A BIT ROCKY

An exploration of the common threads of nature and postgraduate education.

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Dramatis Personæ

Pacifica
Magnus
} PhD students.

General Notes

Two desks are on stage. They are far enough apart that the people sitting at each don't have to be interacting. Both desks face the audience. Each holds a laptop computer.

Pacifica *and* Magnus *have just gotten to graduate school.* Magnus *is dark and serious, and has just come from one of those schools where they start your first class by saying "Look around you. One of you three will be in the top half of the class, one will be in the bottom half, and one will drop out. Which will be you?"*

Pacifica *comes off as much lighter, although underneath the levity there is a deep person. She went to a less scary university, though is not any worse-educated.*

The scene markings do not indicate any discontinuity in the flow of action, but are merely conceptual divisions between parts of the action.

Despite the continuous flow of action, there are gaps in time in the play: every time the lights change, some amount of time passes. It is best if this is conveyed to the audience by never talking during a lighting change, and only letting stage hands onstage during a lighting change.

Scene i

PACIFICA *and* MAGNUS *enter stage right and left, respectively, and each sit down at the nearest desk,* MAGNUS *reaching his seat before* PACIFICA. MAGNUS*'s movements are direct and a little nervous.* PACIFICA *is more curious, looking around when she first comes in.*

MAGNUS (*Sitting down.*) I think I'll emplace myself here. (*Immediately starts working at his laptop.*)

PACIFICA (*After gazing at her surroundings, sitting down.*) What's your name?

MAGNUS (*Noticing* PACIFICA) I'm Magnus. Yourself?

PACIFICA My name is Pacifica.

MAGNUS (*looking back at his computer*) Nice to meet you.

PACIFICA (*is slightly offended by his lack of interest, but gets overy it very quickly and gets to work too*)

They type at laptops for a few beats, ceasing to notice each other. Meanwhile, stage hands bring on piles of books—3 or 4 for each person. The books go on their desks. As the stage hands are on stage, the lights get dimmer and warmer, enough to be slightly perceptible. They notice each other again.

PACIFICA How is grad school for you so far?

MAGNUS It's fine.

PACIFICA Your classes?

MAGNUS Good. I enjoy the fact that we finally learn about real geology, and all the theories that people have about a particular place. No more shying away from the good stuff.

PACIFICA Your peers?

MAGNUS Oh, they're fine. I like my advisor. Dr. Otis.

PACIFICA Does he know that he's a kind of hard lemonade?

MAGNUS Oh yes. Actually, both Doctors Otis float around my lab. When one fails me, the other usually helps.

PACIFICA (*amused*) Doesn't that interfere with your lab work?

MAGNUS Oh no, I'm not doing anything important. Or difficult. Maybe someday.

Oh, and how is it going for you?

PACIFICA Quite well. I'm learning about sediment deposition conditions, seafloor spreading, subduction... All kinds of oceanic geology. My classmates are so much more engaged than in college. And they're less jaded than college seniors, somehow. So I like that part.

MAGNUS Well, the cycle of jadedness is starting again! Be prepared! I already feel like a Chinese figurine.

SCENE II

They return to their studies. Stage hands bring on more books, some loose papers, as well as empty styrofoam coffee cups (several per person). Meanwhile, the lights again get darker and warmer: time has passed.

PACIFICA (*Noticing the time*) Time to teach my intro class. (*Gets up, goes downstage.*)

OK folks, time to learn about geology! Today we'll start on one of *my* favorite topics: subduction. (*pointing at an audience member*) Stop your giggling! Yes, geology is dirty. Let's move on.

All of you know that the earth's surface is composed of plates that move and jostle around. Well they don't exactly jostle, each of

them moves in a particular direction. When they collide, which is constantly, they don't bounce off each other, they just keep going. So there must be somewhere for the material at the edges of the plates to go. If one of the plates is oceanic and one is continental, the oceanic one goes under the other one, it is subducted.

Chile, with the Andes, subducts the Nazca plate. (*pointing*) Be quiet, Andy, you couldn't subduct anyone. Try putting on a few trillion tons.

Anyway, once the Nazca plate goes under the South American plate, what happens to it? For a long time, it remains a coherent entity, even though it is immersed in the much hotter rock of the mantle.

It goes deep, deep into the mantle—definitely as deep as 300 kilometers, and probably deeper than that. Many people think that this sinking of cold, dense crustal plate is what drives mantle convection, which in turn brings the same rock back to the surface after it has been heated near the core. When it reaches the surface, it is under the middle of the ocean, where it flows up to the ocean floor, is frozen, and begins the cycle again.

When rock is deep in the earth, despite the fact that it is convecting like a pot of hot water, it is actually solid rock, and not liquid. What lets the rock flow as a liquid into the cracks in the ocean floor, and out of volcanoes, is called decompression melting. When the rock is removed from the tremendous pressures deep under the earth, the mere fact of its reduced pressure is enough to melt it, even if it stays at a constant temperature.

Well, that's all for today. Have fun decompressing, those who can! Lucky little undergrads.

(*Sits down again.*)

Scene iii

The lights get dimmer and warmer again. Stage hands bring more styrofoam cups and more books.

PACIFICA What's your dissertation topic, Magnus?

MAGNUS (*hollow chuckle*)

The lights change again. They study as stage hands bring beer bottles.

MAGNUS What's your dissertation topic, Pacifica?

PACIFICA I'm going to write about . . . the subduction of poop.

MAGNUS I feel like *I'm* being subducted. Like poop.

The lights change again. They study. Wine bottles.

PACIFICA What's your dissertation topic?

MAGNUS (*pouring himself wine*) I will write on plutons. The hot hearts of mountains. For my field research, I will go to hell. (*drinks*)

Lights and hard alcohol, as they study. By this time, the lights are starting to be noticeably orange or red.

MAGNUS What's your dissertation topic?

PACIFICA I am going to research the partial melting that takes place in recently-subducted oceanic crust. The magma that goes into arc volcanoes.

MAGNUS Hah, so you've rehearsed your 10-second explanation. Well, so have I. Listen and be enlightened! I will research magmatic differentiation, in particular explaining what must have happened to magmas under the Andes. So I pick up where you leave off.

PACIFICA Oh, that's great! Maybe we'll go to Chile together.

MAGNUS I'd like that.

Pacifica (*thinking about it. doubtfully*) I might.

Scene iv

Magnus *and* Pacifica *return to their studies. Lights again.*

Magnus (*noticing the time*) Oh, time to teach. (*Takes a big sip from his wineglass. Gets up, walks downstage.*)

Hello, my lovely intro students. They've called me in to teach you about what happens to a magma chamber as it cools. When was the last time you saw your professor? Three weeks ago? That's not so bad. At least he's famous! Keep that in mind when you do the final.

Anyway, you find magma chambers under ranges of mountains. They are big blobs of magma that have floated up from the mantle, because they are lighter than the surrounding rock, which is called Country Rock. Got that? Country rock, like the Dixie Chicks. (*defensive*) Well, they want me to use examples or something.

So you've got a great mass of magma—cubic kilometers worth. It's molten rock, and rock has a bunch of different chemicals in it, sort of like you on a Friday night. Different chemicals, different minerals. Each of them has its own melting point, which is also affected by liquids and by pressure. As the great mass of magma starts to cool, the minerals with the highest melting points freeze and crystallize first. Those are iron-rich minerals like pyroxene. The magma is now a partial melt, since only part of it is melted. Slowly, the crystallized rock falls out of the liquid magma, and collects at the bottom and the outside edges of the magma chamber.

As the magma keeps cooling, minerals with lower and lower freezing points come out of the magma, one after another. We get hornblende, then biotite, feldspar, muscovite, and finally quartz. That's called Bowen's reaction series. But what happens if the magma continues to rise as it is cooling? Then some of the min-

erals get hard and fall out, while others keep rising. The easier-to-freeze minerals get left behind. That means that the magma that moves has a different composition than it did before, it has less of the iron-rich minerals and more silica-rich ones. So the magma that arrives at its destination is different from what set out from the mantle. It's like school. Some bits of you freeze and get left behind. Like joy, curiosity, and excitement at learning. Anyway, class is over! Have a good weekend!

(*Sits down and resumes his studies.*)

Scene v

Lights get noticeably lighter and cooler.

Pacifica Magnus, do you like rocks?

Magnus Of course I like rocks. I'm studying geology, if you hadn't noticed.

Pacifica You never *act* like you like rocks. To me, anyway. You just talk about how you're bored with your lab work and you hate your dissertation.

Magnus (*turning to her. pause, then*) I desparately want to drop my dissertation and leave. I've been over the argument so many times that I could convince someone in my sleep. But is it good enough for Doc Otis? No! "Collect more data. Cite more sources. Formal language, please."

Pacifica Well if those are his only problems with it, then the end is in sight!

Magnus Yeah, just another six months. Six more months in the basement of Exxon Hall of Geoscience.

Pacifica Well don't be optimistic or anything.

Magnus Sorry. I went to one of those high-pressure, we-don't-actually-like-you sorts of colleges, and I used to hope that grad school

would be different, that I'd have a real relationship with my advisor. But he's so demanding! And he never talks about anything but partial melting!

PACIFICA There's a lot of pressure.

MAGNUS I feel like a damn rock myself.

PACIFICA (*sorta singing*) I am a rock, I am an island.

MAGNUS A lot of islands are volcanoes, not just rocks.

PACIFICA Volcanoes!

MAGNUS Volcanoes!

PACIFICA You still like volcanoes.

MAGNUS I do.

PACIFICA You know, you're not as mean as you used to be.

MAGNUS I've partially melted.

PACIFICA Pour me a drink.

MAGNUS (*does so*) The presence of liquid can reduce the freezing temperature of rocks by hundreds of degrees. Make them much more melty.

PACIFICA (*exhausted, not lovey-dovey*) I'm ready to melt. (*goes to* MAGNUS*, takes the drink, sits down 2 feet from him*)

MAGNUS How is your dissertation going, anyway?

PACIFICA I am crushed by the weight of a thousand pounds of journal articles. (*sips her drink*)

MAGNUS Uh-huh. (*pours himself a drink, also*)

PACIFICA I was trying to cheer you up, but I'm under just as much

pressure as you. All the fun is gone, I feel dead. But at least I'm on the way up again, slowly preparing to reemerge from my scholarly tomb, a rock zombie.

MAGNUS You just need to make it through school as a whole person.

PACIFICA What does that even mean?

MAGNUS (*Didn't think she would ask. Thinks for a sec*) You can't let the part of you that likes wine (*raises glass momentarily*) leave behind the part of you that likes volcanoes.

PACIFICA Why not?

MAGNUS Then volcanoes are just work.

PACIFICA Should volcanoes be play?

MAGNUS Yes. Dangerous, lovely, riveting play. That's why I came here. I kept laughing about the thought that someone would pay me to go look at volcanoes and hike in the mountains.

PACIFICA That's a lovely thought.

SCENE VI

The lights get a little bit brighter and cooler.

PACIFICA *returns to her desk and* MAGNUS *follows to that side of the stage, sitting nearish her.*

MAGNUS I don't need to cite any more sources. I don't need to collect any more data. I don't need to try and speak Chilean Spanish anymore.

PACIFICA How done *are* you?

MAGNUS Not really. So much writing left to do. But the end is in sight! I feel better already. What about you?

PACIFICA My seismographs are returned to the store room. I don't

need to rent supercomputer time anymore. No more field work, either. Just the crushing dread of making the defining statement of my academic career.

MAGNUS Yup!

PACIFICA I've spent so long with this computer. (*pats it*) It's my closest friend. You are a distant second.

MAGNUS Hah. I'm better friends with my laptop *and* my favorite sample of pyroxene.

PACIFICA Isn't there something wrong with that?

MAGNUS Oh, people can be sorta nice. Relaxing, maybe.

PACIFICA Relaxing. Look at us. We're not in the basement of Exxon Hall.

MAGNUS This place has windows!

PACIFICA It's not full of professors! (*motions* MAGNUS *closer,* MAGNUS *complies*)

It feels good to escape from that place.

MAGNUS Escape. It feels good to be with a human.

PACIFICA Yesss. You know, I wouldn't mind escaping with you.

MAGNUS (*shifts to right next to* PACIFICA)

PACIFICA You know what bothers me, though?

MAGNUS (*shifts away a little, surprised*)

PACIFICA It's that it would have to be an escape.

MAGNUS I like escaping!

PACIFICA Me too...

Magnus (*shifts closer*)

Pacifica But I also like rocks.

Magnus I have some...

Pacifica You'd have to, to say that! But what I mean is, I think I like you and I know I like rocks, but if we were to escape together, neither of us would be a whole perosn.

Magnus A whole person?

Pacifica Like you pointed out!

At the end of the day, are you tired of geology?

Magnus Yes.

Pacifica Well, I like geology.

Magnus So do I.

Pacifica I know.

Magnus I just get sick of it.

Pacifica I want to talk with you about volcanoes and subduction.

Magnus You can!

Pacifica But you're sick of it.

Magnus ...yes. It wouldn't actually be very nice.

Pacifica If we don't talk about rocks now, we wouldn't if we were together.

Magnus No?

Pacifica No, that part of us would be left behind in the classroom, where it was emplaced. Just work. It would always stay there, it would never be where the rest of us is. We would be soft to each

other, but geology would remain the high-pressure, hard stuff from work.

MAGNUS Never?

PACIFICA Never. Unless we got fired or something.

MAGNUS So what *do* you want?

PACIFICA I want you, I think. But if I do, I want all of you. The geologist in you can't come to me until he's done with his dissertation and the pressure's off. The rest of you could be mine, but I want all of you.

MAGNUS What do you want out of my inner geologist?

PACIFICA We could be like that volcanologist couple! Who are they?

MAGNUS Krafft?

PACIFICA Maurice and Katia Krafft. Yes.

MAGNUS They died in a cloud of superheated poisonous gas and volcanic ash!

PACIFICA Together.

MAGNUS Well yes, together.

PACIFICA After studying erupting volcanoes together for 23 years!

MAGNUS Well, that is actually the most romantic thought ever.

PACIFICA Agreed!

(*kisses* MAGNUS *on the cheek*) Well, get out of my house! Finish your dissertation and emerge from the underworld, and I'll do the same. Come back in two weeks, an entire person!

MAGNUS (*bewildered, standing up*) Okay. (*pause*) *You* are *confusing.* (*EXIT*)

PACIFICA (*Pours self a drink, sips. She wonders why she sent him out of her house, it seems a little silly in retrospect. But she remembers that school will be over soon and smiles.*)

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