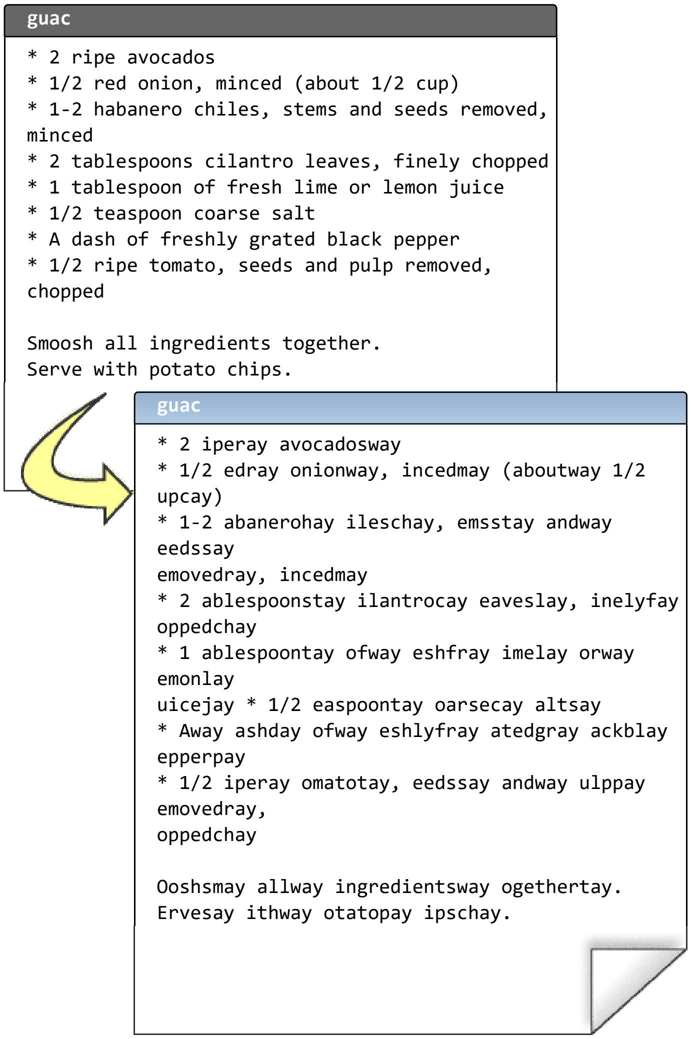
80
Hg
Init
200.59

One of the biggest benefits of Mercurial is that you can use private clones to try experiments and develop new features… if they don't work out, you can reverse them in a second.

Fixing Goofs

Mercurial lets you experiment freely. Imagine that during the course of normal editing, you get into trouble with your editor and do something catastrophic:



guac

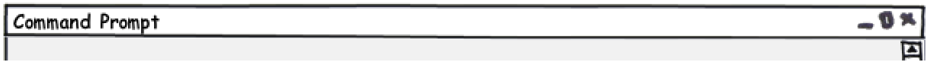
```
* 2 ripe avocados
* 1/2 red onion, minced (about 1/2 cup)
* 1-2 habanero chiles, stems and seeds removed,
minced
* 2 tablespoons cilantro leaves, finely chopped
* 1 tablespoon of fresh lime or lemon juice
* 1/2 teaspoon coarse salt
* A dash of freshly grated black pepper
* 1/2 ripe tomato, seeds and pulp removed,
chopped

Smoosh all ingredients together.
Serve with potato chips.
```

guac

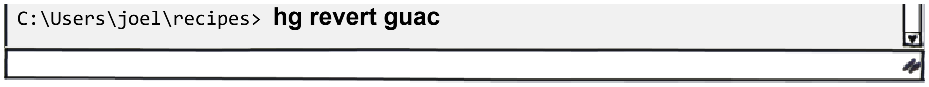
```
* 2 iperay avocadosway
* 1/2 edray onionway, incedmay (aboutway 1/2
upcay)
* 1-2 abanerohay ileschay, emsstay andway
eedssay
emovedray, incedmay
* 2 ablespoonstay ilantrocay eaveslay, inelyfay
oppedchay
* 1 ablespoontay ofway eshfray imelay orway
emonlay
uicejay * 1/2 easpoontay oarsecay altsay
* Away ashday ofway eshlyfray atedgray ackblay
epperpay
* 1/2 iperay omatotay, eedssay andway ulppay
emovedray,
oppedchay

Ooshsmay allway ingredientsway ogethertay.
Ervesay ithway otatopay ipschay.
```

hg revert

Gotta love emacs. Anyway, all is not lost. The most common way to recover from these things is just to **hg revert** them:

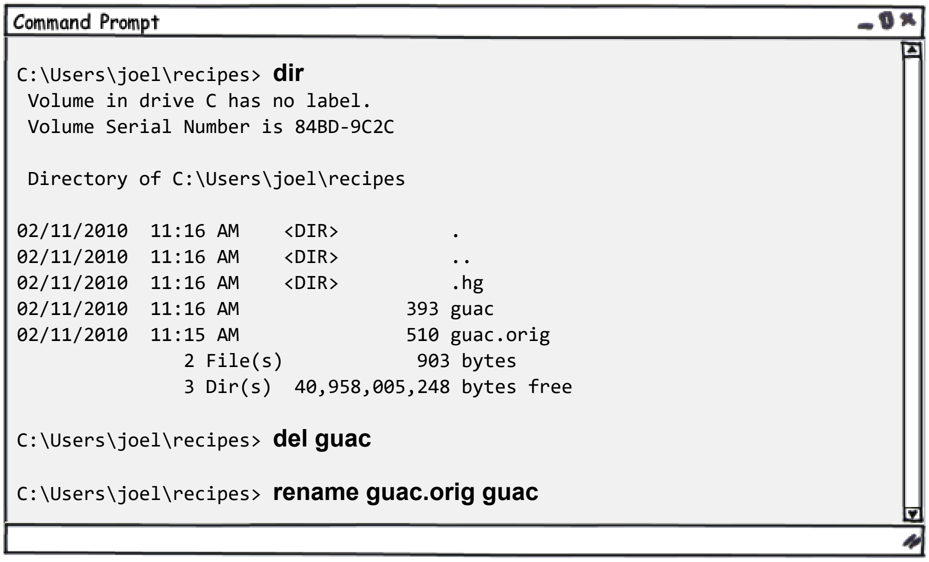


revert changed files back to committed version



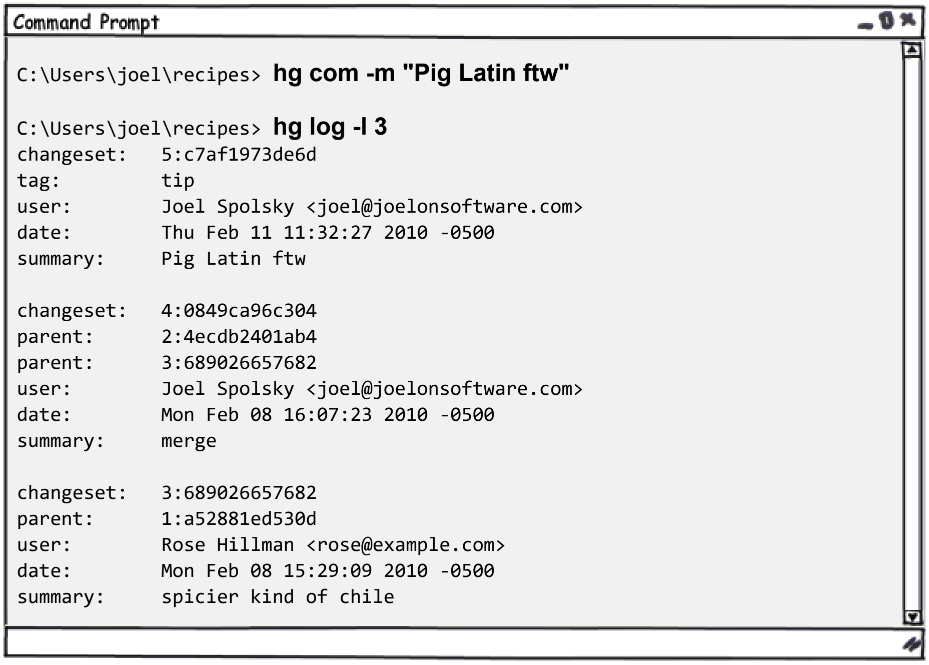
```
C:\Users\joel\recipes> hg revert guac
```

That'll put the files back exactly the way they were at the time of the last commit. Mercurial doesn't like to delete anything, so instead of zapping the Pig Latin recipe, it renamed it:



```
C:\Users\joel\recipes> dir
 Volume in drive C has no label.
 Volume Serial Number is 84BD-9C2C

 Directory of C:\Users\joel\recipes

02/11/2010  11:16 AM    <DIR>          .
02/11/2010  11:16 AM    <DIR>          ..
02/11/2010  11:16 AM    <DIR>          .hg
02/11/2010  11:16 AM               393 guac
02/11/2010  11:15 AM               510 guac.orig
               2 File(s)            903 bytes
               3 Dir(s)  40,958,005,248 bytes free

C:\Users\joel\recipes> del guac

C:\Users\joel\recipes> rename guac.orig guac
```

What if you had gone one step too far and actually committed?

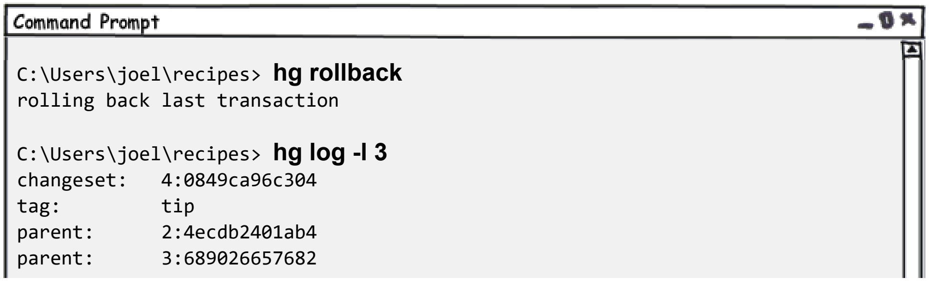


```
C:\Users\joel\recipes> hg com -m "Pig Latin ftw"

C:\Users\joel\recipes> hg log -l 3
changeset:   5:c7af1973de6d
tag:         tip
user:        Joel Spolsky <joel@joelonsoftware.com>
date:        Thu Feb 11 11:32:27 2010 -0500
summary:     Pig Latin ftw

changeset:   4:0849ca96c304
parent:      2:4ecdb2401ab4
parent:      3:689026657682
user:        Joel Spolsky <joel@joelonsoftware.com>
date:        Mon Feb 08 16:07:23 2010 -0500
summary:     merge

changeset:   3:689026657682
parent:      1:a52881ed530d
user:        Rose Hillman <rose@example.com>
date:        Mon Feb 08 15:29:09 2010 -0500
summary:     spicier kind of chile
```

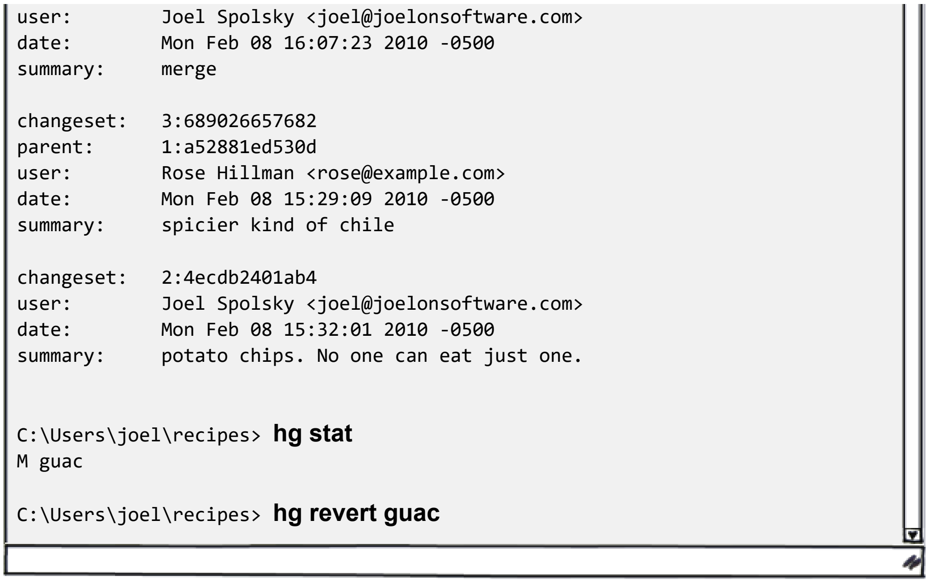
hg rollback

undoes one commit, as long as you haven't pushed it to anyone else.

There's a command called **hg rollback** which will save your skin, but only if you haven't pushed this change to anyone else. It only undoes *one* commit.



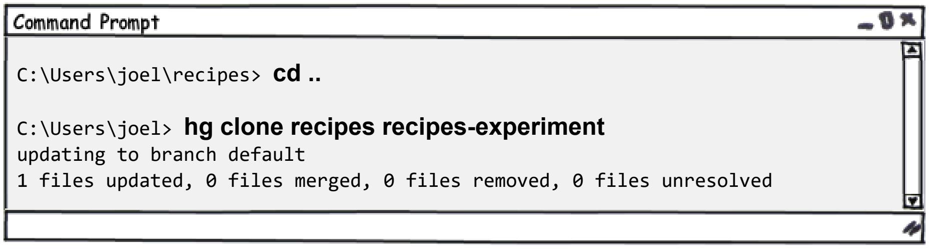
```
C:\Users\joel\recipes> hg rollback
rolling back last transaction

C:\Users\joel\recipes> hg log -l 3
changeset:   4:0849ca96c304
tag:         tip
parent:      2:4ecdb2401ab4
parent:      3:689026657682
```



```
user:        Joel Spolsky <joel@joelonsoftware.com>
date:        Mon Feb 08 16:07:23 2010 -0500
summary:     merge

changeset:   3:689026657682
parent:      1:a52881ed530d
user:        Rose Hillman <rose@example.com>
date:        Mon Feb 08 15:29:09 2010 -0500
summary:     spicier kind of chile

changeset:   2:4ecdb2401ab4
user:        Joel Spolsky <joel@joelonsoftware.com>
date:        Mon Feb 08 15:32:01 2010 -0500
summary:     potato chips. No one can eat just one.


C:\Users\joel\recipes> hg stat
M guac

C:\Users\joel\recipes> hg revert guac
```

Imagine you want to do a major experiment on the side. Your boss hired a new designer, Jim, and lately the specs you’ve been getting from him are just absurd. There’s fluorescent green text, nothing lines up (for “artistic” reasons), and the usability is awful. You want to come in one weekend and redo the whole thing, but you’re afraid to commit it because you’re not really 100% sure that your ideas are better than this nutty graphic designer. Jim is basically smoking a joint from the moment he wakes up until he goes to bed. You don’t want to hold that against him, and everybody else thinks that it’s nobody’s business as long as his designs are good, but really, there’s a limit. Right? And his designs aren’t good. Plus he’s kind of offensive.

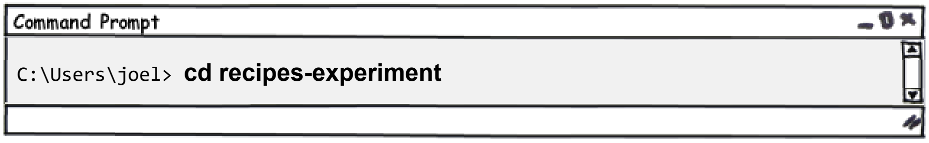
With Mercurial, you can just make an experimental clone of the entire repository:



```
C:\Users\joel\recipes> cd ..

C:\Users\joel> hg clone recipes recipes-experiment
updating to branch default
1 files updated, 0 files merged, 0 files removed, 0 files unresolved
```

This isn’t as inefficient as it seems. Because both **recipes** and **recipes-experiment** share all their history (so far), Mercurial will use a file system trick called “hard links” so that the copy can be created very quickly, without taking up a lot of extra space on disk.

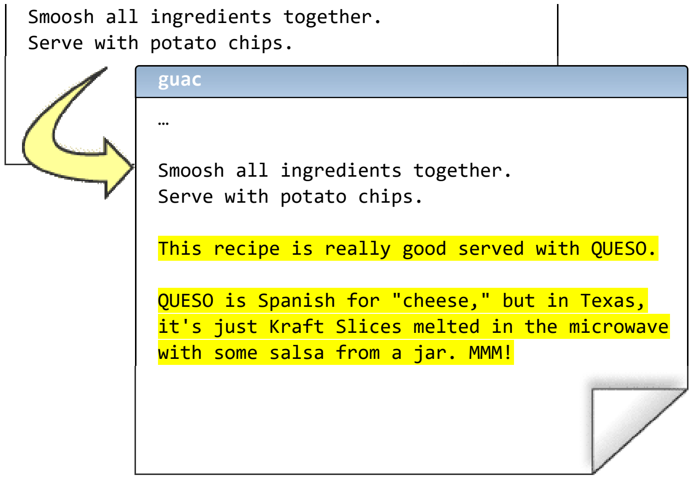
Now we can make a bunch of changes in the experimental branch:



```
C:\Users\joel> cd recipes-experiment
```

Here’s my grand guacamole experiment:

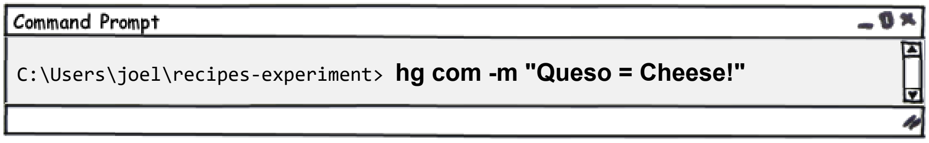
…



```
Smoosh all ingredients together.
Serve with potato chips.
```

```
…

Smoosh all ingredients together.
Serve with potato chips.

This recipe is really good served with QUESO.

QUESO is Spanish for "cheese," but in Texas,
it's just Kraft Slices melted in the microwave
with some salsa from a jar. MMM!
```

Here in the experimental repository, we can commit freely.

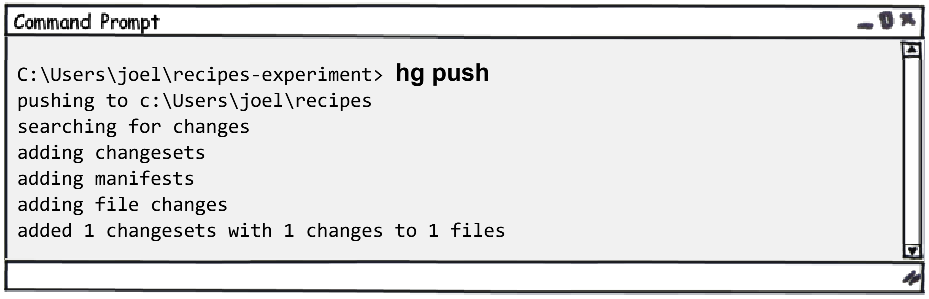


```
C:\Users\joel\recipes-experiment> hg com -m "Queso = Cheese!"
```

You can make changes and work freely, committing whenever you want. That gives you all the power of source control even for your crazy experiment, without infecting anyone else.

If you decide that the experiment was misguided, you can just delete the whole experimental directory. Problem solved. It's gone.

But if it worked, all you have to do is push your new changes:

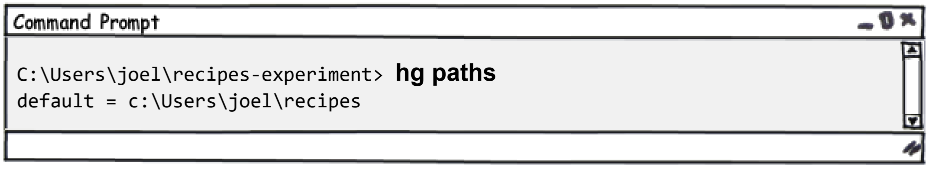


```
C:\Users\joel\recipes-experiment> hg push
pushing to c:\Users\joel\recipes
searching for changes
adding changesets
adding manifests
adding file changes
added 1 changesets with 1 changes to 1 files
```

Where did they go?

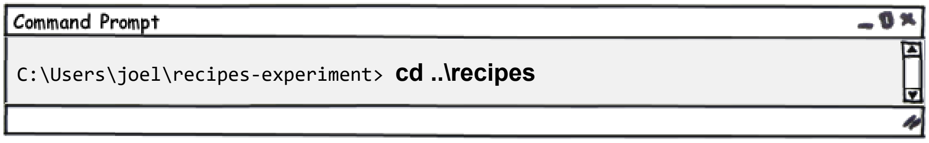
hg paths

shows a list of known remote repositories



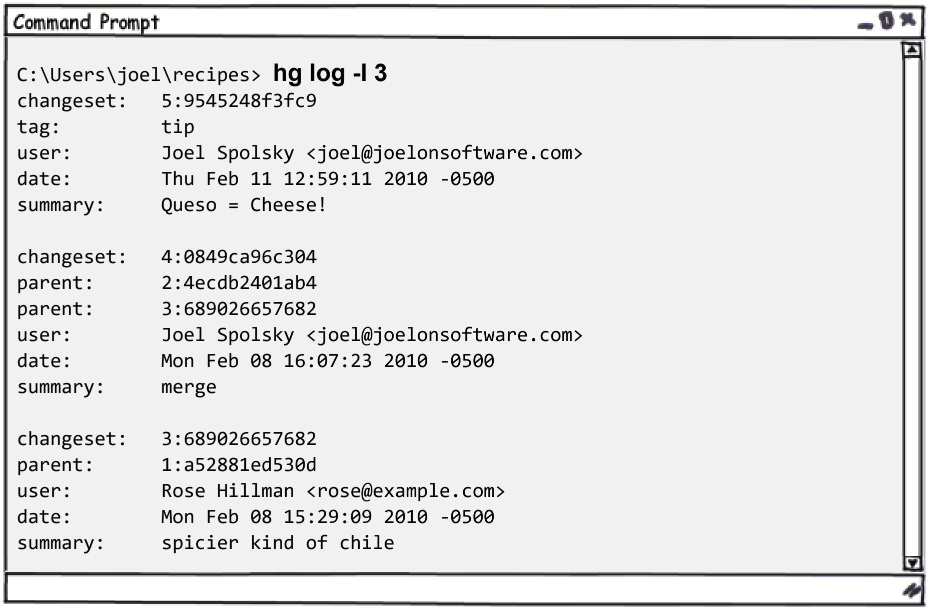
```
C:\Users\joel\recipes-experiment> hg paths
default = c:\Users\joel\recipes
```

The "default" entry there shows you the path to the repository that **hg push** will push changes to, if you don't specify any other repository. Normally, that's the repository that you cloned off of. In this case, it's a local directory, but you could also have a URL there.



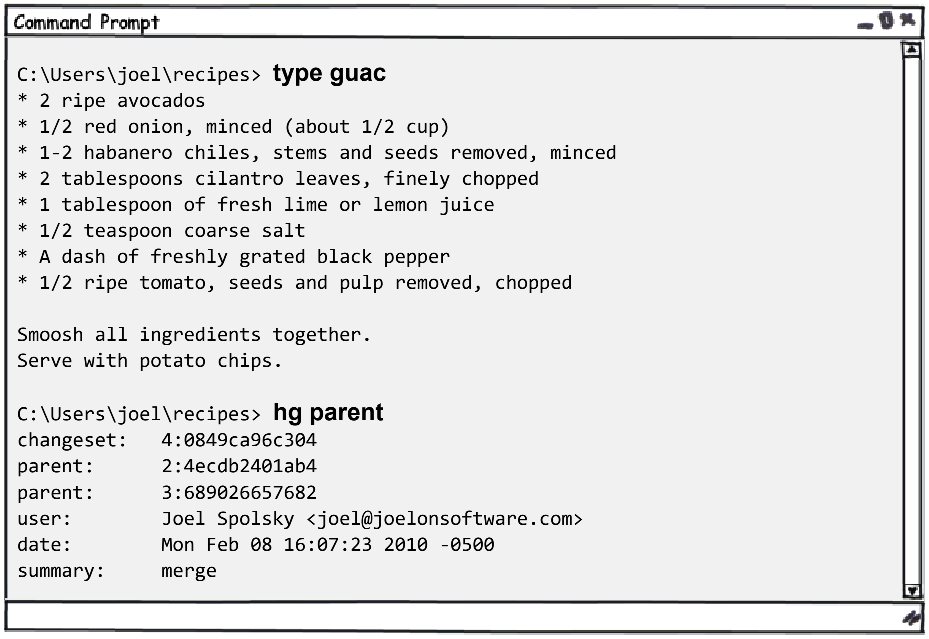
```
C:\Users\joel\recipes-experiment> cd ..\recipes
```

Don’t forget, just because the change has been pushed into this *repository*…



```
C:\Users\joel\recipes> hg log -l 3
changeset:   5:9545248f3fc9
tag:         tip
user:        Joel Spolsky <joel@joelonsoftware.com>
date:        Thu Feb 11 12:59:11 2010 -0500
summary:     Queso = Cheese!

changeset:   4:0849ca96c304
parent:      2:4ecdb2401ab4
parent:      3:689026657682
user:        Joel Spolsky <joel@joelonsoftware.com>
date:        Mon Feb 08 16:07:23 2010 -0500
summary:     merge

changeset:   3:689026657682
parent:      1:a52881ed530d
user:        Rose Hillman <rose@example.com>
date:        Mon Feb 08 15:29:09 2010 -0500
summary:     spicier kind of chile
```

… doesn’t mean we’re working off that version yet.

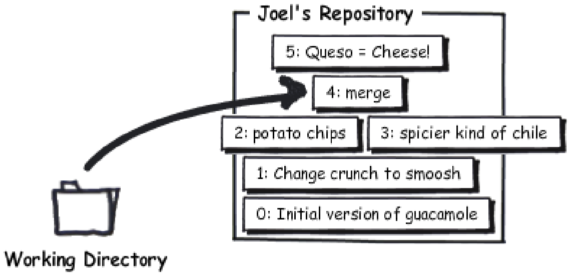


```
C:\Users\joel\recipes> type guac
* 2 ripe avocados
* 1/2 red onion, minced (about 1/2 cup)
* 1-2 habanero chiles, stems and seeds removed, minced
* 2 tablespoons cilantro leaves, finely chopped
* 1 tablespoon of fresh lime or lemon juice
* 1/2 teaspoon coarse salt
* A dash of freshly grated black pepper
* 1/2 ripe tomato, seeds and pulp removed, chopped

Smoosh all ingredients together.
Serve with potato chips.

C:\Users\joel\recipes> hg parent
changeset:   4:0849ca96c304
parent:      2:4ecdb2401ab4
parent:      3:689026657682
user:        Joel Spolsky <joel@joelonsoftware.com>
date:        Mon Feb 08 16:07:23 2010 -0500
summary:     merge
```

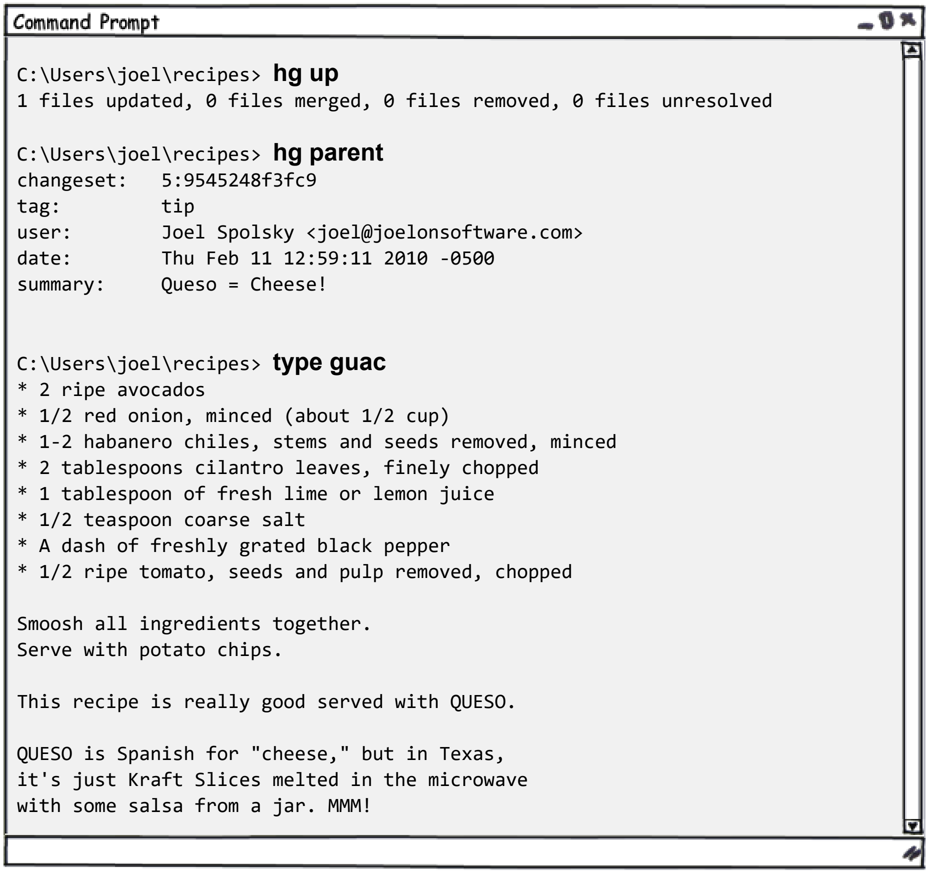
hg parent

shows which changeset(s) you’re working off of

See? That “Queso” stuff is in changeset 5. But my main repository was working off of changeset 4, and just because someone pushed new changes into the *repository*, doesn’t mean they’ve showed up in my working directory yet, so I’m still working off of changeset 4.



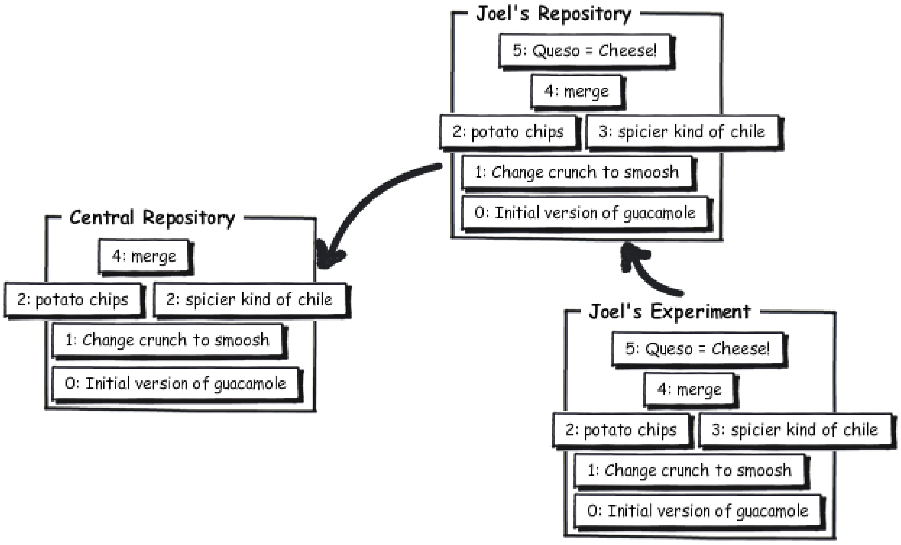
If I want to see what’s in changeset 5, I have to use the **hg update** command:



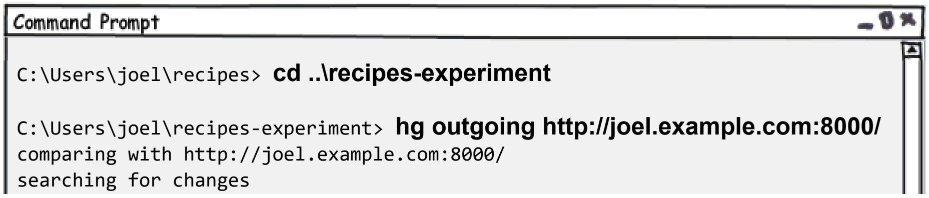
```
C:\Users\joel\recipes> hg up
1 files updated, 0 files merged, 0 files removed, 0 files unresolved

C:\Users\joel\recipes> hg parent
changeset:   5:9545248f3fc9
tag:         tip
user:        Joel Spolsky <joel@joelonsoftware.com>
date:        Thu Feb 11 12:59:11 2010 -0500
summary:     Queso = Cheese!


C:\Users\joel\recipes> type guac
* 2 ripe avocados
* 1/2 red onion, minced (about 1/2 cup)
* 1-2 habanero chiles, stems and seeds removed, minced
* 2 tablespoons cilantro leaves, finely chopped
* 1 tablespoon of fresh lime or lemon juice
* 1/2 teaspoon coarse salt
* A dash of freshly grated black pepper
* 1/2 ripe tomato, seeds and pulp removed, chopped

Smoosh all ingredients together.
Serve with potato chips.

This recipe is really good served with QUESO.

QUESO is Spanish for "cheese," but in Texas,
it's just Kraft Slices melted in the microwave
with some salsa from a jar. MMM!
```

See what happened here? The changes came in, but they were on top of the version I was working on. **push** and **pull** just send changes from one repo to another—they don’t affect the files I’m working on at the moment.

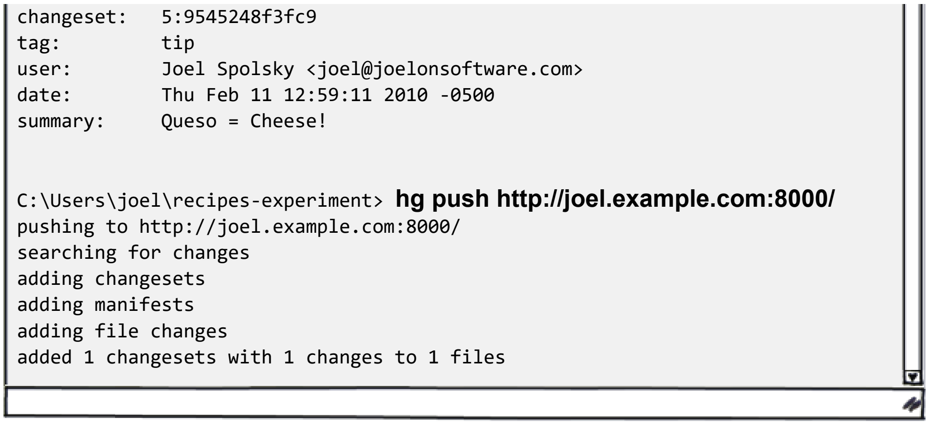
Right now here’s the state of repositories:



Mercurial is flexible about moving changes around from repository to repository. You can push straight from the experimental repository into the central repository:

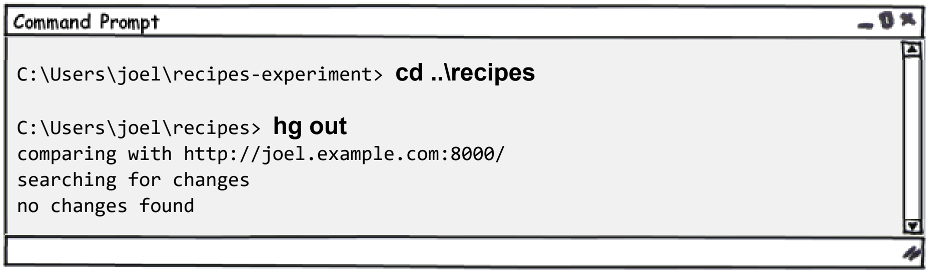


```
C:\Users\joel\recipes> cd ..\recipes-experiment

C:\Users\joel\recipes-experiment> hg outgoing http://joel.example.com:8000/
comparing with http://joel.example.com:8000/
searching for changes
```



```
changeset:   5:9545248f3fc9
tag:         tip
user:        Joel Spolsky <joel@joelonsoftware.com>
date:        Thu Feb 11 12:59:11 2010 -0500
summary:     Queso = Cheese!


C:\Users\joel\recipes-experiment> hg push http://joel.example.com:8000/
pushing to http://joel.example.com:8000/
searching for changes
adding changesets
adding manifests
adding file changes
added 1 changesets with 1 changes to 1 files
```

That pushed change 5 from the experimental repo directly into the central repository. Now, if I go back to my repository, there's nothing left to push!

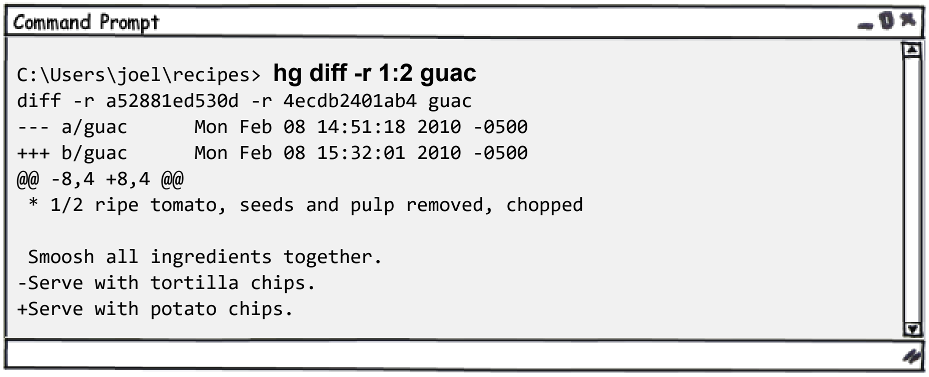


```
C:\Users\joel\recipes-experiment> cd ..\recipes

C:\Users\joel\recipes> hg out
comparing with http://joel.example.com:8000/
searching for changes
no changes found
```

That's because Mercurial knows that the central repo already got this particular changeset from somewhere else. That's really useful, because otherwise it would try to apply it again, and it would be massively confused.

After they made a job offer to designer Jim, he said he would start work right away, but then he didn't show up for two months. People had mostly forgotten about him and about the job offer, and when he showed up at the office for the first time to start work, looking rather sunburned, to be honest, nobody quite knew who he was or what was going on. It was pretty funny. He is kind of a generic looking guy. Eventually they figured it out, but since he was new, nobody had the guts to ask him what the hell had happened. Just like they never ask him about the bruises and scratches on his face. Whatever. We hate that guy.

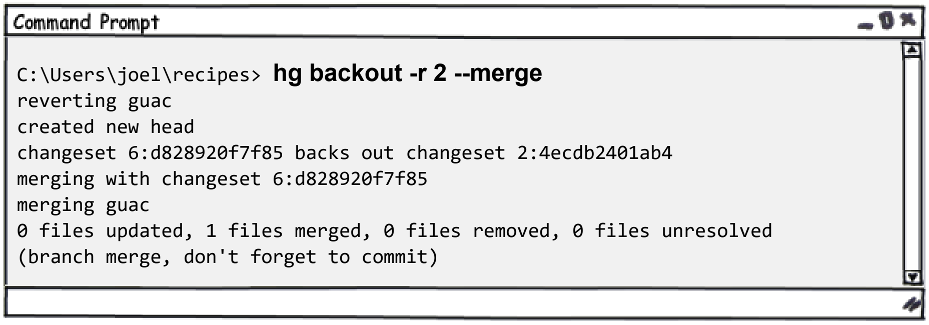
Sometimes it may happen that you discover that, months earlier, you made a mistake.



```
C:\Users\joel\recipes> hg diff -r 1:2 guac
diff -r a52881ed530d -r 4ecdb2401ab4 guac
--- a/guac      Mon Feb 08 14:51:18 2010 -0500
+++ b/guac      Mon Feb 08 15:32:01 2010 -0500
@@ -8,4 +8,4 @@
 * 1/2 ripe tomato, seeds and pulp removed, chopped

 Smoosh all ingredients together.
-Serve with tortilla chips.
+Serve with potato chips.
```

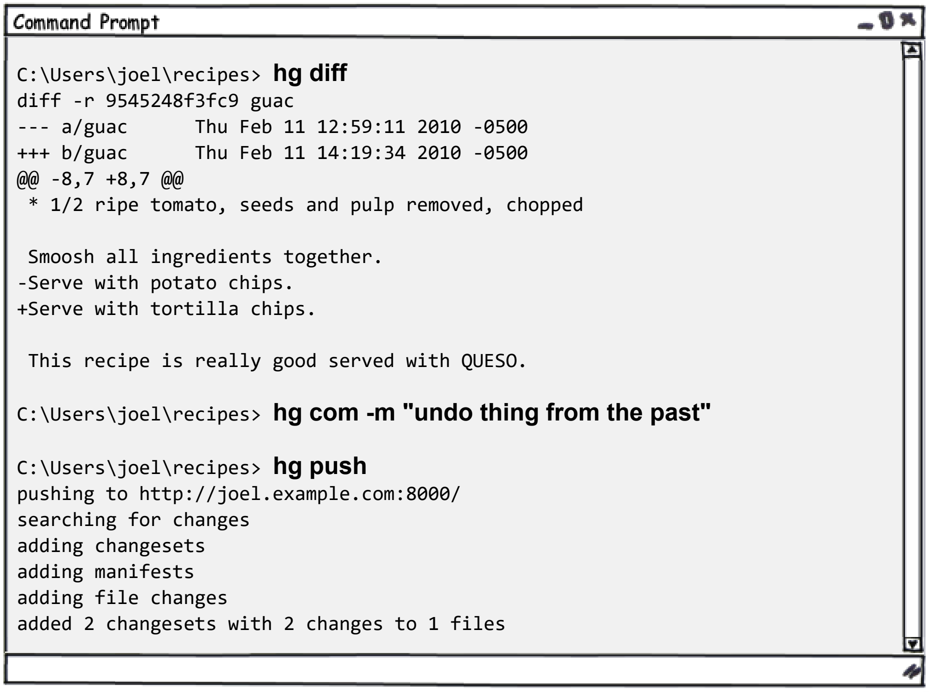
Potato chips? WTF?!

Mercurial can backout an old changeset from the past for you. It looks at the changeset, figures out the *opposite*, and does that to your current working directory. Let's try backing out that old revision 2.



```
C:\Users\joel\recipes> hg backout -r 2 --merge
reverting guac
created new head
changeset 6:d828920f7f85 backs out changeset 2:4ecdb2401ab4
merging with changeset 6:d828920f7f85
merging guac
0 files updated, 1 files merged, 0 files removed, 0 files unresolved
(branch merge, don't forget to commit)
```

Holy crap, what just happened?



```
C:\Users\joel\recipes> hg diff
diff -r 9545248f3fc9 guac
--- a/guac      Thu Feb 11 12:59:11 2010 -0500
+++ b/guac      Thu Feb 11 14:19:34 2010 -0500
@@ -8,7 +8,7 @@
 * 1/2 ripe tomato, seeds and pulp removed, chopped

 Smoosh all ingredients together.
-Serve with potato chips.
+Serve with tortilla chips.

 This recipe is really good served with QUESO.

C:\Users\joel\recipes> hg com -m "undo thing from the past"

C:\Users\joel\recipes> hg push
pushing to http://joel.example.com:8000/
searching for changes
adding changesets
adding manifests
adding file changes
added 2 changesets with 2 changes to 1 files
```

Now, a lot of time may have passed. The chips might already be gone from the recipe. All kinds of spooky stuff might have happened that makes it impossible to merge in this change. In that case, you're going to get merge conflicts, which you're going to have to resolve somehow. We'll talk about that in the next tutorial.

Test yourself

Here are the things you should know how to do after reading this tutorial:

1. Revert accidental changes, before and after checking in
2. Clone a repository locally for experiments
3. Push between repositories
4. Revert an old mistake that's been in the repository for ages

« Home

Next, we talk about how to merge in Mercurial

Next »

Any questions?

If you have any questions about the material in this tutorial, no matter how newbie, ask them at the Kiln Knowledge Exchange.

About the author.

Joel Spolsky is the founder of Fog Creek Software, a New York company that proves that you can treat programmers well and still be profitable. Programmers get private offices, free lunch, and work 40 hours a week. Customers only pay for software if they’re delighted. Fog Creek makes FogBugz, Kiln, and Fog Creek Copilot. Joel's blog Joel on Software is read by programmers everywhere.