How to Make Sure Your Talk Doesn't Suck

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This is an annotated version of a talk I gave at a summer school for first year graduate students in theoretical physics. Anything sitting in a box, like this, summarizes what I said about each slide. Or, at least, what I meant to say.

It’s Good to Talk

The talks that you give *will*
determine the jobs that you get.

It’s important to give seminars. It’s almost certainly more important than you realise. Of course, you have to do good work, and you have to write papers that you’re proud of. But this isn’t enough to guarantee that you will succeed. To be blunt: no one will read your papers. And, if someone does, chances are that the paper includes your supervisor, or other collaborators, as co-authors and your contribution may not be appreciated. Going around and giving talks is the main method that you have to advertise your work, and more importantly, to advertise yourself.

I can put this in perspective. I did four postdocs before coming to Cambridge. And for three of these I can pinpoint the talk that got me the job --- meaning that, if I hadn’t given that talk, I wouldn’t have been offered that job.

This means that it’s important to give as many talks as you can.

Ways in which you can suck

In case it’s not obvious, what follows are examples of what *not* to do

Assume the Audience is Omniscient

Introduction

As you all know, the remarkable Kontsevich-Soibelman wall-crossing formula is given by

$$\frac{d}{du}\left(\prod_{-Z_\gamma(u)\in\mathcal{V}} \mathcal{K}_\gamma^{\Omega(\gamma;u)}\right) = 0$$

The number one pitfall that students fall into is simply pitching the talk way too high. And it's understandable. I remember as a grad student that there seemed to be a chasm between what I knew and what everyone else knew. And this meant that, obviously, everyone else already knew everything that I knew.

Of course, this isn't the case. If you're one year into a PhD it means that you've spent one year studying a fairly specialized topic that isn't common knowledge. And you need to be aware of this when giving talks.

There's no hard and fast rule which determines the amount of knowledge you can assume of your audience. It depends very much on who you're speaking to and you should try to get a good idea of this when preparing the talk. But a good rule of thumb is that anything taught at an advanced Masters level --- say a the level of Part III in Cambridge --- can be assumed to be common knowledge, as can material that is covered over and over in many seminars.

However, it's extremely hard to make a talk too simple. (It can be done. I once saw a famous physicist give a talk at the TASI summer school which I'd previously seen them give when trying to sell their latest bestseller at a bookstore.)

Acknowledge the Expert in the Room…

…by saying “But, of course, I don’t need to explain that to *this* audience”

Another extremely common pitfall, is to pitch the talk at a single expert in the audience, ignoring the many graduate students and postdocs that are present. Perhaps there's one person in the room whose work plays a fundamental role in your talk. But you still need to explain this for the benefit of everyone else.

Just because Einstein is sitting in the front row, doesn't mean that poor Peter Debye in the corner knows what the black ring solution in AdS_5 looks like.

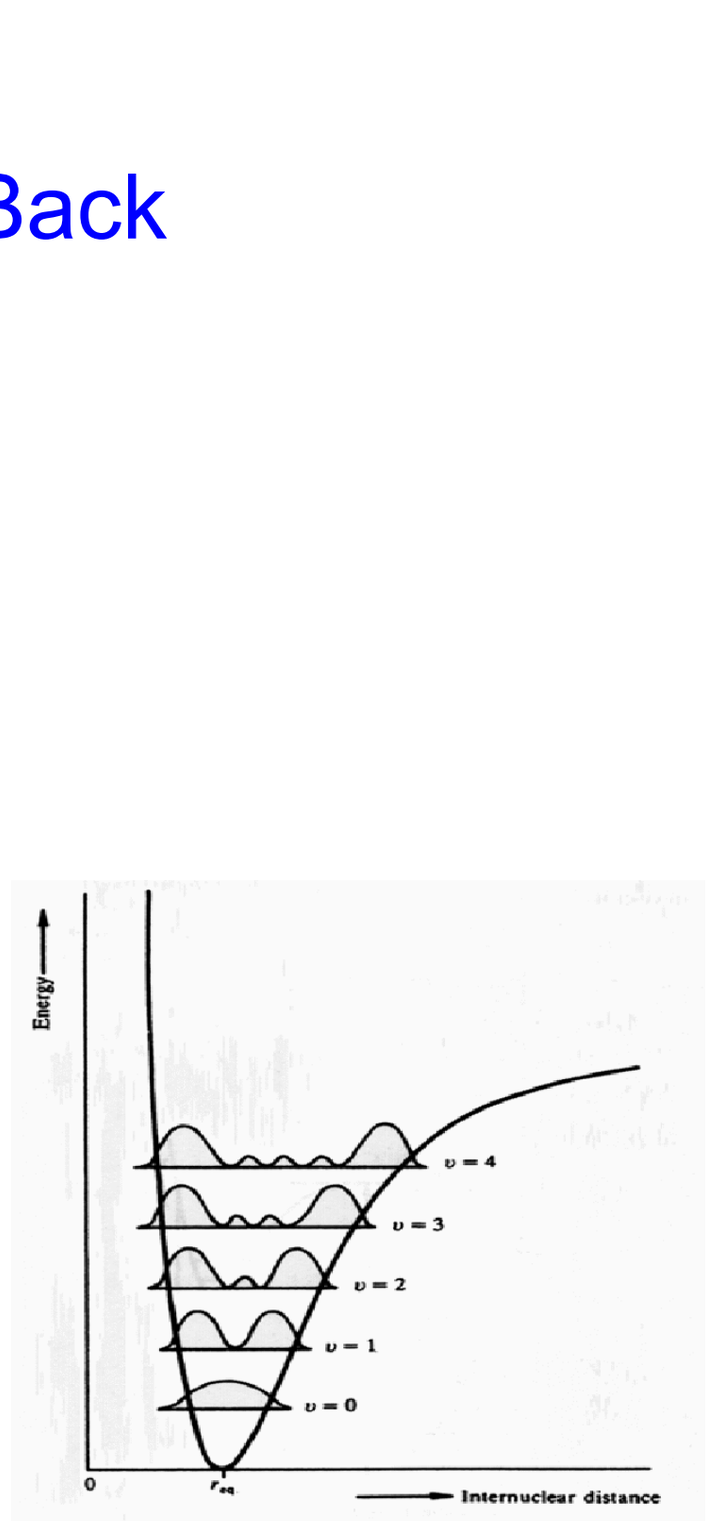
Show the Audience Your Back

(and mumble)

Introduction

- The problem of bound states in strongly coupled quantum field theory is difficult.

- A recent mathematical development by Kontsevich and Soibelman solves this problem in supersymmetric theories



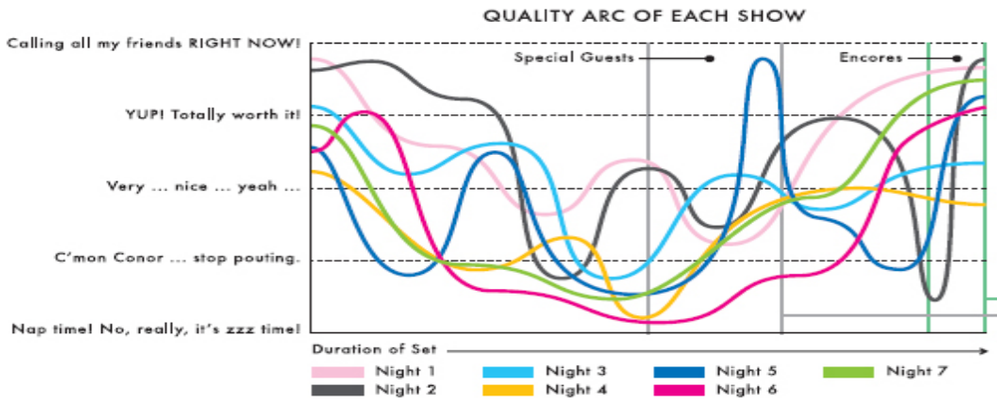
People relate to the human face much better than the human arse.

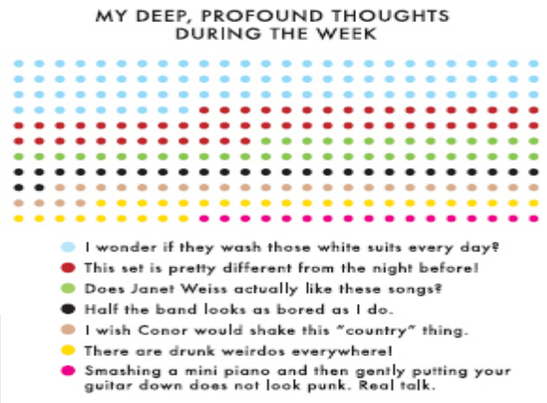
Look at your audience. Make eye contact. It doesn't matter how clear your explanations are, if you can't engage your audience, people will turn off.

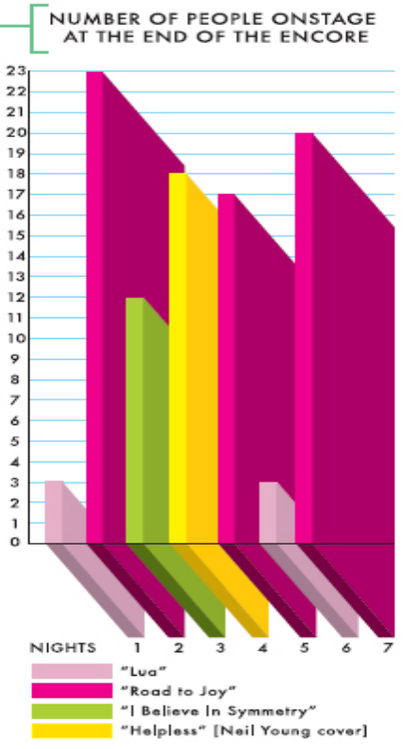
[There followed a miserable performance in which I faced the board and tried to mumble, but completely failed to make my voice inaudible.]

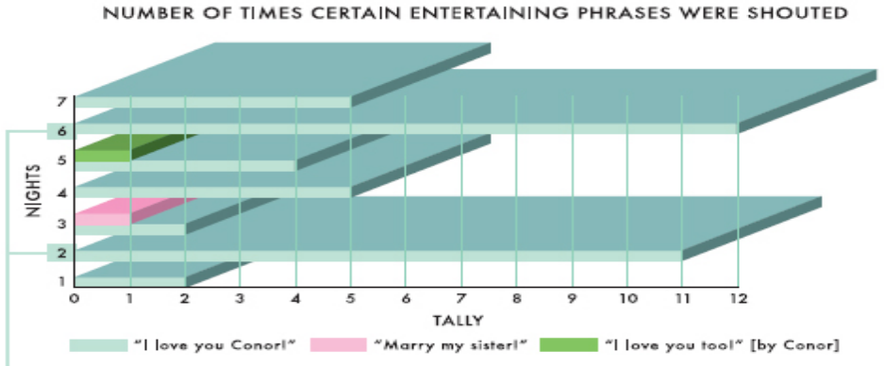
Get as Much on That Page as Possible

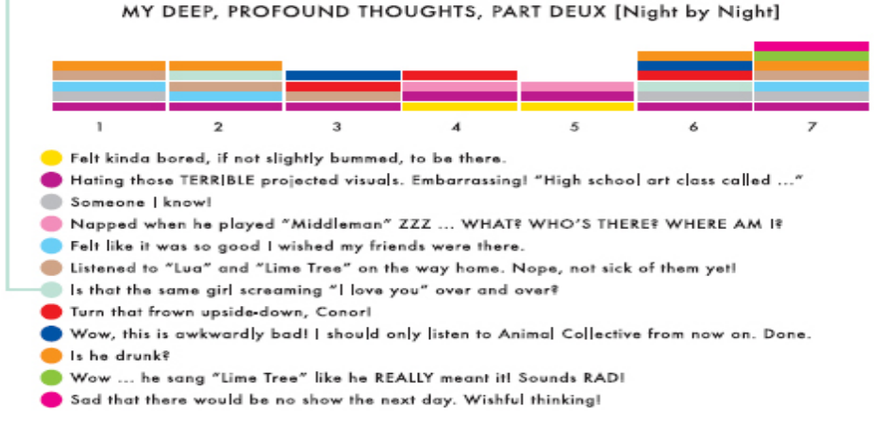
(and speak really fast)

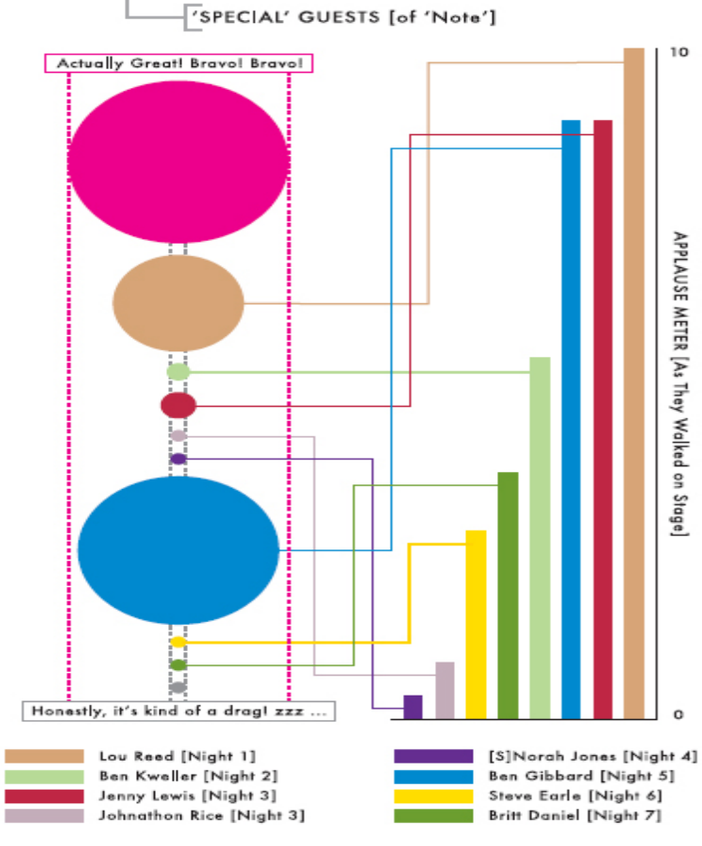


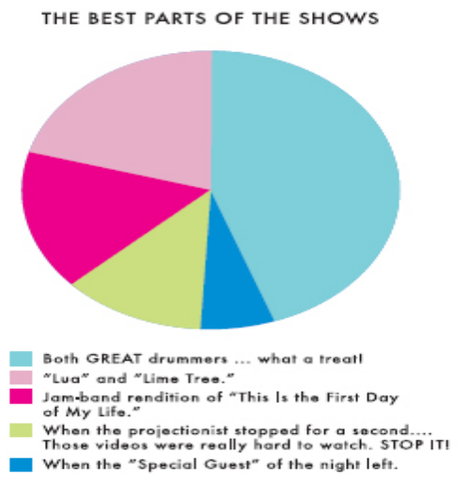












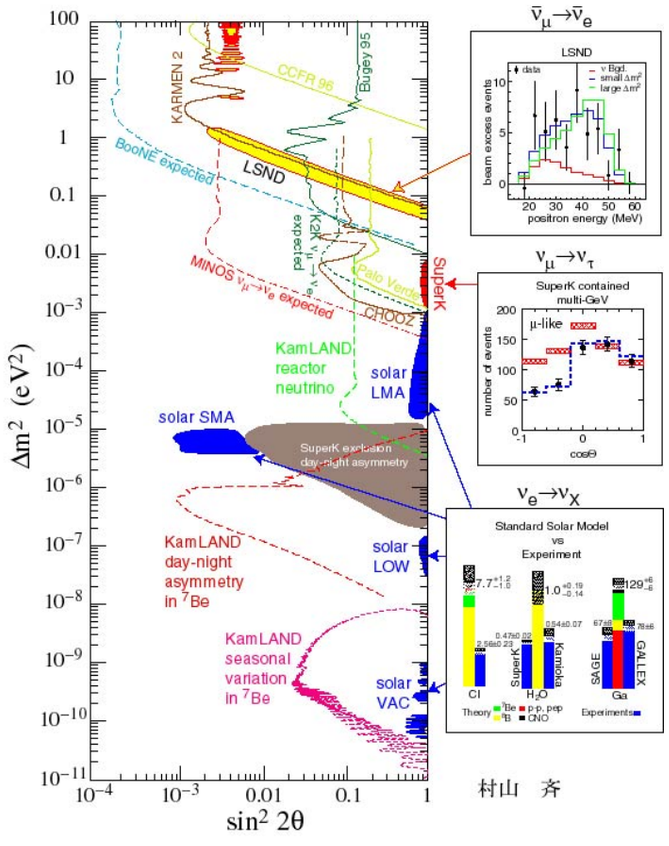
This one’s fairly self-explanatory. Keep the slides clean and simple. Just because you display more and speak faster doesn’t mean that people will learn more. The concept of baud rate is important.

Say “I know you can’t read this but…”

- Make sure all your graphs are tiny and illegible. Never label the axes.
- Throw in equations that are just cut and pasted from a paper with lots of indices and redundant notation that won’t actually be relevant for the talk

$$\mathcal{L}_6 = QQQL, \bar{L}\sigma^{\mu\nu}W_{\mu\nu}He, W^{\mu}_{\nu}W^{\nu}_{\lambda}B^{\lambda}_{\mu}, (H^{\dagger}D_{\mu}H)(H^{\dagger}D^{\mu}H), \cdots$$

- Use stupid colours. Green on white is always a good idea



Just Read to the Audience

Another common technique is the following. You write every single thing that you want to say on the slide, turn to the screen, and you simply read. Now, this isn't a completely terrible technique. If you read it well, and pause in the right places, it can be quite effective. In fact, Ashoke Sen uses this technique and gives some of the clearest talks I've seen. But he's Ashoke Sen. And we're not. On the whole I wouldn't recommend it.

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But that’s not the way people learn in seminars. It’s not a linear process. People scan backwards and forwards, trying to build the big picture and fill in the gaps in their understanding. It’s one reason why a blackboard is often better than slides.

I've noticed that the striptease technique is less common now than it was ten years ago, and it's mostly older scientists who still use it. I suspect that, in the 1970's, there was a guy going around summer schools giving lectures like this one, saying "I've got this great new way to teach people: you cover up the transparency with a piece of paper, and you slowly pull it down to reveal your calculations. It's a pedagogical breakthrough…."

How not to suck

Simple, Obvious Advice

- Put a lot of effort into writing a talk. (At least a day.)
- Practice.
- Be aware. Learn from other people's talks.

I have a lot less advice to give on how to make your talk good, than on how to avoid making it bad. Some things are obvious. Work hard at it. (It took me one day to prepare this, and a further two hours of practice). Watch other people's seminars and figure out for yourself what makes a good speaker, and a good talk.

The Structure of the Talk

In this talk, I focussed mainly on presentational issues. With more time, I would have also described the structure of a good talk. However, much of my advice would have been lifted straight out of an excellent article by Bob Geroch, which can be found at gr-qc/9703019.

The Presentation

- Decide which method suits you best. (And suits the talk best.)

- My opinion: blackboard > powerpoint slides
  - This is not universally accepted!

Blackboard talks are guaranteed to proceed at a reasonable pace, and much of the information remains on the board for the audience to review. Also, I find that I can deliver blackboard talks with much more energy than powerpoint presentations. But sometimes, like now, powerpoint is simply more appropriate.

The Pointer

Stick > Laser pointer >> Mouse on Screen

It’s useful to use a pointer to guide people through calculation and graphs. A solid stick is best. Laser pointers tend to move too fast. Also, if you’re nervous, the tiny shakes of your hand are amplified to enormous oscillations of the screen.

Never use the mouse pointer. You will give your audience an epileptic fit.

Coping with Nerves

- Take a bottle of water. Or a glass of wine.
- Learn the first 3-4 minutes by heart to get into your stride
- Invite questions early

The last piece advice may sound paradoxical, but it’s much easier to relax when having a one-on-one dialogue with someone than when standing on stage attempting a monologue

Dealing with nerves is one of the hardest parts of giving a talk. And I don’t have any magical advice. Other than to say that nerves aren’t necessarily a bad thing. They get the adrenaline flowing. Talks I give where I’m not nervous usually bomb.

The Golden Rule

- Never never never go over time.
- Never.
- You might think that, given another five minutes, you can get more across. But you're wrong. No one is listening at that point. You are merely pissing people off.

The End

Don’t leave that awkward silence hanging, where the audience don’t know if you’ve finished or are just having a deep thought.

That’s all I have to say. Thank you for listening.