Stats Songs: A Musical Tribute

From the Sequoia Christmas Party 2003:

This is a story about being a grad student in the Stats department at Stanford. What is the first year like?

A Hard Study Night (Hard Day's Night)

It's been a hard study night, and I've been working like a dog
It's been a hard study night, even when sleeping I take the log
Cause I got homework to do, have weak convergence to prove
pages of formulas to write

You know I work all day to figure out all these crazy things
And it's worth if I can get an A
My dad will give me everything
So why on earth should I moan, 'cause with these old solutions
300 is a piece of cake

When in class everything seems to be right
When I'm home, nothing makes sense, I feel tight, tight

It's been a hard study night, and I been working like a dog
It's been a hard study night, even when sleeping I take the log
But why on earth should I moan, 'cause with these old solutions
300 is a piece of cake

Eight Days a Week

D#
Ooh I need S-plus babe,
Got to strap a boot.
It will take ten hours, babe
If I use a loop
Code it, solve it, show it, prove it.
Ain't got nothing but homework,
Eight days a week.

Theorems every day girl,
Always on my mind.
Got to keep on working,
Or else I'll fall behind.
Code it, solve it, show it, prove it.
Ain't got nothing but homework,
Eight days a week.

Eight days a week, with homework.
Eight days a week
Is not enough to absorb Durrett.

Theorems every day girl…

Eight days a week ....

Yes, we work hard, and we struggle with difficult concepts, like Bayesian theory.

I got you Bayes (I Got You Babe)

C
They say that your assumptions are strong,
You have your critics, but I know you can't be wrong.
Well I don't know if your prior is true
but you got me, and Bayes-ie I got you.

Bayes, I got you Bayes, I got you Bayes…

Minimize average risk,
I can't stand frequentists.
When the prior's bad it might let you down,
But do not get scared Persi's always around.
                                                              G G#
C#
You're so easy to learn, you're so easy to see
Unless you're taught from chapter 4 TPE
We'll never forget you, never at all,
At least until after we finish the quals.

And eventually, there is the culmination of the first year.

Here Come the Quals (Here Comes the Sun)

D
Little first year, it's been a long and lonely summer
Little first year, it's been one year that we've been here
Here come the quals, here come the quals
And I say it's all right

Little first year, the amount to study is overwhelming
Little first year, it will be years 'till you leave here
Here come the quals, here come the quals
And I say it's all right

Quals, quals, quals, here they come...
Quals, quals, quals, better run...

Little first year, I feel my brain is slowly melting
Little first year, it seems like years since it's been clear
Here come the quals, here come the quals
And profs say "That's all wrong".

If everything goes well, we move on to the second year. Then we have no idea what to do, but we have to keep ourselves busy with something. For example, we teach. Here's a song to sing to the undergraduates on the first day of Stat 60 section.

I Want to Teach You Stats (I Want to Hold Your Hand)

C
Oh yeah, I'll teach you something,
I hope you'll understand.
Let's start testing something
I want to teach you Stats, x 3

Oh please, say to me
If you don't understand
And please, don't fall asleep
Just please raise your hand.
Now let me see your hand,
Come on and raise your hand.

And when I teach you, I feel happy inside.
It's such a feeling to feel smart
I can't hide, I can't hide, I can't hide.

Yeah, you, please ask something,
How much math can you stand?
Let's now estimate something
I want to teach you Stats. x 3

No wonder nobody asks anything. We do the same thing when we go to class. What are we thinking about while sitting there in the classroom?

X-Y-Z, Theta-Pi (Obla Di Olba Da)

What proof is he doing on the board today?
All I know is I don't understand
I can't read his writing, but what can I say?
I'm much too timid and I'll never raise my hand

x-y-z, theta-pi, class goes on, brah!
La-la-la-la, class goes on

In a couple of years they have built a theory, nice theory
With a couple of kids running in the back
the grad students doing the work.

Happy is the master that we call the prof.
Long live my superior advisor
I can't understand him, but I do my job
I'm much too timid and I'll never say a word

x-y-z, theta-pi grad school rocks, brah!
La-la-la-la, grad school rocks!

And if you want some fun, take x-y-z-mu-pi

We keep ourselves busy too by doing consulting. We feel good because people need us. They come to us from all over campus screaming…

Help!

C
Help, I need somebody,
Help, a student, anybody,
Help, I need some help with Stats, help!

When I was doing my experiment today
I never needed any kind of help from my TA
but now the survey is done, and I don't feel so sure
how to find the regression line, significant predictors

Help me if you can, I'm feeling drowned
And I do appreciate your drop-in hours.
Help me get my data figured out,
Won't you please, please help me.

I need your expertise, but I don't want to pay
And my design is flawed in oh so many ways
But I can't find Sequoia, and I don't know what to do
Oh here it is, this must be it: a building called SEQ!

Help me if you can…

The third and forth year roll by and at some point we have to do some work. That's when we run up against the department's computing resources.

Miller (Cecelia)

Miller, you're breaking my heart
You ruin my work almost daily
R.G. Miller, I'm down on my knees
I'm begging you please to be up, come on up

Working hard in the afternoon
Simulations in my office room
Suddenly the screen goes blank
Naras tells me it crashed, will be down for 3 days

Miller...

Jubilation! It's running again
Maybe this old machine still has use
Jubilation! It's running again
Now I need another excuse... not to work

But our experience would just not be the same if we didn't have our wonderful secretaries.

Let Me Eat (Let It Be)

When I find myself in times of trouble
Mother Helen comes to me
Speaking words of wisdom, in Greek.
And in my hour of hunger
She has always an extra cookie
Right before the seminar, a cookie.

Let me eat, let me eat, let me eat, let me eat.
Don't care about the seminar, let me eat.

Hey Judi (Hey Jude)

Hey Judi, I've been so bad
I turned the heat on in the PC room
I rigged up the radiators to creak
And stole from the fridge all the party food

Hey Judi, I'm so afraid
Didn't show up to give my section
I once was a good choice for student rep
But now I'm facing a recall election

And anytime work is a pain, I just refrain
I'm in my twelfth year and getting older
And by the time I graduate, I'll get a date
And hell will be truly frozen over

Hey Judi, I've been so bad
I turned the heat on in the PC room
I rigged up the radiators to creak
And stole from the fridge all the party food

Na-na-na... hey Judi

Years of frustrating research may pass, but despite it all, the hard works eventually pays off. How exciting, we might be able to graduate after all! We have results!

It's .05 (My Boyfriend's back)

G
The p-value's low and I'm gonna get it published
Heh-na, heh-na, it's .05

The p-value is low and the journal isn't rubbish
Heh-na, heh-na, it's .05

Yeah, my paper got accepted
Null hypothesis rejected
Heh-na, heh-na, it's .05

The effect is microscopic but I got four thousand patients
Heh-na, heh-na, it's .05

Now people will forget my bad TA evaluations
Heh-na, heh-na, it's .05

Yeah, my paper got accepted
Null hypothesis rejected
Heh-na, heh-na, it's .05
Heh-na, heh-na, it's .05
Heh-na, heh-na, it's .05

Truly, we are very happy to be part of this department. Being in statistics is great. Everybody is talking about it. It is the field of the future.

Give Stats a Chance (Give Peace a Chance)

Everybody's talking about
Classification, estimation, information, validation,
Integration, derivation, expectation, deviation
All we are saying is give Stats a chance

Everybody's talking about
Simulation, computation, transformation, model selection,
linear regression, ridge regression, spline regression,
logistic regression
All we are saying is give Stats a chance

Everybody's talking about
Univariate, multivariate, distribution, convolution
Maximizer, minimizer, analyzer, optimizer
Databases, smoothing bases, wavelet bases,
So amazing!
All we are saying is give Stats a chance

Stats Songs Continued

From the Departmental BBQ 2004:

These songs are longer and less thematically tight – the result of having a thesis to write. This one was started in a 2nd floor office early one morning.

Sequoia's Silence (Sounds of Silence)

Cm
Hello Miller my old friend,
I've come to work on you again.
Because and idea that I must flaw
Was told to me by my advisor,
And the program that is now making you chug
Has a bug,
Within Sequoia's silence.

It's morning time and I'm alone,
Even Lai has gone on home.
'Till 10 o'clock the halls upstairs will be
With offices completely empty.
While downstairs, Helen fills the coffee pot
There's not a lot
To break Sequoia's silence

The conference deadline is next week
I'm working out how I can tweak
My results so that they look convincing
And get them through the refereeing.
No one's around to ask me for advice,
That's kind of nice
I like Sequoia's silence.

Things that I do not know;
My office hours seem to show.
Come to me and I will teach out
All the things a Chi-squared can do.
But my words, like strange Greek letters fell
Who can tell
What breaks Sequoia's silence.

And the students bowed and prayed
About the problem sets I grade.
Some bitch about how much I marked wrong
Some wonder where these tests all came from;
I just say "The pictures of past profs are hanging on the lounge room walls."
Then evening's fall
Brings back Sequoia's silence.

We all know where power rests in our department. This is a tribute to a fan of the Grateful Dead.

Touch of Gray (Touch of Grey)

G
Admit committee's forming,
Applications running late
GREs not yet collected
Might be phony.

Peoplesoft is everywhere
Lots of courses, no time spare
Can't make entries, I don't care
'Cause, it's all right.

And time goes by, and students cry
Miller will die, I will survive

I see you've got your forms out.
Now I'm going to talk about
The baseball game I saw last week.
It's all right.

Central Admin is all fools!
That just lets me bend the rules;
Every Stat degree has got a
Touch of Gray.

Don't ask me why, don't even try,
I'll get it by, you will survive.

And it's a pleasure to me,
Weekends in Santa Cruz at the Beach;
A wedding whim out in Reno
Helen's party's, ready to go.

The summer sun is on the trees,
Sit and smoke beneath the leaves,
Talk to who-ever you please
And it's all right.

Oh well a Touch of Gray
Suits Sequoia anyway
And we know she's here to stay
And it's all right.

And time will fly, old Sequoia died
Finances slide, She has survived.

We will get by, we will get by
We will get by, we will survive.

Think of this as a plea to the gods:

Graduation(Mercedes Benz)

C
Oh Naras, won't you buy me a new Pentium?
EEs all have laptops, we must make amends.
Worked hard on my research it's time to defend.
So Naras, won't you buy me a new Pentium?

Oh please, can we purchase a new projector?
These two keep dying, they're starting to blur.
All the faculty seem to concur.
We're embarrassed each time there's a new visitor.

Oh Trev, can you find me and internship please?
I need cash this Summer, the rent is a squeeze.
I'm at the affiliates day, down on my knees,
Just so I don't end up out under the trees.

Oh lord, won't you find me a thesis topic?
I've lots of ideas which don't seem to fit.
For each one I'll spend hours programming it;
The theory all looks nice, but in practice it's shit.

Oh Judi, please process my graduation!
I have all the forms here, it won't take too long.
My job is awaiting, so before it goes wrong,
Judi, please process my graduation!

This one is self-explanatory but it was inspired by Weird-Al Yankovic.

The Bootstrap Begins (American Pie)

C
Long long time ago,
Ingram can still remember when
ANOVA used to be the thing.
Small samples were all that we had
And of the Normal we were glad
And we all said R.A. Fisher was our king.
But my data would never fit,
No matter how I transformed it.
Significance was too low;
I did not know where to go.
My referees all called it "crap",
When a thought hit me with a slap:
"You should try out the bootstrap."
That's how I got published.

CHORUS (slow):

My, my, this assumptions a lie,
But if we bootstrap we can use it and the paper will fly.
We'll resample and kiss the normal goodbye
Singing "Theory is too hard for this guy".

Well Tukey in the olden days
Used to sing the Jack-knife's praise
'Though no-one knew exactly what it did.
Mann and Whitney and Signed Ranks
Received our non-parametric thanks
When non-normality could not be hid.
But if the data was over-dispersed
And transforms seemed to make it worse:
The Chi-squared wouldn't work
The doctors went berserk!
But Brad told us to resample,
A few hundred times should be ample;
Use the histogram empirical
We'll call that the bootstrap.

CHORUS

Do you know that our confidence
Can be put in places that make sense
Even when the distribution is unknown?
Do you have processing power
To run this scheme within an hour
And find a result that's not yet been shown?
Any applied statistician
Will almost always say "I can!"
What ever task you bring
"We'll bootstrap anything."

A distribution we can plot
For any statistic you've got;
You've stepped into the perfect shop
Here's the best thing on the lot.

CHORUS

Twenty-five long years have come and gone
Since Efron's idea came along
And now you see it everywhere.
With computers now so very fast
Simulation is a blast
And for all that theory we don't really care.
Though Donoho still rails away
At the lack of rigor found today;
Models are complicated,
Distributions are not stated.
And though there is no guarantee
That the truth is what we'll see,
When consulting comes to me
I'll still say "Let's bootstrap".

CHORUS (x2: soft then fast)

Miscellany

This one was submitted as the back page of Giles' thesis; Armin gave the first public performance at the 2004 Christmas party.

I'm Graduating In the Summer (I'm Getting Married in the Morning)

I'm Graduating in the Summer,
Doctoral glory will be mine!
Congratulate me,
Publish and féte me,
But get my thesis in on time!

Reading committee is assembled
Making corrections line by line.
But they're still waiting
While I'm procrastinating.
Just get my thesis in on time!

If I am sleeping, come get me up!
If I am dozing, someone fill my coffee cup!

I've got to submit by September,
Work that is worthy of my prime.
And though I try writing,
The web is so inviting
I think I'll look up news this time.

Sun's shining brightly on the Oval,
Staying indoors is just a crime!
But I'm still lurking,
These halls, and still not working
To get my thesis in on time!

They're playing frisbee: pull down my blind,
I'm at a party; tell me not to waste my mind.

And hopefully:

I'll have graduated in the summer,
Answering to 'doctor' seems so fine!
And any letter from me
Will finish with 'PhD':
I'll have my thesis in,
I'll have my thesis in,
At long last I'll have my thesis in on time.

Giles wrote this one since graduating. As Armin commented, "It's interesting to see what you're thinking about these days."

Negative Binomial (Blowing In the Wind)

Oh how many times can I teach intro stats,
Before my lecture slides are dead?
Yes 'n' how many examples must I do on the board,
To get ANOVA into their heads?
Yes, 'n' how many years can I set this homework
Before solutions are on the web?
The answer my friend is negative binomial,
The answer is neg. binomial.

And how many papers must faculty publish
Before they get given tenure?
Yes, 'n' how many grants must they apply for
Before their summer salary is sure?
Yes, 'n' how many applied articles must go out
Before Annals takes one that is pure?
The answer my friend is negative binomial,
Or since 'n' equals one, geometric.

And how do I test if its better for me
To publish or do consulting?
And should I write software or do more theory,
which brings in the most financing?
And what's the politics when I'm on committee
And money needs allocating?
The answer dear prof, is nothing is normal,
The answer is non-parametrics.

Lyrics written by
Armin Schwartzman, Matthew Finkelman and Giles Hooker
Stats BBQ, May 23, 2004