri, 18 Mar 2005 07:35:05 -0500  
**To:** barbara Drauschke <drauschk@math.harvard.edu>

X-Apparently-To: [millenniumproblems@yahoo.com](mailto:millenniumproblems@yahoo.com) via 68.142.198.100; Thu, 17 Mar 2005 18:50:32 -0800  
Authentication-Results: mta108.mail.sc5.yahoo.com  
  from=thpc22.fnal.gov; domainkeys=neutral (no sig)  
X-Originating-IP: [140.247.28.153]  
Date: Thu, 17 Mar 2005 20:50:30 -0600 (CST)  
From: Boris Kayser <[boris@thpc22.fnal.gov](mailto:boris@thpc22.fnal.gov)>  
To: [jaffe@math.harvard.edu](mailto:jaffe@math.harvard.edu)  
Subject: Message for Sidney Coleman

Hi Arthur,

I would be grateful if you could add the message below for Sidney Coleman to the ones I imagine you must be collecting for tomorrow and Saturday. Thanks!

With best wishes,  
Boris (Kayser)

\*\*\*\*\*

Hi Sidney,

Heartiest congratulations on the wonderful things you have done in physics, and warmest thanks for doing so much to enrich the lives of your colleagues in the physics community. Very best wishes for many happy and fruitful years to come.

Boris Kayser  
March 17, 2005

**Subject:** Fwd: Message to Sidney Coleman  
**From:** Arthur Jaffe <jaffe@math.harvard.edu>  
**Date:** Wed, 16 Mar 2005 21:28:58 -0500  
**To:** barbara Drauschke <drauschk@math.harvard.edu>

X-Apparently-To: [millenniumproblems@yahoo.com](mailto:millenniumproblems@yahoo.com) via 68.142.198.98; Wed, 16 Mar 2005 15:03:06 -0800  
Authentication-Results: mta118.mail.scd.yahoo.com  
  from=thsrv.lbl.gov; domainkeys=neutral (no sig)  
X-Originating-IP: [140.247.28.153]  
Date: Wed, 16 Mar 2005 15:01:53 -0800 (PST)  
From: Stanley Mandelstam <[mandelst@thsrv.lbl.gov](mailto:mandelst@thsrv.lbl.gov)>  
Reply-To: [smandelstam@lbl.gov](mailto:smandelstam@lbl.gov)  
To: [jaffe@physics.harvard.edu](mailto:jaffe@physics.harvard.edu)  
Subject: Message to Sidney Coleman

Dear Sidney,

This is just a note to congratulate you on the conference dedicated to you and to wish you well. The conference is a worthy tribute to all your contributions to our subject. It should be a very good conference and I am sorry I cannot be there. I need hardly say that I was sorry to hear that you were not well and I very much hope that things work out all right.

Best regards,

Stanley

**Subject:** A note for Sidney Coleman  
**From:** "Jeffrey E. Mandula" <mandula@bellatlantic.net>  
**Date:** Fri, 18 Mar 2005 17:14:06 -0500  
**To:** <oconnor@physics.harvard.edu>  
**CC:** <jeffrey.mandula@science.doe.gov>, <mandula@bellatlantic.net>

Dear Sidney,

I am sad to be missing your celebration, although it is probably fitting that it is a medical glitch (a flu of some sort) that is keeping me from Cambridge.

As your student, I acquired a rather peculiar view of theoretical physics. It seemed to me that whatever question I would ask you, the response was always a polished pedagogic demonstration – something more like a rehearsed classroom presentation than an answer created on the spot at the blackboard. It took me some time after my departure from Harvard to learn to distinguish between ordinary questions and research problems.

While all good theoretical work aims at making phenomena comprehensible, the directness with which you approached this task was exceptional. I think that your immediate pursuit of the essence of any problem is what came to define your special role in the world of theoretical physics.

Thank you for giving me a rarified view of what doing theoretical physics is all about!

Congratulations on this special day.

Your student forever,  
Jeff Mandula

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17 Oxford Street, Cambridge, MA 02138

Voice: 617-495-4320

Fax: 617-495-2895

Name: Andre Martin

Switzerland  
Email Address:

Home Telephone:

Office Telephone:

Fax:

SORRY. I AM VERY TOUCHED  
TO BE INVITED TO A CELEBRATION  
IN HONOR OF SIDNEY, FOR  
WHOM I HAVE THE HIGHEST  
ADMIRATION, BUT I SHALL BE  
UNABLE TO ATTEND

I will attend the banquet and musical event on Friday, March 18: Yes  No   
(please indicate number attending if more than one)

Andre Martin

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Friendly Inn (B&B), 617-547-7851  
Marriott Cambridge (near MIT), 617-494-6600

Andre Martin  
Theory Division  
CERN  
CH-1211 Geneva 23

## RUTGERS UNIVERSITY

DEPARTMENT OF PHYSICS

NEW HIGH ENERGY THEORY CENTER, RUTGERS  
PISCATAWAY, NEW JERSEY 08854-8019

Gregory Moore  
email: gmoore@physics.rutgers.edu  
Tel.: (732) 445-4375

Mar. 21, 2005

March 21, 2005

Dear Sidney,

I only got to see you briefly last Saturday, and did not get the chance to express properly my gratitude to you for all that you have done for me. I vividly recall our first meeting - when I was visiting Harvard as a prospective graduate student. You took me to the faculty room and discussed physics with Steve Weinberg, occasionally turning to me to explain things or make a joke. It was instantly clear to me that I should go to Harvard and that I wanted you to be my advisor.

Although, to my regret, we never worked on a paper together I have many happy memories of discussing physics with you at Harvard. Also at Aspen, where you took me on my first Aspen hike (to Cathedral lake). Let me remind you of just one memory I cherish: It was late at night, sometime in 1986. Those were heady days for string theory and some people were making extravagant claims in extravagant language about string theory being the unique theory of nature. Those were also the days when, to check email, you had to go to the terminal room in Lyman and log on to the vax. Well, three of us were there - you, Paul Ginsparg, and myself, and we were joking about the string theory craze. All of a sudden you started laughing and - impromptu - came up with a splendid parody of the formal axioms of set theory. Fortunately, Paul had the presence of mind to write down what you said. Here it is: (you produced two versions in succession):

### Axiomatic String Theory

Axiom 1: If  $S$  is a string theory, then  $\sigma(S)$ , the successor of  $S$ , is also a string theory.

Axiom 2: If  $S$  is unique, then  $\sigma(S)$  is unique.

Axiom 3: There exists one string theory such that it is not  $\sigma(S)$  for any  $S$ .

**Theorem:** Each string theory is unique.

## Axiomatic String Theory (v2)

### Axioms

1. If  $S$  is a string theory, the successor of  $S$ ,  $\sigma(S)$ , is a string theory.
2. There is a unique string theory, the bosonic string, that is not the successor of any string theory.
3. If a property  $P$  holds for the bosonic string, and if it is true that if  $P$  holds for  $S$  it holds for  $\sigma(S)$ , then  $P$  holds for all string theories.

Comment: Since the successor of unique object is obviously unique, we immediately obtain

Witten's Lemma: If  $S$  is a string theory,  $S$  is unique.

I did not know of your terrible illness until the recent conference. Perhaps I should gossip more. I fervently hope it is reversible and that you can fight it, and I wish you all my heartfelt best wishes for a recovery,

Gregory Moore

1 2 pages

Professor Arthur Jaffe  
Maths dept, Harvard University

Dear Arthur,

Many thanks and all my gratitude for the chance I got through your invitation to partake, and in phase, in the salute to Sidney Coleman. Sidney has enriched Physics with his many contributions but I believe we owe him special thanks for the role he played in PERIODS OF CONFUSION and I regard him in our field as the embodiment of Maimonides' "GUIDE TO THE PERPLEXED". There is quite a list of examples, the two most effective (in my view) being his guidance in the 1964-65 "RELATIVISTIC SU(6)" crisis and in the next decade, his "Black Holes as Red Herrings" strike at a threatening cloud of black smoke. I believe Sidney has continued where Wolfgang Pauli left but with better judgment. He has also made physics more approachable with his sense of humour.. Sorry I cannot be in Cambridge physically but I

2

shall join you all telepathically.  
Hearty Greetings to Sidney and  
best wishes for the leftover until  
he gets to the allocated 120!  
Yuval Ne'eman .

X-Apparently-To: millenniumproblems@yahoo.com via 68.142.198.103; Thu, 17 Mar 2005 11:10:51 -0800  
Authentication-Results: mta140.mail.re2.yahoo.com  
  from=slac.stanford.edu; domainkeys=neutral (no sig)  
X-Originating-IP: [140.247.28.153]  
Subject: RE: message  
Date: Thu, 17 Mar 2005 11:10:44 -0800  
X-MS-Has-Attach:  
X-MS-TNEF-Correlator:  
Thread-Topic: message  
Thread-Index: AcUq9UR/Y/hV373mQD6ZhO3Q9K35SwAl2Rsg  
From: "Quinn, Helen" <quinn@slac.stanford.edu>  
To: "Arthur Jaffe" <jaffe@math.harvard.edu>  
X-OriginalArrivalTime: 17 Mar 2005 19:10:44.0508 (UTC) FILETIME=[04D995C0:01C52B25]

Greetings to Sydney and Diana

The first time I met Sydney he terrified me! I was finishing my thesis and Dan, my husband, had an offer from Tufts for a postdoc. Too timid to apply for a Harvard postdoc I nevertheless visited there when Dan was visiting Tufts and asked Sydney if there was any possibility I could be a visitor there if Dan was at Tufts and I had no position. His reply "We're not nasty to anyone without cause" left me thinking I would no doubt soon give him cause. Then he asked about my thesis, and I told him. "Oh", he said, "that's been done, did you know that". Fortunately I knew what he was talking about and could tell him what was missing in that recently published paper. The tone changed, and the rest of our conversation was a friendly physics discussion of the problem. Later I came to enjoy his direct style and acerbic humor that I had taken personally in that first meeting.

Our next meeting was Erice, where, as so often, he gave a stellar set of lectures. My sense of the mind of this man grew, his lectures were clear and interesting, though often it took me some time afterwards to puzzle through what I thought I had understood when he laid it out so clearly. He taught me new ways to look at field theory, more subtle and interesting than the pragmatic Bjorken and Drell approach I had been taught before.

Later I joined the group at Harvard, and was there for six years, first as a visitor, and eventually as an Associate Professor. Both of my children spent their first six months in the Harvard Physics department, where Sydney, along with the rest of the group, not only tolerated this unusual invasion (remember this was the early 70's) but were supportive and amused by it. Most of you probably don't know that Sydney likes babies, but I saw his smile as he interacted with them. Diana was then part of the group too, as our administrative assistant, and she was a great support -- babysitting a child in her office more than once, and indeed coming to my home to be there with Beth when James was born, until Dan got home and my mother arrived.

During my years at Harvard Sydney was a wonderful and generous colleague. Any puzzle interested him, his comments over lunch often provided a clue that led me on to new ideas when I was confused about something. He always saw directly to the heart of the issue. A later example is the idea now known as Peccei Quinn symmetry. I described to him the ideas that Roberto and I were discussing on the subject and our sample model for our solution. I said the idea was more general than the specific model but it was he who pointed out that the key feature of our model was an additional  $U(1)$  symmetry, broken only by QCD instanton effects. Until that moment I had not quite recognized that that was the key to our idea, my mental image of what we had to do was a picture of the multi-Higgs potential, and I had not yet reached the point of describing the key property I knew this potential must have as symmetry property.

I can bet that there are many other papers where Sydney contributed such a key insight -- many more than those where his name appears as an author. That was his style and his true generosity! I have been richer for knowing him, and surely a better physicist for the many times he clarified my muddled thinking or offered an insight to help me move on.

Thank you Sydney!

**Subject:** aforementioned message (fwd)  
**From:** Howard Georgi <georgi@physics.harvard.edu>  
**Date:** Fri, 18 Mar 2005 11:18:37 -0500 (EST)  
**To:** Barbara Drauschke <drauschk@physics.harvard.edu>

----- Forwarded message -----  
Date: Wed, 9 Mar 2005 10:23:01 -0800 (PST)  
From: David Politzer <politzer@theory.caltech.edu>  
To: [georgi@physics.harvard.edu](mailto:georgi@physics.harvard.edu)  
Subject: aforementioned message

Howard --

Here's something that might fit in at the upcoming dinner.

Arthur, not missing a beat, pointed out that, even if I wouldn't be coming, I could send a message of regards. Well, I do really feel bad about not getting to see you all. But it's the actual traveling that I hate, and I had plenty enough last fall and more by necessity coming later in the spring.

As a theory graduate student, I, like the rest of us, simply adored and idolized Sidney. We basked in his erudition and wit and were certain that there was no one in the world who knew more or could explain it better. I attended every course he gave, and even his freshman physics was a gem. Every time I teach Special Relativity, I still do my best to reproduce his discussion of "The Length Paradox" (a parallel presentation with what Sidney gleefully described as "Rockettes'-like precision" alongside the Twin Paradox).

There are an enormous number of stories that could be told. (Has anyone recounted about Gerry in Istanbul? ... I was always transfixed by the cockeyed Sicilian-made American flag and the autographed glossy photo from a Chicago children's TV show that adorned the walls of his office.) And there are a great many tributes that can be made. (I am confident that they will.)

As my own contribution to the present festivities, I thought I'd recount two quips, delivered "voce sotto," as Sidney often called it, in the middle of otherwise normal lectures. They may have long been forgotten by others, but they certainly stayed with me.

1) After writing out a particularly long equation in a course on General Relativity, Sidney paused and said, "You know, when I was young, I used to think that this was the ultimate goal of theoretical physics --- to have an equation so long that it stretched from one end of the blackboard to the other. But that's not it at all. The real pay-off is when you have an idea, turn it into equations and produce a prediction --- 5. And then the experimentalists' report a result ---  $4.6 \pm 0.6$ .

2) At some point in a course on particle symmetries, current algebra, or some such things, Sidney came to what is known as the Coleman-Glashow mass formula. (This is obviously the work he had in mind in the comment I just mentioned.) At this point he said simply, "Make it big when you're young, and you'll never have to work again."

...

aforementioned message (fwd)

Have to or not, he did continue to work, and the impact on the whole world of high energy physics is immeasurable. For a period of at least twenty years, there probably wasn't a theorist who hadn't worked through each and every one of Sidney's tutorials. That's impact.

Best wishes to you all. And don't worry; there really is no way that we could ever thank Sidney enough.

David Politzer

X-Apparently-To: millenniumproblems@yahoo.com via 68.142.198.104; Fri, 18 Mar 2005 07:14:18 -0800  
Authentication-Results: mta172.mail.re2.yahoo.com  
  from=perimeterinstitute.ca; domainkeys=neutral (no sig)  
X-Originating-IP: [140.247.28.153]  
Subject: Message for Sidney  
Date: Fri, 18 Mar 2005 10:18:04 -0500  
X-MS-Has-Attach:  
X-MS-TNEF-Correlator:  
Thread-Topic: Message for Sidney  
Thread-Index: AcUrza4xmJr4OTjmSF2fjerlNs3h2w==  
From: "Lee Smolin" <lsmolin@perimeterinstitute.ca>  
To: "Lee Smolin" <lsmolin@perimeterinstitute.ca>, <jaffe@math.harvard.edu>

Dear Arthur,

I'm afraid I was not able to change plans to be there today. The following is a message to be read or transmitted to Sidney, as you judge best. Please tell him also that I'd be very pleased to see him when I come to Harvard Smithsonian in May. And thanks for doing this.

Lee

-----

Dear Sidney,

I am very sorry that the pressure of previous commitments prevents me from being with you and your many friends on this day. If I may nevertheless, I would like to send a few words of appreciation. After many years and students of my own I have gained an understanding of the many different ways to be an advisor. In my case, you gave me the two most precious things an advisor can grant, which is freedom and the confidence to support where the student takes that freedom.

Harvard was then not an easy place to be a graduate student. One felt one was in a highly charged environment, where respect had to be earned, by showing one could do real work in theory. One thing that all of your students appreciated at the time was that you showed us all respect and treated us as young colleagues.

Younger people will not appreciate how unusual it was then for a student to show up wanting to work in quantum gravity. You made a deal with me: you gave me a year to try to do what I wanted. If I found there was nothing I could do in quantum gravity then you would suggest a problem in the standard model. Then you also gave me the gift of sharing my supervision with Stanley, one of the very few people working in quantum gravity at the time.

Well, I was fortunate and didn't have to ask you for a problem. For a long time I felt lucky, but from time to time I find myself wondering what that problem would have been. In fact, if you have a good problem to suggest, perhaps I've learned enough by now that I'm ready to listen to your advice.

With all best wishes,

You student,

Lee

-----

Sent from my BlackBerry Wireless Handheld

## Reminiscences of Sidney Coleman

Robert Socolow

March 14, 2005

I was Sidney's first student. I worked with Sidney from 1962 to 1964, the last two of my four years in the Harvard Physics Department. In my third year, Sidney was a Fellow, he taught a wonderful field theory course, and he was appointed an Assistant Professor -- but only after the Department hauled Dick Friedberg up from Columbia to give a lecture, so the Department could be absolutely sure that in Sidney it had found the absolutely smartest young physicist in the world.

When Sidney was still a graduate student at Cal Tech with Murray Gell-Mann, Shelly Glashow and he discovered the Coleman-Glashow formula, relating the electromagnetic mass differences among the members of the proton family in the Eightfold Way. My thesis problem was an extension of this work. Shelly was a visitor to the Department, on leave from Berkeley, for some of that time, and I worked with both of them. One onlooker referred to Sidney, Shelly and me as a symmetry triplet, and then went on to note that the symmetry was badly broken.

Sidney could not have been a better thesis advisor. He steered without overwhelming me, and he read critically every word I wrote. Above all, he kept the light on at the end of the tunnel. He believed in quick Ph.D.'s -- that time spent as a graduate student was not an estimable part of a life. Evidently his belief was strong enough to prevail, at least in my case, even as Julian Schwinger's students toiled beside me into their eighth and ninth years.

Physics was enchanted in those years. We were all under the spell of Murray. I remember the elation when, in the fall of my fourth year, we learned that the Omega Minus had been discovered. With the encouragement of Shelly and Sidney, I made some of the first calculations of the branching ratios for its decay. New physics was never available with so little agony, before or since.

I stopped doing what physicists recognize as physics when I was in my early thirties. But I carried the ways of thinking of physics into work on energy and the environment: simplify, work out limiting cases, investigate contradictions, and this... A 3x5 index card was scotch-taped to the door to Sidney's inner office, and on it was a single sentence: "In order to know the truth, it is necessary to imagine a thousand falsehoods." Nothing I have heard or read since then better captures the spirit of theoretical physics, and its transferability to other domains.

Date: Sat, 19 Mar 2005 12:40:23 -0500  
From: "Paul J. Steinhardt" <[steinh@Princeton.EDU](mailto:steinh@Princeton.EDU)>  
Organization: Princeton University  
User-Agent: Mozilla/5.0 (Macintosh; U; PPC Mac OS X Mach-O; en-US; rv:1.7)  
Gecko/20040616  
X-Accept-Language: en-us, en  
To: [jaffe@physics.harvard.edu](mailto:jaffe@physics.harvard.edu)  
Subject: thanks  
X-HELO-Mismatch: postoffice02.princeton.edu (Princeton.EDU) [128.112.130.38]

Hi, Arthur,

I managed to get back by 3 AM this morning.

I want to thank you on behalf of all of Sidney's students for making this event happen. We all wish that Sidney were in better health and able to enjoy the celebration. And, I can imagine all the logistical and emotional hurdles you had to surmount. You have done a very, very good thing.

Best regards,

Paul

**Subject:** Fwd: sidney  
**From:** Arthur Jaffe <jaffe@math.harvard.edu>  
**Date:** Sat, 19 Mar 2005 07:35:17 -0500  
**To:** Barbara Drauschke <drauschk@math.harvard.edu>

To: [jaffe@physics.harvard.edu](mailto:jaffe@physics.harvard.edu)  
From: "Geoffrey B. West" <[gbw@santafe.edu](mailto:gbw@santafe.edu)>  
Subject: sidney  
Date: Mon, 14 Mar 2005 20:31:03 -0700  
X-Mailer: Apple Mail (2.619.2)

Arthur,

I never received an official invitation to the Sidneyfest which hurt a little since I consider Sidney an old friend going back to the days when I was a post-doc at Harvard and Sidney (with the help of Shelley) made me feel inadequate at every turn. Over the years I got tremendous enjoyment from my many interactions with him wherever we met from Harvard to CERN, Aspen, Berkeley, Los Alamos, etc, etc. I was deeply upset when I learnt of his plight (first from you when you were at SFI) and had hoped (and still hope) that there will be a turn-around. I am also deeply moved by the honour the Harvard Physics Dept and the Physics community is bestowing on him with this event.

Ironically I will actually be at Harvard this Thurs and Fri giving lectures in the Systems Biology Dept but my schedule is such that I cannot attend the events honouring him. My second talk is Fri afternoon after which I leave (about 4.00) for a flight to London! I am quite frustrated by this but there is no way of changing the schedule (the talk is analogous to the "all-Boston" seminar). So, could you please pass on to Sidney my very best wishes and tell him that I have very fond memories of him even when he made me feel like I understood even less than I thought.

Meanwhile I hope that you'll make it to the Science Board at SFI in May and look forward to seeing you then.

Best regards,  
Geoffrey

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Professor Geoffrey B. West  
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Distinguished Professor  
Santa Fe Institute  
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Santa Fe, NM 87501  
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My dear Sid,

I would very much have liked to be with you in person, but unfortunately, due to a previous long-standing engagement, this has not proved to be possible. Your book with the superb lectures you gave in Erice over a period of 14 years, the period of the famous triumph of quantum field theory, is now a classic and renowned world-wide. It is with great pleasure that I recall you being the Best Erice Lecturer, a unique gold medal in more than 40 years of activities covering all fields of advanced knowledge and over 100 thousand scientists following our Schools.

I am really sorry not to be with you for the celebrations which Harvard University is dedicating to you. I wish you all the best, and send you my warmest greetings. I am sure that you still have a lot to contribute to the field of physics.

As ever, Nino.



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February 7, 2005

Professor Bruno Zumino  
Department of Physics  
University of California  
Berkeley, CA 94720

Dear Bruno,

The Harvard Department of Physics is planning a few talks on the theme QFT & QCD: Past, Present and Future dedicated to Sidney Coleman. Sidney has given us his blessing to carry out this plan. We write to advise you of this event and to invite you to attend on Friday afternoon, March 18, and Saturday, March 19.

We apologize for such short notice, but circumstances worked out that way. Since time is short, please return the accompanying information sheet as soon as possible, by FAX if you can.

Scheduling details of the meeting will soon be posted on the Harvard website [www.physics.harvard.edu](http://www.physics.harvard.edu). I certainly hope that you will be able to join us in March.

Yours sincerely,

John Huth

Enclosure: Information Sheet

*Dear John,*

*I am very sorry that I will not be able to attend. Sidney is a good friend of mine. He deserves recognition and more awards that were given to him for his outstanding and original work in many subjects in theoretical physics. I wish him happiness and great success in the coming years.*  
*Bruno*