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Piled Higher and Deeper

By Jorge Cham

[drumming]

[music]

[alarm sound]

[music]

So...?

Well, professor, I was hoping I could talk to you about your research?
What for? It's all on my webpage.

Yeah...

Well, sir, I'm a first-year masters student,
and I was hoping I could do a Ph.D. in your research area--
And you want me to fund you and be your thesis advisor.

Yeah, uh, here's all the work I've done. As you can see, I have some
ideas--

Yeah. Listen, let me tell you how this works.

Being a Ph.D. student, working with an professor,
it's a lot like a marriage.

Whole thing typically lasts five to seven years,
fifty percent of them end in a bitter divorce,
and it all culminates in a big ceremony
where you walk down the aisle wearing a fancy gown.

But sir, I--, I joined this program specifically to work in your research
group.

I mean, I graduated at the top of my class--

Well that's nice-- So did the other seven master's students
waiting outside my door right now.

You're in the upper echelons of academia now.

Very few make it to the top.

Like a pyramid scheme?

Well it is pyramidal in shape, yes.

This may sound cruel, but we in academia,
we stand at the cutting edge between humanity and the great abyss.
Between ignorance and truth.

Who else are you going to trust to tell you the difference?

The politicians?

Wall Street? The media? Please.

Well, but sir, what if I can't find a professor who will take me?

If you're that desperate to work in a lab,

I suppose our floors could use a good mopping.

Well I mean, what if I don't make it as Ph. D. student? What am I gonna do?

I don't have a backup plan.

I suppose you could try, uh, a lesser institution?

MIT, perhaps?

What I'm saying is,

maybe you should look around a little.

[music]

Morning, Tajel!

Hey, Cecilia-- Goodness gracious, what are you wearing?

What, this? It's my favorite shirt! I got it free my freshman year.

It reminds me of a simpler time,

of my dream to come to grad school and make a difference with my research.

So, what happened to that dream?

It's stained and crumbling, kinda like this shirt.

Are you going to a rally?

Yes. Today we're protesting poor living conditions for an underprivileged and exploited minority.

Sounds serious. Who is it?

Us! Graduate students!

Did you know that it pays more to work at McDonalds than to get a Ph.D. from a major university?

Wow. Is that true?

Totally. I read it on Wikipedia.

Hey! Today's my first day as a teaching assistant for Professor Chu's class.

Oh really? I thought you were fully funded already.

True, I don't have to TA, but I'm really excited about it.

I watched Dead Poet's Society last night for inspiration.

You know that movie doesn't end well.

That's why I came to grad school--to make a difference, to challenge young minds and inspire them.

Anyways, at least it'll look good when I apply for faculty positions. They value teaching experience...right?

Maybe it's time for a new shirt.

[music]

[music]

[sighs] [music]

Oh, I'm so sorry I'm late. The last meeting I was at ran over a little bit. I'm really sorry.

I'm so happy to meet you. Can you tell me about yourself?

Oh, uh, Professor, I was hoping that I could talk to you about your research?

Okay. Good.

Yeah, I've-- um, I--, I was hoping that--

"[phone rings]

-- maybe we might be able to --"

Marcy! You know I'm in a meeting.

Oh, ok. Ohh, D. C. tomorrow! Ok. Just a moment.

Okay.

I don't have time!

"Oh! Right! Yes, I'll be right there.

[music]"

Welcome everybody. I'm Professor Chu.

For this class, your T. A. is Cecilia,
one of my best and brightest students!

She is being considered for a faculty position at Berkeley right now.

Ok. Computer Science: how did we get away with calling it science?

Um, hello Professor. Um, uh, I was taking a look
at some of your papers, and I think that I might...

...be able...uh...

Who are you?

Oh, I'm uh-- I'm uh, a grad student--

[loud snoring]

...and I, uh...

Back in my days, we did not have sixty-four bits.

Not even six bits. We barely had one bit.

And, we did all experiments--everything!--with zero only.

And, it upsampled both ways, left and right.

Yes, I would love to take you as my Ph. D. student.

Really?

Absolutely. Your coursework and experience are perfect for my research
interests.

Well that, uh, that's great. I cannot tell you how hard--

Unfortunately, I just got denied tenure.

What?

They're kicking me out! I guess getting published
in the journal Science and landing a fifteen-million-dollar contract
isn't enough around here.

But--

Ok, granted, it was only the Letters section, and I was
the fourteenth co-author on that grant.

Anyways, I'm moving to the middle of the country
to work for a third-tier institution.

I can bring you with me if you like!

Um...?

Uh, Miss T. A.?

Oh, just call me Cecilia.

Uh, yeah. Hey, can I get an extension?

On what?

The homework...

We haven't assigned any yet. It's the first day of class.

Oh, um, then can I get an extension on the extension?

I suppose... Why? Is something the matter?

Uhh...well, I'm just kind of, uh...

...super busy right now. I've got, uh, classes and stuff.

Yeah, of course. No problem. I'm here to help you guys.

"Oh captain, my captain!"

Yeah.

Hey, uh, can I get an extension?

I guess--are you super busy too?

Yeah, kinda. My boyfriend just proposed to me!

And we all went out to celebrate.

So now I'm way too excited to go to class.

Uh, okay.

Cool, thanks!

Can I also maybe get an extension because I am very very very hungry...

Hey, Dad. Yeah, uh, grad school's going...great.

Yeah, I'm actually doing an independent study for a professor.

It's called, "Workspace Augmentation of Photon Impingement Through Impurities Removal"

Technically, it means that I'm paying the university to do free work for them.

Yeah, but Professor Smith says that if I do a good job he might tentatively consider possibly thinking about taking me on as a Ph. D. student.

How long before I finish my Ph. D.?

Uh, well... Yeah, yeah, I know you told all your friends

I was gonna be a doctor.

You didn't tell them I was gonna be a medical doctor, did you?

[music]

[knocks]

[commotion inside]

"Yeah?"

--Are you Mike Slackenerny?"

Maybe--who's asking?

I'm a new student with Professor Smith's lab and they told me to come talk to you?

Ah, new guy. Hold a sec.

Let's go.

Okay, the first lesson in being a Ph. D. student is learning about the most important thing in a Ph.D. student's life. It surrounds us, it binds us, flows through us, and gives us life.

You mean, the Force?

The free food!

Okay, act casual.

Is this food for us?

Nah, it's for the Special Relativity Seminar,

but they're always losing track of time.

You want some?

No thanks.

You see, free food's about a lot more than just getting a free meal.

It's about opportunity,

and how you're wasting it coming to grad school

instead of getting a real job and earning a decent living.

Did you know there are over

five thousand janitors in this country with a Ph. D.?

So you might as well eat the free food--am I right?

Welcome to the Smith Lab.

[angelic choir music]

Uh, don't I need a labcoat?

Suit yourself.

So, do you feel more science-y now?

Yeah, I picked the only labcoat that seems clean.

Ah, that's Professor Smith's.

Won't he need it when he works at the lab, though?

[laughter]

Oh man. Let me introduce you around the group.

That's Carlos.

'Sup.

That's Deva. He already has a Ph. D. from his home country,

but the only job he could get there was as a taxi driver.

The tips are better here!

That's Sean, but everybody calls him Golden Boy.

Guys, I keep telling you--I'm not Professor Smith's favorite.

Ask him what he did last weekend.

I went hiking with Professor Smith.

What?

And that's Allison. She's #2 on the lab hierarchy.

Basically, I do all the crap around here nobody else wants to do.

The lab motto is:

"Why do something today,

when you can get Allison to do it for you tomorrow?"

So, uh, how's your research going?

Don't you know you're never supposed to ask a grad student that question?

It's just rude.

Uh, how's your thesis going?

Come on, why don't you just ask her weight and age while you're at it?

Gosh!

This is the fume hood, a.k.a. the community storage closet.

That chemical will kill you instantly.

That one will kill you eventually.

That one will dissolve all the bones in your body.
And don't even look at that one if you're ever planning on having kids.
And those two--uh-oh--should not be that close together.
And this is The Machine.

[scary music]

I've always wanted to work on the cutting edge of technology.
It was cutting edge when I started.

Why waste a million dollars on a newer model
when it's cheaper to just waste a million grad student hours?
Which brings us to our business.

Professor Smith has asked me to teach you how to use it,
but I have to warn you, learning to use it
will make you more indispensable to the lab,
but it will also make everyone else come to you with their projects.
Do you accept this great responsibility?

I do.

Ok, well, here is the manual.

That's it?

Okay, you want to know the real secret to making this thing work?

It took my first decade in grad school to figure that out.

So, congratulations. Here is your immunity idol.

You can't get kicked off the island now.

Welcome to the Lab.

Hey Mike!

Do you have any more advice?

Yeah, don't go for your Ph. D.

[music]

"Hi, Cecilia!

-- Oh, hi!"

"Hey, Cecilia!

-- Hi!"

Would you like to dance?

Looks like you need some help.

Oh.

Thanks.

Actually, I don't really know how to dance this.

Ah, well, it's easy. It's the triple step.

You take three steps in syncopation.

Syncopation?

It just means quickly. So you start with your left foot forward.

"Your left?

-- Uh-huh, always the left"

Forward, back, now cha cha cha.

Forward, back, cha cha cha!

Forward, back--

"Cha cha cha!

-- There you go!"

I take it you're not a regular at the club?

No, this is the first time. Can you tell?

Well, it's just a practice session.

We're really gearing up for the big competition next term.

Wow, I didn't know it was so popular.

Actually, I read a study once that said that people who are normally more uncomfortable in social situations really love ballroom dancing.

It's a more structured form of interaction.

There's an agreed-upon set of rules, and if you follow them, you're pretty much guaranteed not to embarrass yourself.

And what are these rules?

First of all, if someone asks you to dance, you shouldn't say no.

Also, you can't ask the same person to dance twice in a row.

And, you have an out. When the song stops, the dance is over.

They don't play tracks continuously like they do at other clubs

Doesn't 'syncopation' mean 'out of sync'?

Uh, no. It just means 'unexpected.'

Oh, I think I have to dance with someone else now.

Oh, well, there is a loophole to the rule.

Oh there is?

If I ask you to dance, it's not the same as you asking me twice.

I'd love to.

Oh, there's the rumba. Maybe we should just watch this one.

People always talk about the tango in ballroom dance, but I think the rumba's much more interesting.

It's about the point in the relationship when two lovers are frustrated.

They love each other, but they can't stand each other.

See how they push and pull?

There's so much longing and angst in their movement.

Besides, look at it. It's so beautiful.

The key to dancing is finding the right impedance match between two partners.

It's about not losing momentum.

It's about finding the right resonant frequencies,

close enough to each other, so that you don't lose energy.

What's your major?

Um, oh, it's hard to define. Dynamic computing stuff.

And how's that going?

Oh, you know, losing momentum.

Falling out of sync with my advisor. You?

Well, uh, I don't know. I haven't decided yet.

I'm undeclared.

You're what?

Undeclared.

You're an undergrad?

[loud gasps]

[music]

I'm telling you, it was working perfectly,
then he walked in, asked for a demo,
and "Poof!" It stopped working.

I've been there.

And of course, as soon as he walked out of the room,
it started working again.

That's the Professor Smith Negation Field.

Anything within a five foot radius of him magically stops working.

He's a walking Bermuda Triangle.

It'll get you every time.

"Hey!

-- Hey, Sean."

Is this your first group meeting?

Yeah.

I see you brought a graph--nice!

I actually just got it. It was, uh--, I pulled an all-nighter.

"Ouch.

-- Yeah."

[footsteps]

Guys! That sounds like Professor Smith's footsteps!

Afternoon, gentlemen!

"Ahem!

-- And Allison."

So, I've got some good news and some bad news.

The good news is that we've been invited to submit a paper
to a prestigious conference in Hawaii.

Yes!

The bad news is that one of you is going to have to write that paper.
And the deadline is tonight.

Also, I'll be the one going to Hawaii, not you.

So I guess the good news only applies to me.

So, I'd like to remind everyone

that the symposium we're hosting is now only a month away.

Everyone in our field will be coming to campus,

well, at least the ones I invited,

and that includes representatives from all of the agencies
that fund our work.

So, I'll expect to see all of you from now on in the lab

working nights and weekends.

In addition to days and weekdays.

What about holidays?

Holidays are only for normal people.

Anyone who considers themselves only normal,
you're welcome to find another research group.

So--

How's research?

Avoid eye contact!

You!

I don't remember your name right at the moment,
but tell me how your research is going.

Oh, I, um--, uhh, well--

Well, I've been trying to, uh, develop an analytical formulation
for-- [loud snoring] ...that thing I was working on, but--
[snoring continues] ...the problem is... that...

I'm still waiting!

Oh, well, see, I don't really know what to do about the boundary
conditions, because well...

Oh! Before I forget,

there's a large amount of money in our discretionary budget
that we need to spend. Otherwise, we lose it.

Any suggestions?

Uh, you could give us raises?

I said spend the money, not waste it.

We could get a new lab fridge?

What's wrong with the current one?

[alarms sounding]

They're threatening to come with HazMat suits and remove it.

[sighs]

Uh, we could use it to update the machine I'm using?

Okay. Do it.

But I'll expect groundbreaking results in time for the symposium.

Yes.

Or else. I'll be coming by in a few weeks for a demonstration.

Beware the Negation Field...

[music]

[music]

[knocking] I'm looking for CS 101 office hours?

That's me!

Sweet.

I need help with the homework.

Of course. That's why I'm here.

Uh, what did you have trouble with?

All of it.

Okay, uh, let's see what you got.

I haven't actually done any of it.

Oh.

I tried Problem 1.

Okay, well what did you do in this problem?

I did Problem 1.

I know that. Uh, what's this number that you have here?

That's a seven.

I can see it's a seven. How did you compute it?

I--, I used the formula.

The formula for what?

For Problem 1.

Yes, but what does that formula compute?

Seven?

Seven what?

Seven...point zero?

I mean, what units?

Meters?

That would violate the laws of physics.

Hertz.

Okay. How did you compute seven hertz?

Well, you put the numbers into it and that's what you get.

But what does it represent?

The answer?

But why did you get that answer?

Because the problem asked for it.

Aren't you supposed to help me?

[knocking]

Um, hi. I forgot to get the lecture in handout today?

I mean, I forgot to get the handout in lecture today.

Is the answer seven?

I can't tell you that directly.

Is it true you're going to Berkeley to become a professor?

Uhh, yeah. It looks like it.

Uh, ok, ok. Is fourteen the answer times two?

How 'bout, touch your nose if the answer is seven,
and pull your ear if it's thirty-two.

"Is this gonna be on the test?"

-- It might."

"Will the test be on a curve?"

-- Maybe."

"Will I need to know this formula?"

-- That would be advisable."

Yeah, I seriously don't understand why I even need to know this stuff.
I'm pre-med. I'm gonna be, you know, a real doctor.
The fact that real human lives are gonna depend on you one day
really scares me.
Can I...
...have...
...an extension?
[frustrated sigh]
[music]
"Aargh!
Why? Why am I doing this?"
I have a college degree. A monkey could do this!
You know, in my country, they torture people with something very similar.
Guys, guys, research is torture.
They're trying to get the truth out of you.
All of us, we were once like you,
young, ambitions, excited about changing the world with our research.
And now?
And now, the highlight of our week is drinking free beer...
while talking to the same people we've been talking to all week.
It's happy hour! [music]
Okay, let me explain the basic cliques around here.
Over there, you've got your third years.
They only care about qualifying exams.
Then you have the departmental staff.
You want to be nice to them.
Then, you got your cool grad students,
the bitter post-docs,
and then, there's Aaron.
He's not cutting his beard 'til he finishes his thesis.
My girlfriend left me.
And then there's the faculty, with the first- and second-years schmoozing
up to them.
It's like high school.
Yes, but with much bigger egos.
Whoa. Is that Professor Smith's wife?
She looks so nice. Cheerful.
They say opposites attract.
Maybe she's a robot.
Guys, I heard Professor Smith used to work in the circus.
"What!?"
-- It's true!"
I heard it from one of the older grad students.
And how did he know?

He heard it from one of the grad students before him?

Professor Smith:

Hey, you guys talking about Brian?

You call him by his first name?

What? That's how he signs his emails.

Doesn't he sign his first name on your emails?

Well, he's just kinda standing there, so I'm gonna go say something to him.

Schmooze away. Good luck!

Nice weather we've been having, Professor Smith, huh?

Small talk is for small minds.

How's the project I assigned you going?

Uh, slowly?

It'll be ready in time for the symposium.

Yeah, uh, of course.

You know the difference between those who succeed in academia and those who don't?

"Uhh...

-- It's ambition."

You either have it,

or you don't.

Say, do you play squash?

"Squash?

-- I need a new partner."

"Well, I--

-- Splendid! We'll play next week."

Hopefully you can dodge a racquet better than my last partner.

Honey, I just saw the time. I think the kids are waiting for us.

Well, I think I've suffered enough happiness this hour. I'll go get the car.

I'm, uh, one of Professor Smith's grad students.

You know, Brian talks about you all the time.

He does?

Well, not really. He's very bad at names.

Don't let him fool you.

He was once a graduate student too.

She is not a robot!

[music]

You're playing squash with Professor Smith?

Man, I wish I had that kind of relationship with Professor Smith.

Brown-nosers!

Don't let these babies with daddy issues distract you from what's really important:

"Losing.

-- What?"

Do not let Professor Smith lose.

Do not let him lose.

[toilet flushing]

Oh, hold this.

That's not yours, is it?

"Uh, no.

-- That's too bad. It's actually pretty good."

So, you ready for a little friendly, gentlemanly competition?

[boxing bell rings]

Did you know that squash was invented by monks
in the twelfth century in France?

Here, help me stretch.

They used leather gloves with webbing between the fingers
and sticks to swat the ball around.

It was further developed by prison inmates in the eighteenth century.
There's not much to do when you're surrounded by four walls with no
windows.

Is that why labs are always in the basement?

So, do you want to play by British Traditional or World Squash Federation
rules?

Either's fine.

Ok. Don't go easy on me now just because I'm your advisor.

But remember, if I don't win,
you're fired.

Oh, I'm just joking with you. There's no way you're gonna beat me.

I'm gonna wipe the floor with you. [door closes]

We have a lot in common with monks and prison inmates.

In research, you work mainly in isolation.

It should be the sole focus of your life.

You need to eat, sleep, breathe your research.

I'm allowed to sleep?

Only the lie-awake-in-the-middle-of-the-night kind of sleep.

I need your results on my desk by Monday.

Well, uh, actually sir, I've been having some--, some problems--

Let me give you some advice.

In academia, we never use the word 'problems.'

It's considered a sign of weakness.

Call them... 'challenges'-- 'issues,' if you must, but never 'problems.'

I have issues.

Not my problem.

Are you using my methodology?

"Yes.

-- So are you saying my method is wrong?"

"No.
-- No it's not wrong, or no you're not saying it?"
Yes?
[sighs] Maybe I was too ambitious in setting the goals for this project.
Or perhaps you just don't have what it takes
to carry out the grandeur of my vision.
Guess which one I think it is?
The fact that you can't make it work doesn't tell me it's impossible.
It only tells me it's impossible for you.
Isn't that the same?
That's impossible to say. Make it work,
or there's no place for you in my research group.
Yes.
Okay, are you ready to play?
[music]
You're gonna play squash with Prof. Smith?
Man, I wish I had that kind of relationship with Professor Smith.
Brown-nosers!
Do not -- do not -- do not let him lose.
[screams]
Professor Smith!
Are you okay?
Uh, what's my name?
Uhhh....
Never mind.
[music]
Cecilia! Please, come in.
Here are the papers for you to grade.
Don't worry. It will not be due until the seventeenth.
That's next Monday.
Really? Oh, then do it by Friday.
Today is Friday.
"Really?
-- I'll take care of it."
Thank you.
[phone rings]
Hi, Mom. Sorry, I can't talk right now.
I have to grade these papers before dance practice tonight.
Yeah, it's the last one before the competition.
No, I don't think it should take too long.
I mean, we went over this stuff, like, a million times in class, right?
They should all get a perfect score!
Wrong.
Wrong, wrong, wrong.

The problem is that to the university, we're in this weird limbo state.
Are we students? Employees? Neither?
Do I give them seven points? Seven and a half points? Seven point seven
five?
Indentured servants?
I want to make sure their grade accurately reflects their progress.
Good job.
Anyways, I gotta go. Professor Rivera wants to talk about my thesis topic.
I thought you didn't have one.
That's kind of what he wants to talk about.
Good luck grading.
[sighs]
[music]
Almost....done!
[music]
[music]
"Oh!
[record scratch] I forgot!"
Can you make the grades have a Gaussian distribution
with a mean of 81.709 and standard deviation 12?
So it will be easier to assign letter grades.
Um, ok.
By the way, I talked to the Berkeley hiring committee.
You are on the top of their candidates. I put in a lot of good word for
you.
Oh. Thanks.
Are you even in this class?
"It's spelled "you're": y- o- u- '- r- e.
Not y-o-u-r!"
Hello! Are you-- You didn't even put your name on the paper!
[phone rings]
Oh, I forgot. Some of the students turned this in late.
Could you grade them too?
Come on, can't we just bury them?
No, just your feelings.
[music]
What are you doing?
I'm stapling Taco Bell job applications to all of the papers.
If undergrads are our future, we are all doomed.
Cecilia!
Hi, it's me, Julie! Uh, we went to high school together?
"Julie?
-- How are you?"
Oh, wow. What are you--

I'm doing some consulting for the university.
How funny that I should meet you here!
Yeah, uh, I'm-- [phone rings]
Oh, I'm sorry, just a second.
Hi honey! Yes, I'm taking the early flight back in the morning.
Ooh, seared salmon with lemon reduction--that sounds amazing!
Say hi to the kids for me! Bye.
Jon's a bit of a chef. Do you have any kids?
Uh, no?
Married?
"No.
-- Seeing anyone?"
No.
Oh. Well.
You were the smartest person in our class.
I bet you're off doing something amazing.
Actually, I'm still in school.
Oh. Um.
"[phone rings]
-- Uh, I'm sorry, just a second."
It's our real estate agent. We're buying a second house!
You can buy houses?
Oh, wait! Our reunion's coming up and I'm on the social committee.
Are you on Facebook?
[phone rings]
Oh, hello?
[music]
[music]
Working hard, or hardly working?
Both.
I'm working hard, but this is hardly working.
It's the new machine. Costs more than all of my student loans combined
and I'm not getting the right results.
This is for the symposium tomorrow?
I mean, later today?
I haven't slept in days.
I've eaten nothing but ramen and caffeine.
Ever heard of a balanced diet?
Yes. Half of those are beef, and the others are shrimp.
And my favorite flavor: MSG.
[laughs]
I have to finish this.
Professor Smith says it's "trivial" but I'm starting to think it's
impossible.

It's like trying to prove a negative.
You can't show him that it's impossible unless you spend
an infinite amount of time trying to do it.
There is no limit to how long you can spend in grad school.
How has nobody else ever done this before?
I mean I can think of three possibilities.

A:

B:

C:

I don't even know which one's the worst.

Or D:

You're the One, Neo.

Allison, do you ever feel like you're just an imposter?

Like everyone just hasn't noticed that you're not as good as they think you
are?

I'll let you in on a little secret.

Around here, everyone is an imposter.

[microwave beeps]

[alarms ring]

[baby cries]

One of three students to be named U.S. Presidential Scholars.

He turned out a perfect ACT score, and he's at the top of his class
academically.

And he's headed to Pasadena in the fall.

Okay, now it's impossible.

I'm free. I'm free! [laughs]

I'm FREE!

[music]

"David.

-- Hi, Cecilia."

I hope it's ok that I've come to your recitation session.

What recitation? Only two people showed up.

I'm not even sure if he's alive.

I had a whole lecture prepared. I brought special notes,
and practice problems--I even made cupcakes.

The "P" ones are lactose free. The "NP" ones are lactose and gluten free
in case of allergies. I was up last night making a dance routine for hash
tables.

I was up all night rehearsing it.

Hash tables are data structures with keys and buckets.

You can search associative arrays like a super-fast rocket!
Is this a bad time for the session? Is the room hard to find?
Or am I just a bad TA?
Well, it's not you. It's them?
Like I haven't heard that before.
I don't even know why I try anymore.
Hey listen, the dance competition.
Is that something that you'd like to bring a date to?
Because I was thinking--
Uh, listen, David. You're a nice guy,
even for an undergrad,
but I don't have time to be in a relationship.
And I dropped out of the dance competition.
Oh, you did?
I need to be graduating. I need to get out of here.
I can't be a grad student forever.
I need to focus on my thesis and stop wasting my time
with dancing, and teaching, and...
That's not what I meant.
I mean, what happens when I graduate? I can't get a professor job anywhere.
These jobs only open up when someone dies.
Let's not get too creative here.
I can't go into industry. What have I been working all this time for?
I'd be selling out, like... like--
Like a regular person?
Listen, I'm not asking you to marry me.
Look, I'm sorry.
Okay, it's fine. I get it.
You don't get credit for having a life.
Is this gonna be on the test?
[music]
There's a lab up here that simulates the surface of Mars.
I keep a case of beer hidden behind one of the rocks.
It's pretty cold on Mars.
Thanks.
Professor Smith's presenting at our symposium right now,
and you know what he's thinking?
That I failed him, and I'm just not good enough.
I'm sure that's not the case.
How do you know?
He probably doesn't think about you that much.
You ever wonder what the point is?
Eh. Not really.
I mean about this research we do.

We publish so that people can give us more money
so that we can do more research so that we can publish more!

Ad infinitum!

Ad nauseum.

See, I thought that I was gonna be working on big problems,
but it seems like I'm just working on a subproblem of a subproblem of a
subproblem.

We're all just research tools.

I don't wanna be here forever, like..., like--

Me?

[music]

There you are.

Hey.

I don't think I've been here before. It's...

...like a rat maze? Yeah.

Sometimes I think grad school's just a weird psychological experiment.

Wouldn't that be funny.

This year I got to move one spot closer to the window.

Sunlight goes by seniority.

I haven't seen you around the house very much.

I've been working here. I've got my coffee and clothes

and water and food. And a place to crash

and the internet. My work's all on the computer.

I could do an entire Ph.D. without leaving these four walls.

Don't you need to shower?

All my friends are online.

How do you find anything?

I know it looks chaotic, but really it's organized.

It's really organized. That's my research paper pile.

And that's my class stuff pile. And that's my bank stuff pile.

What's this one?

That's my I-don't-know-what-to-do-with-it pile.

Isn't your dance competition today?

I can't go. I'm working.

I'm taking a break!

So, what's the lab pool up to on how long I've been here now?

Uhh, three hundred fifty?

[music] [dinosaur roaring]

Let me know when it gets to \$500.

I like to win it every couple of years.

Mike, what happened?

I worked hard. I was industrious.

And then the project that I spent my first seven years on
got retracted. Nobody could reproduce our results.

And you couldn't do it again?

Nah, we lost the funding. The machine we used got shut down.

Nobody believed you?

Nobody believes anything in academia. That's the whole point.

Evidence is king. The only thing you take for granted is that there'll be another grant.

Man.

Life is tough. And then you graduate.

Everybody's here because they want to be here.

There's nothing reasonable about pursuing a life of reason.

Cecilia, as your roommate and secondary character, I have to tell you you need to snap out of this funk.

I have to finish my thesis, Tajel.

I'm gonna be thirty-five in a few months.

Thirty-five?

In base seven!

Dating and dancing just don't make for good research.

No, but they do make you happy!

You feel like you've lost your passion for research

but maybe you've just forgotten how to be passionate about anything.

Graduate school is as much about truth in research

as it is about finding truth in yourself.

How do you do it, Tajel? How come you're never stressed?

Well--

How do you do it, Mike? How come you're never stressed?

It's easy in research to get tunnel vision.

You feel isolated, like you're the only person with your problem.

But the truth is

you're not alone. But whenever I get stressed

I just ask myself the question:

Do I really care?

Would I rather be doing anything else?

You're not a machine. You have to embrace the things you're passionate about.

Every great idea, every great moment of "Eureka!",

came when it was least expected.

Google,

Facebook, Newton and gravity, Einstein and relativity--

all of these things happened when they weren't doing what they were supposed to be doing.

When they were following their passion--

Procrastinating.

I need to relax.

Exactly.

No! I mean my experiment.

That's why I haven't been able to get the data.

I need to relax to boundary limit conditions--of course!

[music]

I could still make the competition!

Yes!

How do I look?

Ready to rumba.

Uh, Miss T.A.?

What about the homework?

It's all in the book!

I've figured it out.

Professor Smith's methodology, it's not right or wrong.

It's just that it doesn't apply for all of the experimental conditions.

Whoa.

Does anyone have a--

Here. Use mine.

Thanks!

Does anyone know the fastest way to the symposium?

Yeah, take the sub-sub-basement corridor to the Millikan Library.

Topside is swarming with the tour groups at this time.

"Thanks!

-- Wait!"

You'll need this!

Thanks!

[music]

Are you ok?

Uh, yeah, yeah. I will be.

All right, I gotta go.

"Me too, okay.

-- Okay, uh??

[music]

[pounds on window]

[music]

[pounds on window]

[music]

I thought you couldn't make it to the competition.

I decided to give myself extra credit.

[music]

So.

So?

That project I assigned you wasn't impossible after all.

I guess not.

Huh.

Are you surprised by my competence?

I must be losing my touch.

Although, showing up with the data you did at the last minute, that was, uh, that was dramatic.

A little bit of theatrics can go a long way in academia.

Sometimes I ask my students not to give me their data until the night before a presentation.

That way I can honestly say it's data that my grad student just sent me. Well I thought you'd want to see this right away.

It was...interesting. Might make a good Figure 1 on a Ph. D. thesis.

Just Figure 1?

Unfortunately, I don't have any funding for another Ph. D. student right now.

However, I do have some interesting ideas for a new proposal.

If you'd help me write it, and if it gets funded,

I might consider taking you on.

Yes. I'd like that, Professor.

No need to thank me, uh...

Winston. My name is Winston.

Very well.

Now get back to the lab.

[music]

You came to recitation.

You stopped making lecture handouts.

So now, we have to come and, like, pay attention and stuff.

Who's ready to learn about hash tables?!

Get it? Keys?

Yes? Do you need an extension?

No, actually I wanted to say thanks.

This has been a really cool class.

I can't wait to get to more complicated stuff next term.

Really? You think this stuff is cool?

Yeah, but I'm kind of a dork.

You're like a grad student waiting to happen.

I hope not, but thanks again. I'll see you around.

Uh, you too.

[music]

Jen?

Guess what? Your sugar momma is about to be a real momma.

You have nine months to deliver your thesis.

Mike's married?

Hi.

Hi.

Can I help you with that?

Oh, uh, yeah. Thanks.

Hi. Are you guys graduate students?

This is for my thesis. I'm studying why

there's a fifty percent dropout rate amongst Ph. D. students.

That means that two out of every four graduate students

will never graduate.

But I know that there're a lot of issues that I should be really concerned about,

especially as a graduate student, because, you know, no one's really going to be your advocate.

So.

How's research?