

The Git Parable

Johan Herland

<johan@herland.net>

The Git Parable

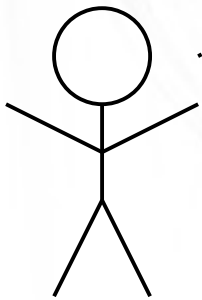
- Shamelessly stolen from Tom Preston-Werner
<http://tom.preston-werner.com/2009/05/19/the-git-parable.html>
- I'm lazy...
- Also: Best introduction to Git I've found so far

The Git Parable

- Git - simple & powerful

The Git Parable

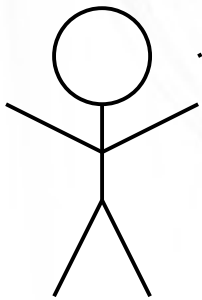
- Git - simple & powerful



```
git init
git add ...
git commit ...
git branch ...
git checkout ...
git tag ...
git diff ...
git log ...
git remote ...
git fetch ...
git pull ...
git push ...
...
```

The Git Parable

- Git - simple & powerful

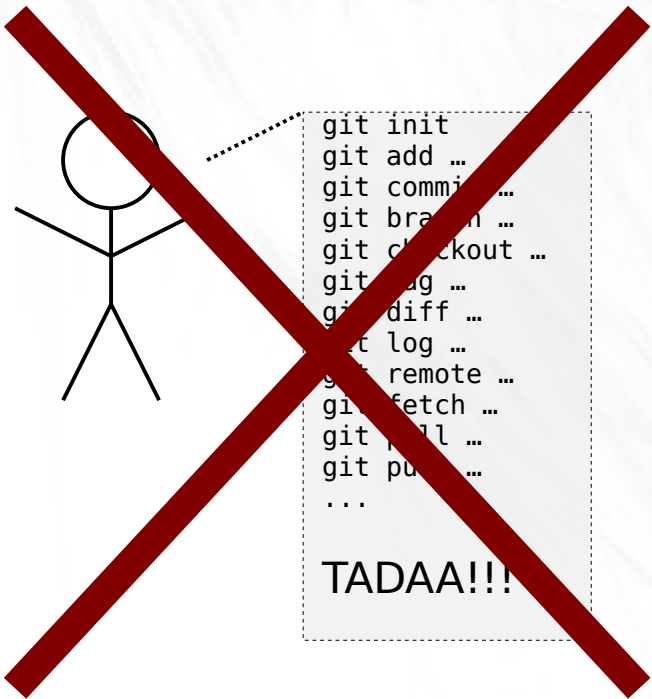


```
git init  
git add ...  
git commit ...  
git branch ...  
git checkout ...  
git tag ...  
git diff ...  
git log ...  
git remote ...  
git fetch ...  
git pull ...  
git push ...  
...
```

TADAAA!!!

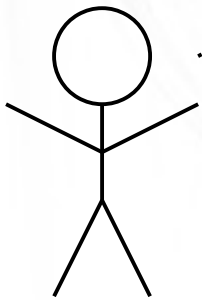
The Git Parable

- Git - simple & powerful



The Git Parable

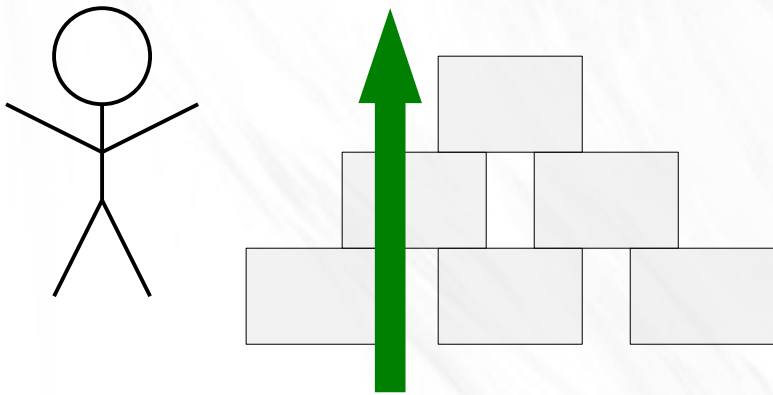
- Git - simple & powerful



Let's tell a parable

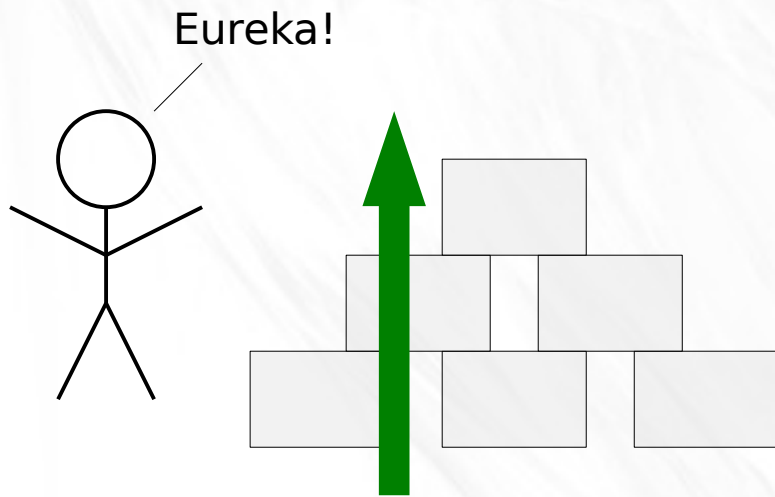
The Git Parable

- Git - simple & powerful



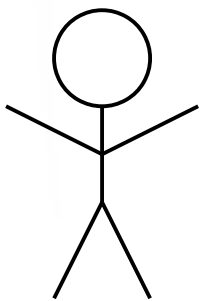
The Git Parable

- Git - simple & powerful



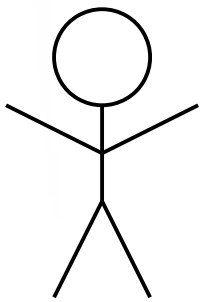
The Parable

- A simple computer
 - A text editor
 - A few filesystem commands



The Parable

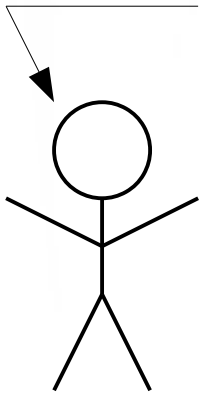
- Write a large software program



The Parable

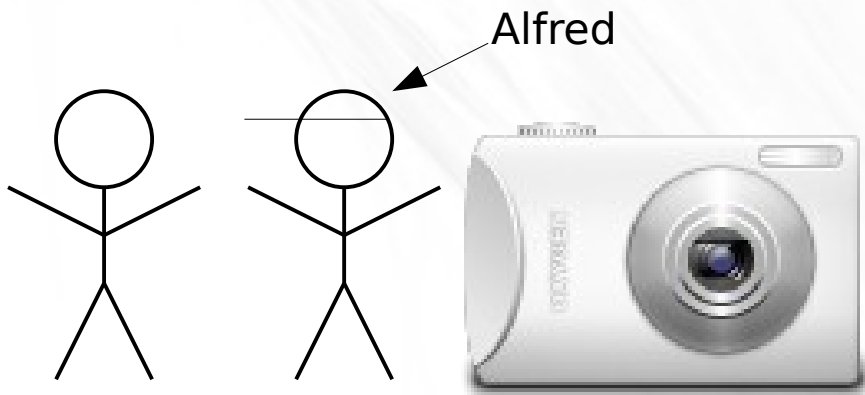
- Write a large software program
- Invent some method to keep track of versions
 - retrieve code that you changed/deleted

Responsible!



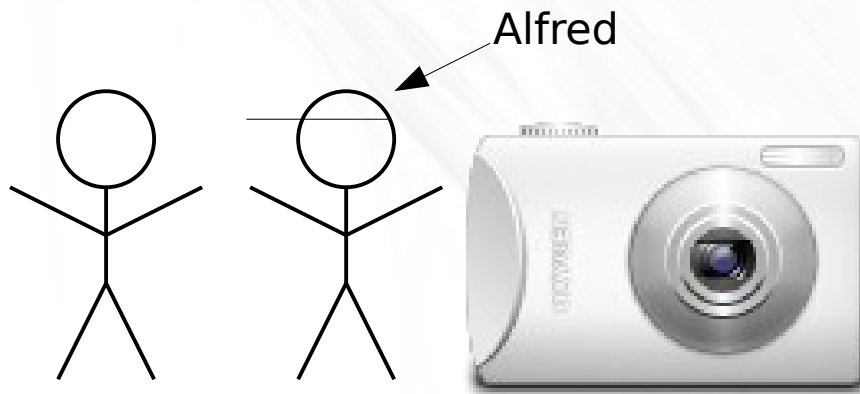
Snapshots

- Alfred, the photographer



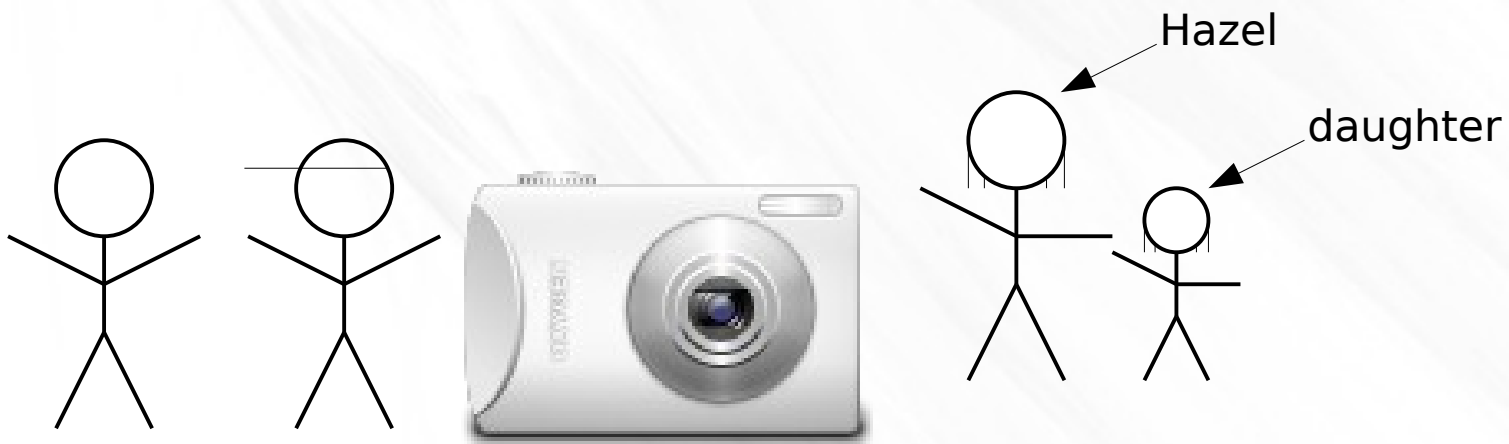
Snapshots

- Alfred, the photographer



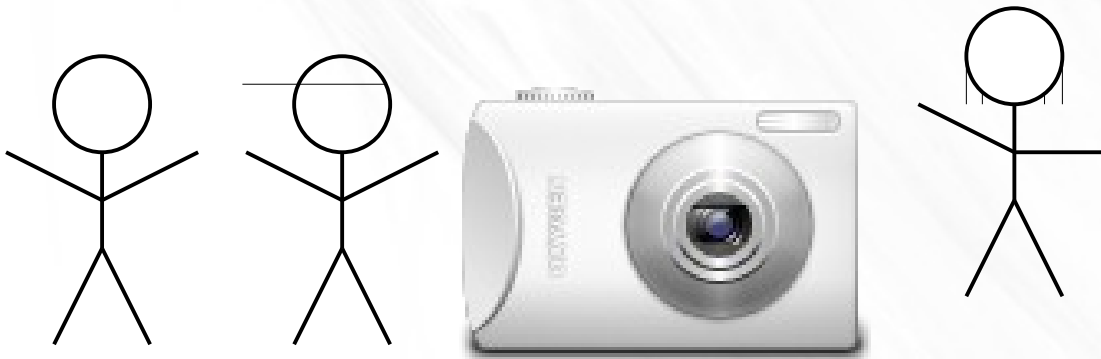
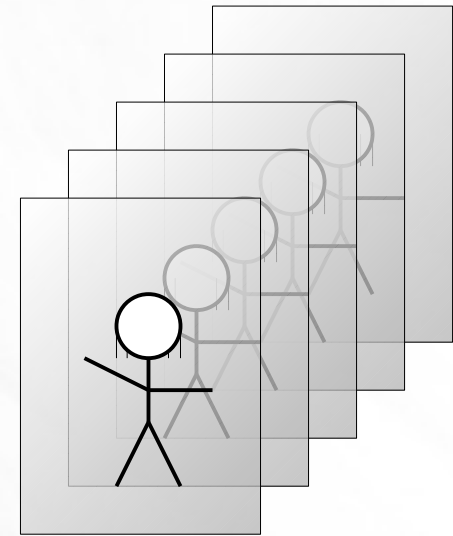
Snapshots

- Alfred, the photographer
- Hazel and her daughter



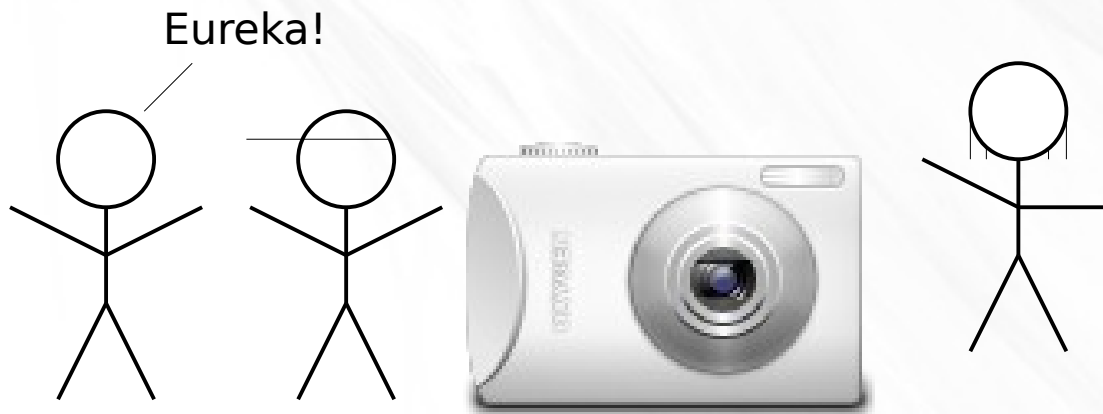
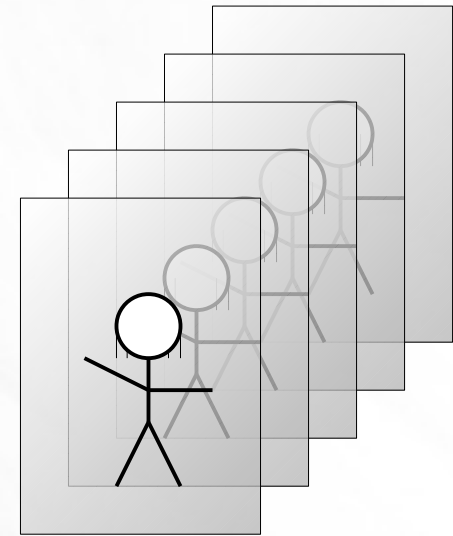
Snapshots

- Alfred, the photographer
- Hazel and her daughter
 - Remember what the daughter was like at each different stage



Snapshots

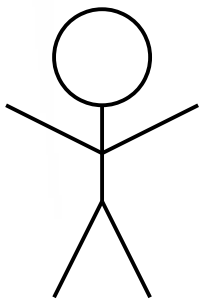
- Alfred, the photographer
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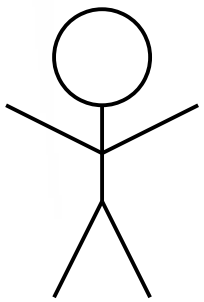
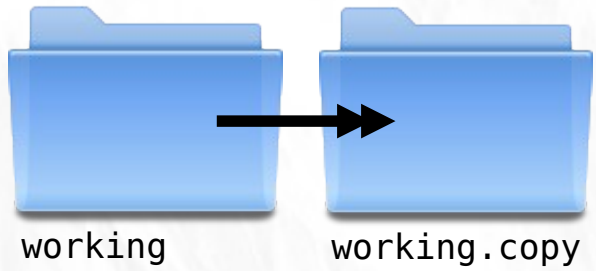
Snapshots



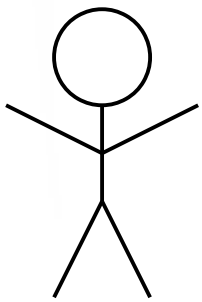
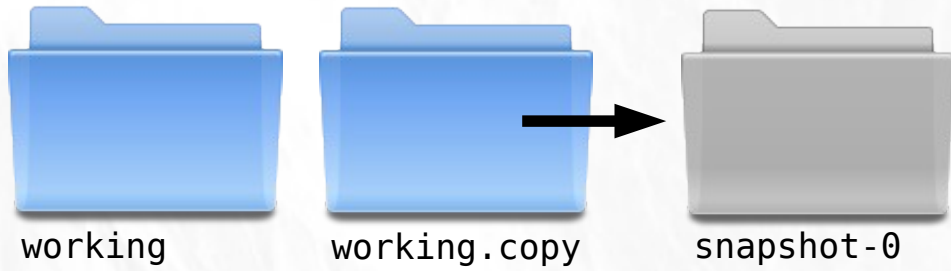
working



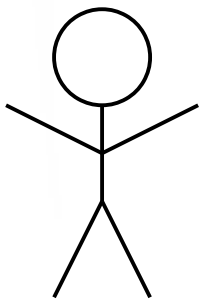
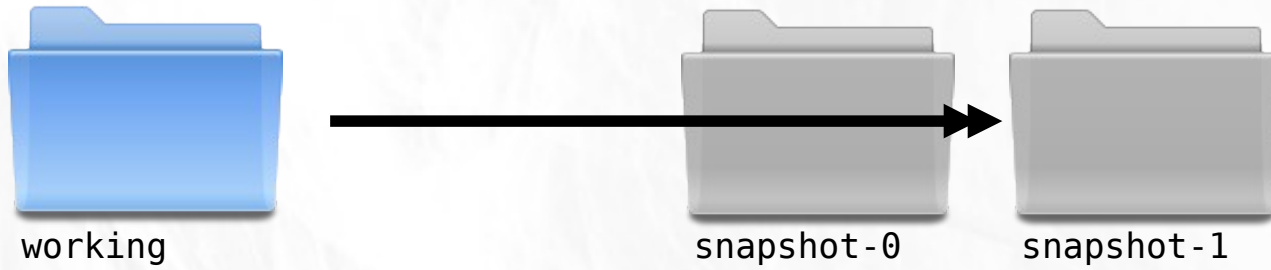
Snapshots



Snapshots



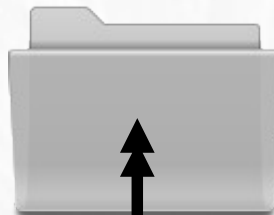
Snapshots



Snapshots



working



snapshot-0



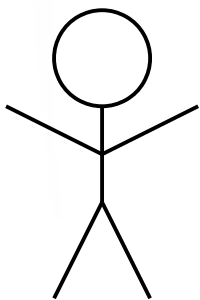
snapshot-1



message



message



2009-05-20 12:34:56

Initial version

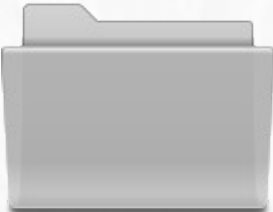
2009-05-21 23:45:01

Introduced a new foo,
and reset the bar to
xyzyz.

Branches



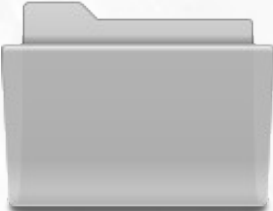
working



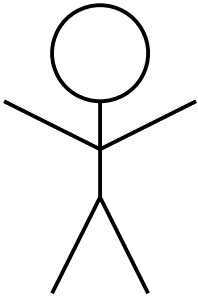
snapshot-0



snapshot-1



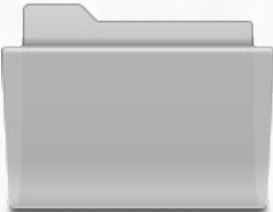
snapshot-99



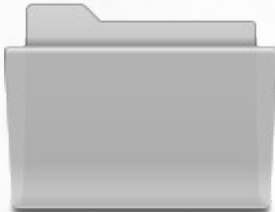
Branches



working



snapshot-0



snapshot-1

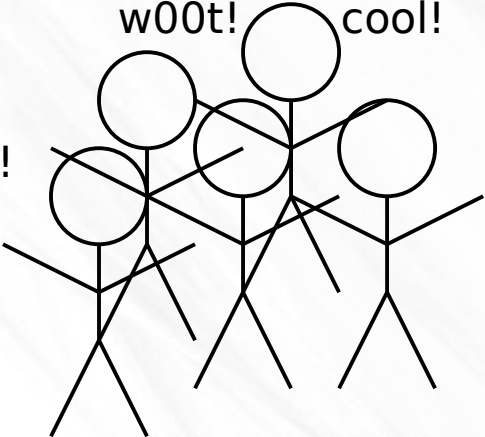
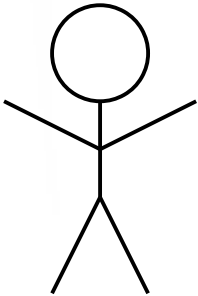


snapshot-99



w00t! cool!

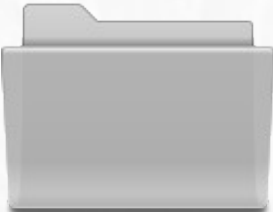
nice!



Branches



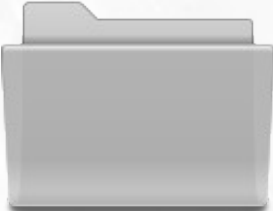
working



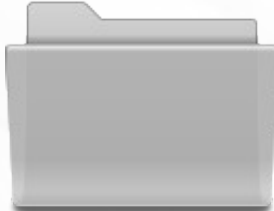
snapshot-0



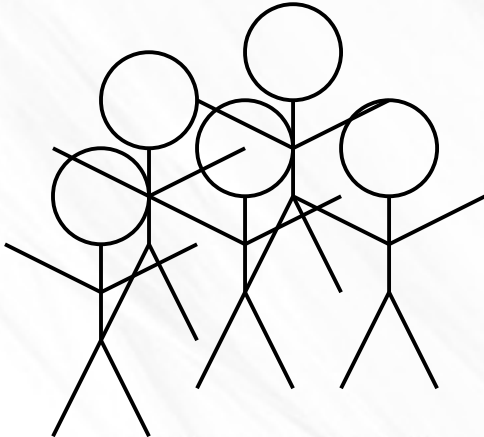
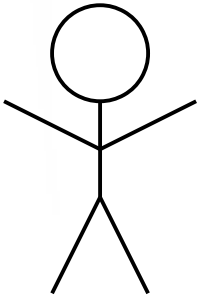
snapshot-1



snapshot-99



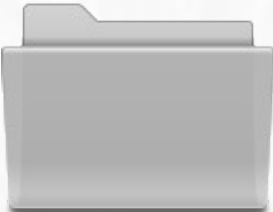
snapshot-109



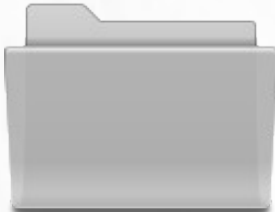
Branches



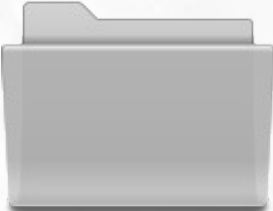
working



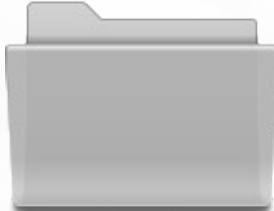
snapshot-0



snapshot-1

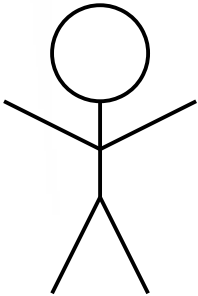


snapshot-99

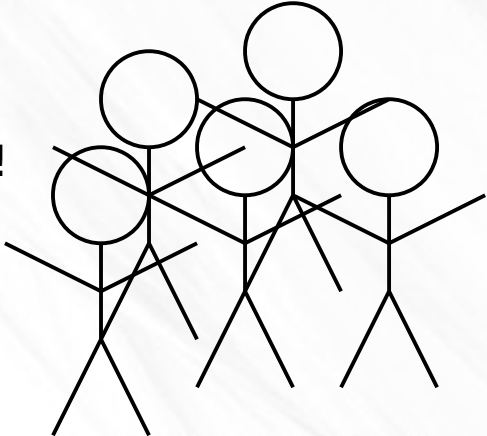


snapshot-109

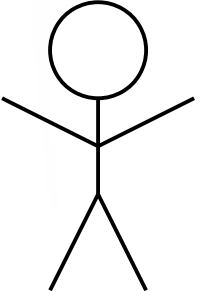
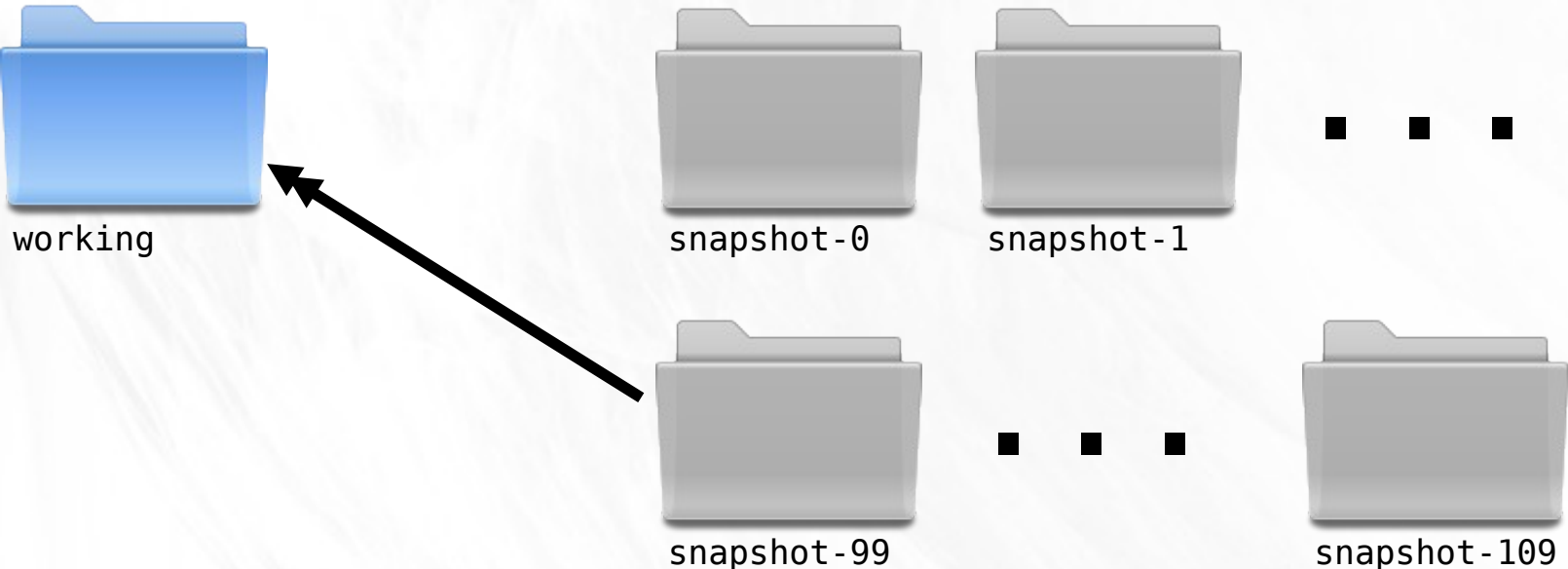
Does not work!



Boo!



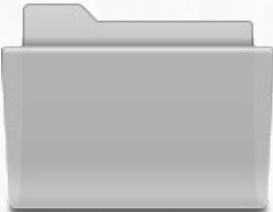
Branches



Branches



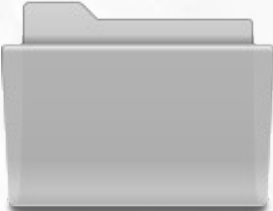
working



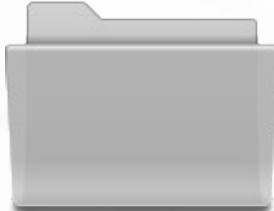
snapshot-0



snapshot-1



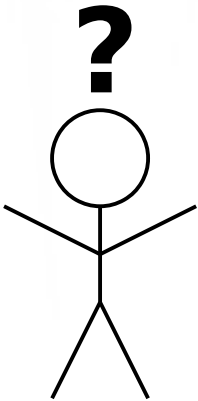
snapshot-99



snapshot-109



snapshot-110



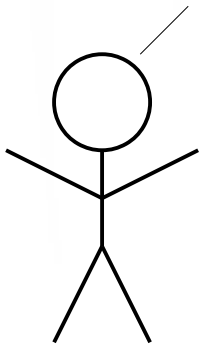
Branches



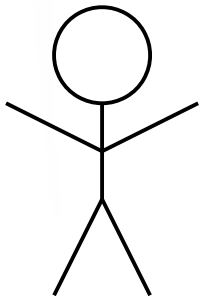
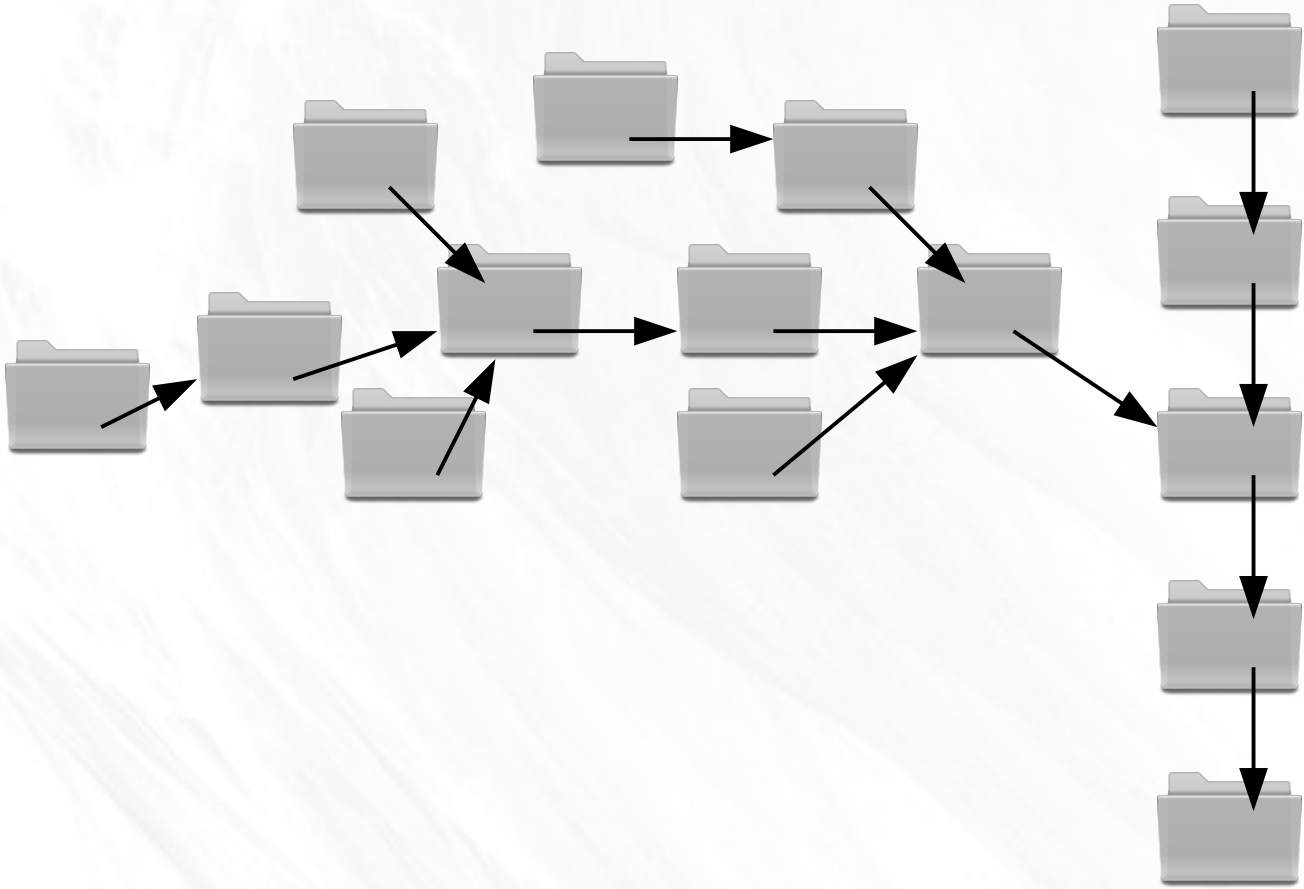
Branches



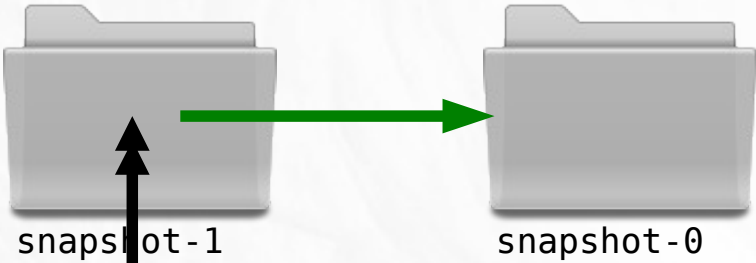
Eureka!



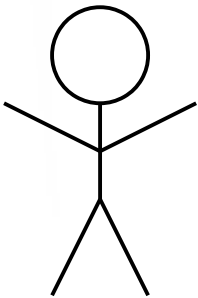
Branches



Branches

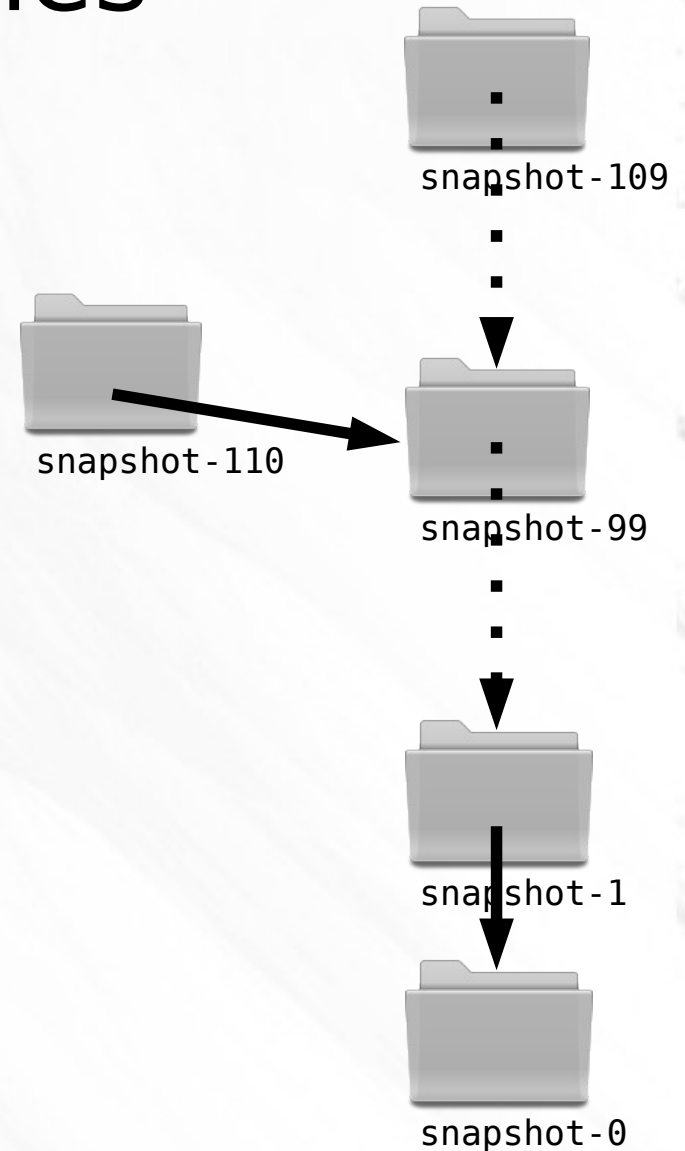
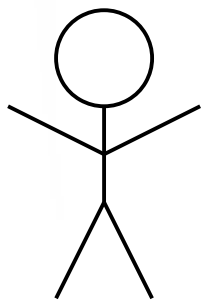


message



```
2009-05-21 23:45:01  
parent: snapshot-0  
  
Introduced a new foo,  
and reset the bar to  
xyzyz.
```

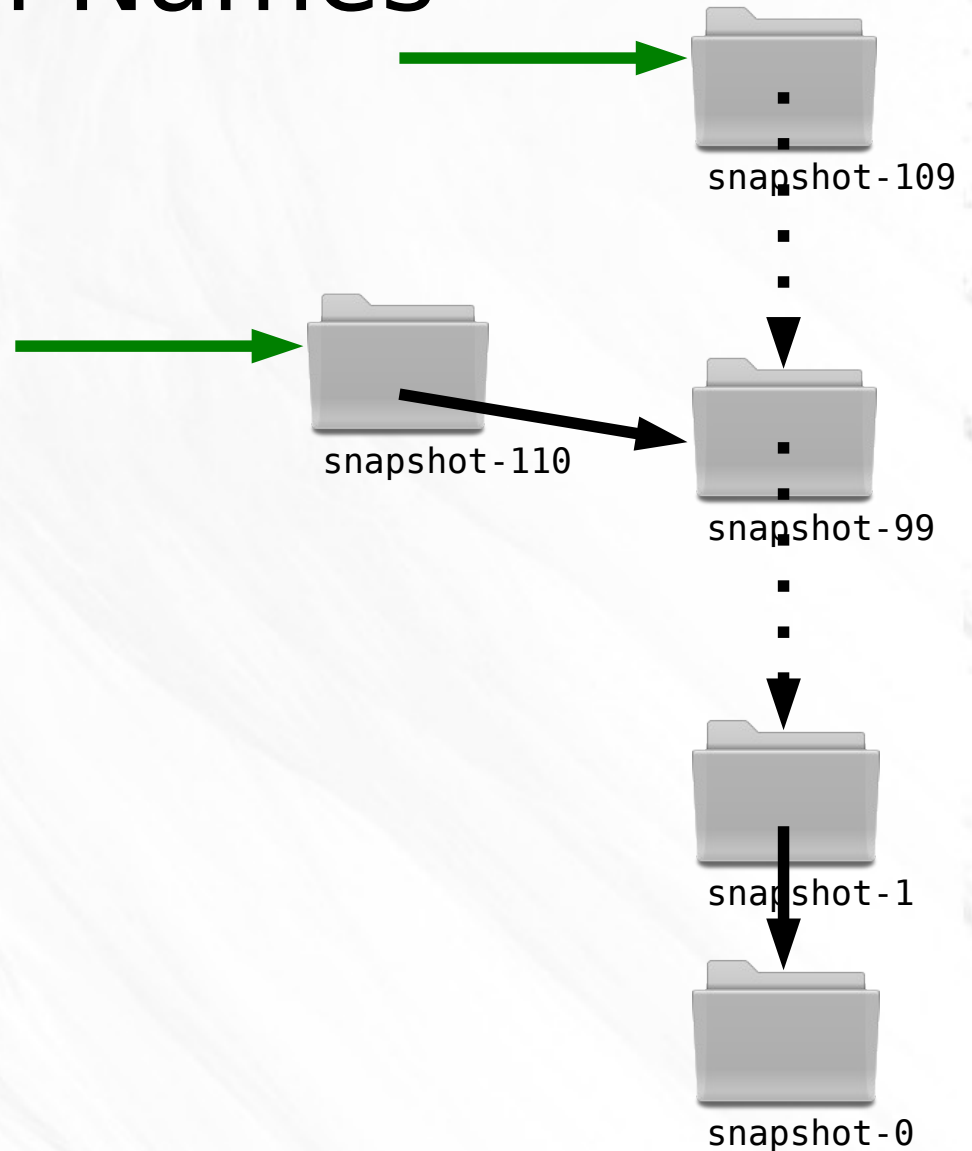
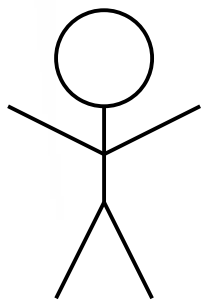

Branch Names



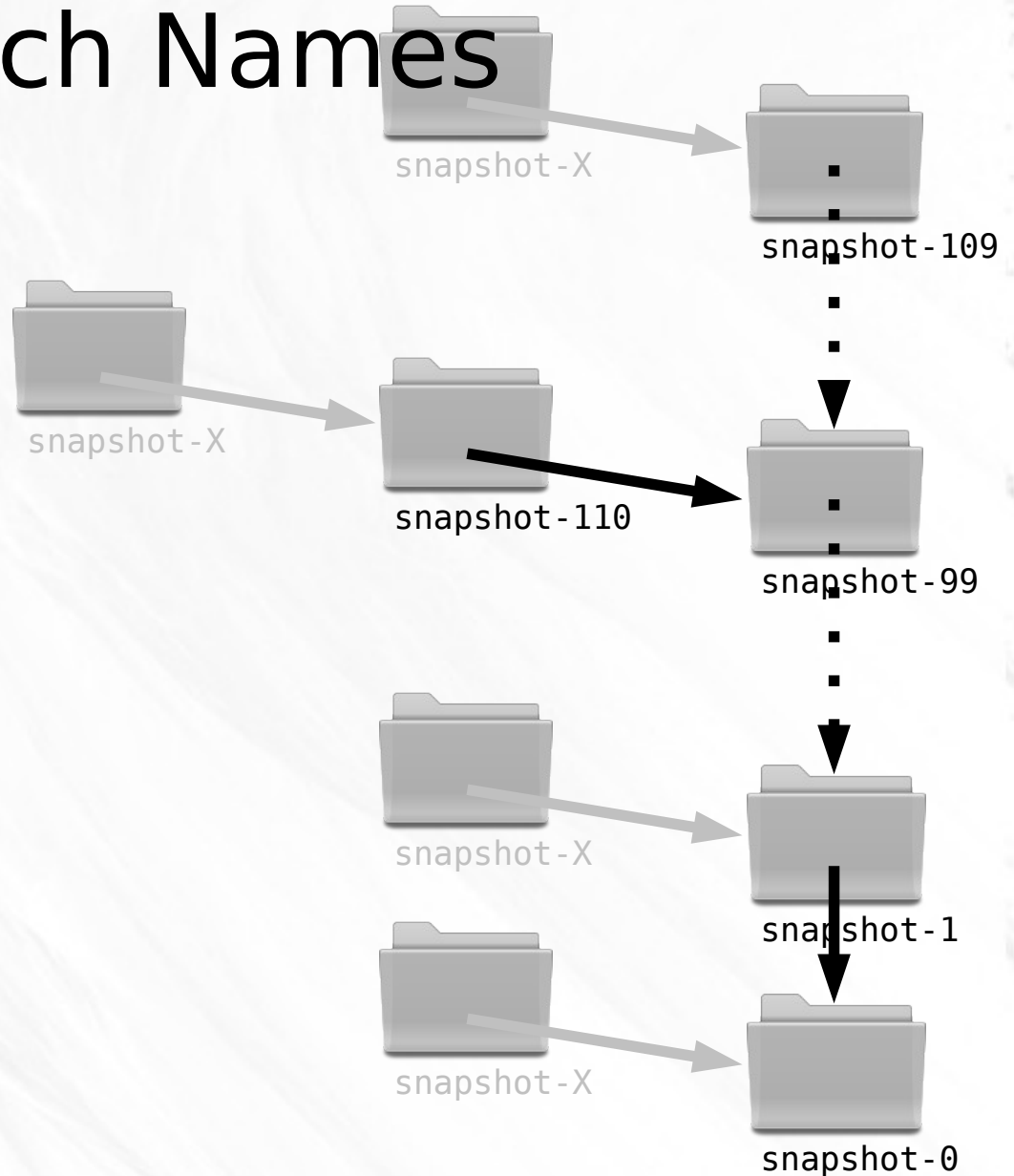
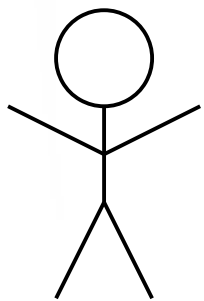
Branch Names



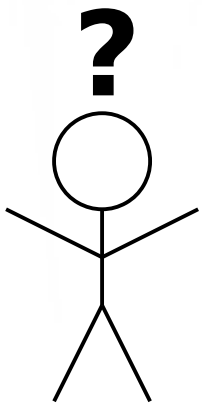
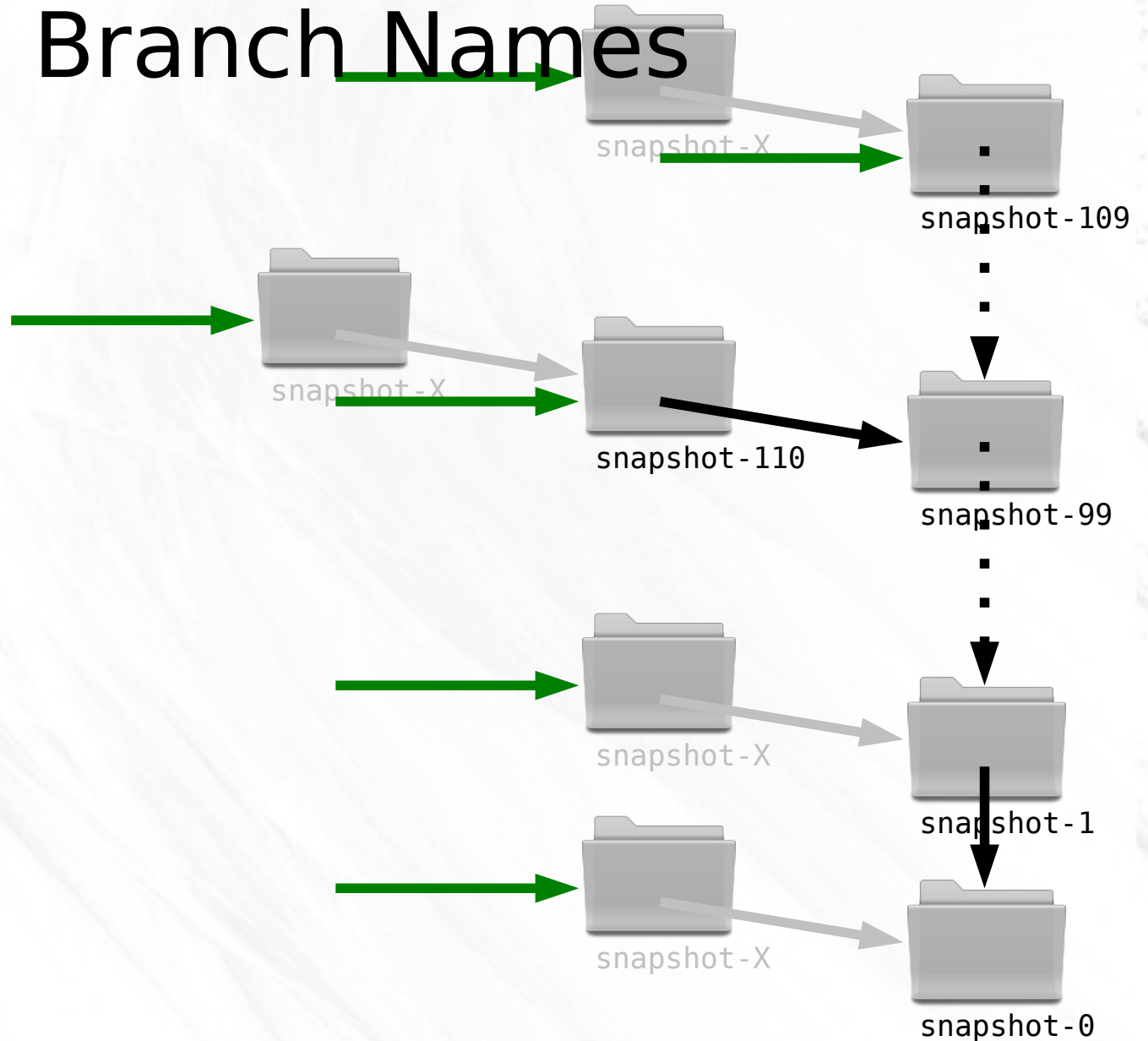
working



Branch Names



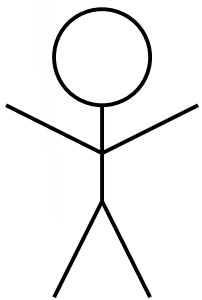
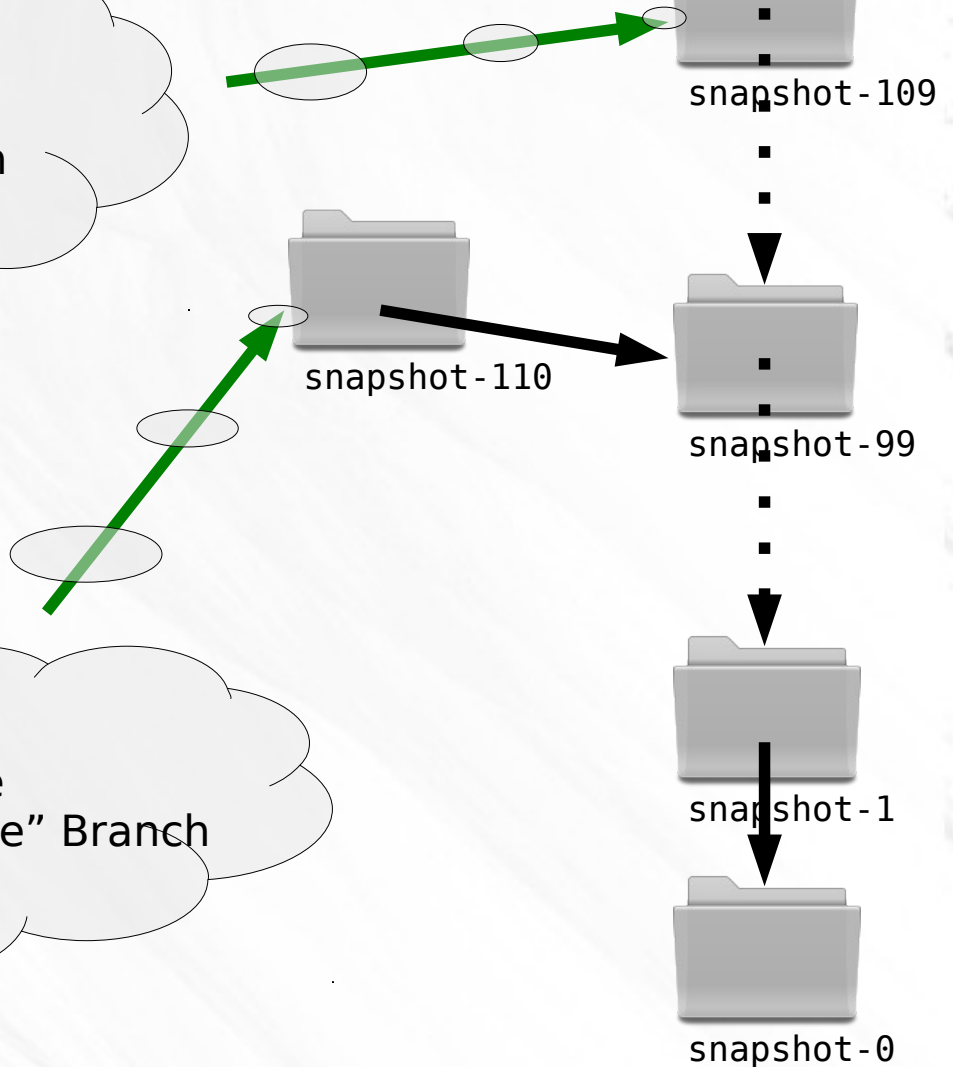
Branch Names



Branch Names



This is the "master" branch



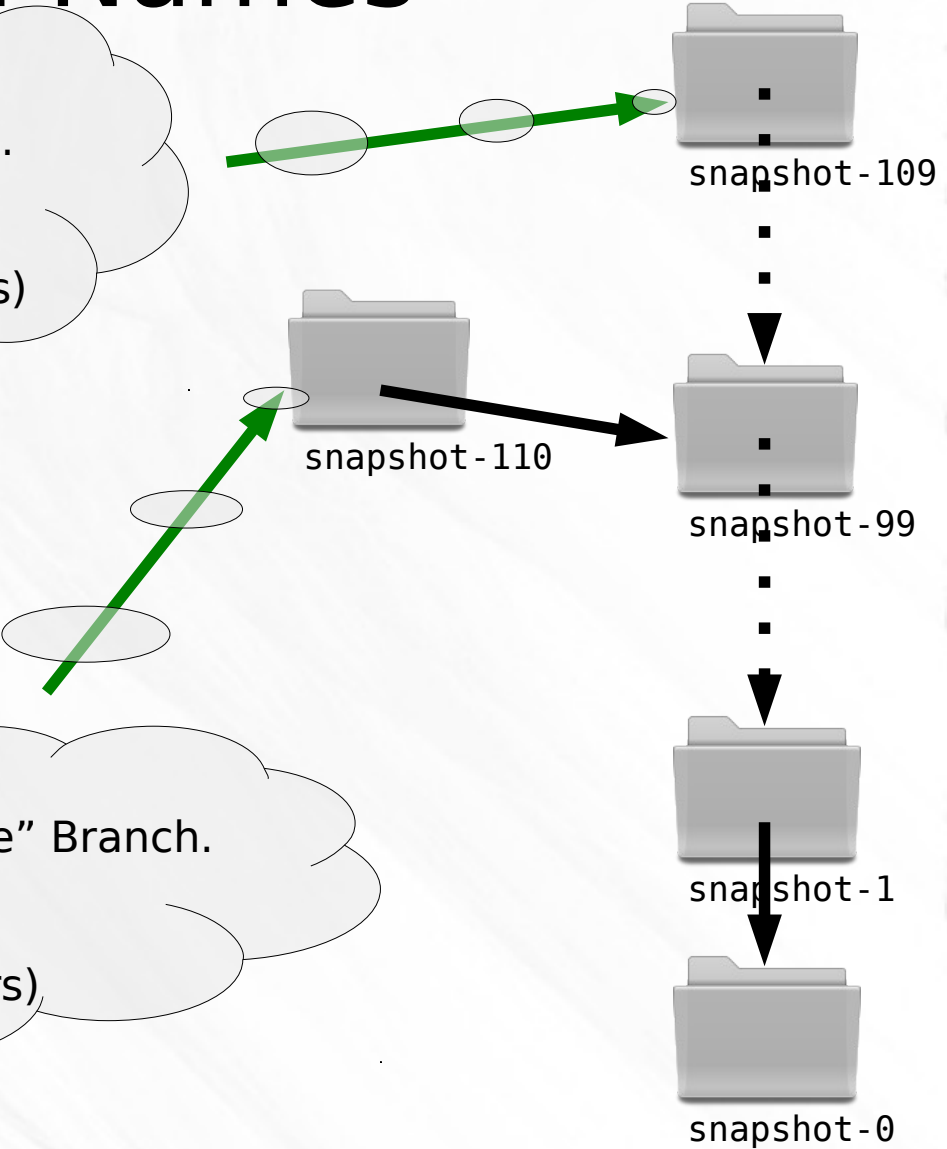
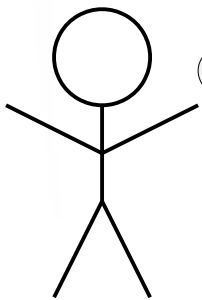
This will be the "Version 1.0 Maintenance" Branch

Branch Names

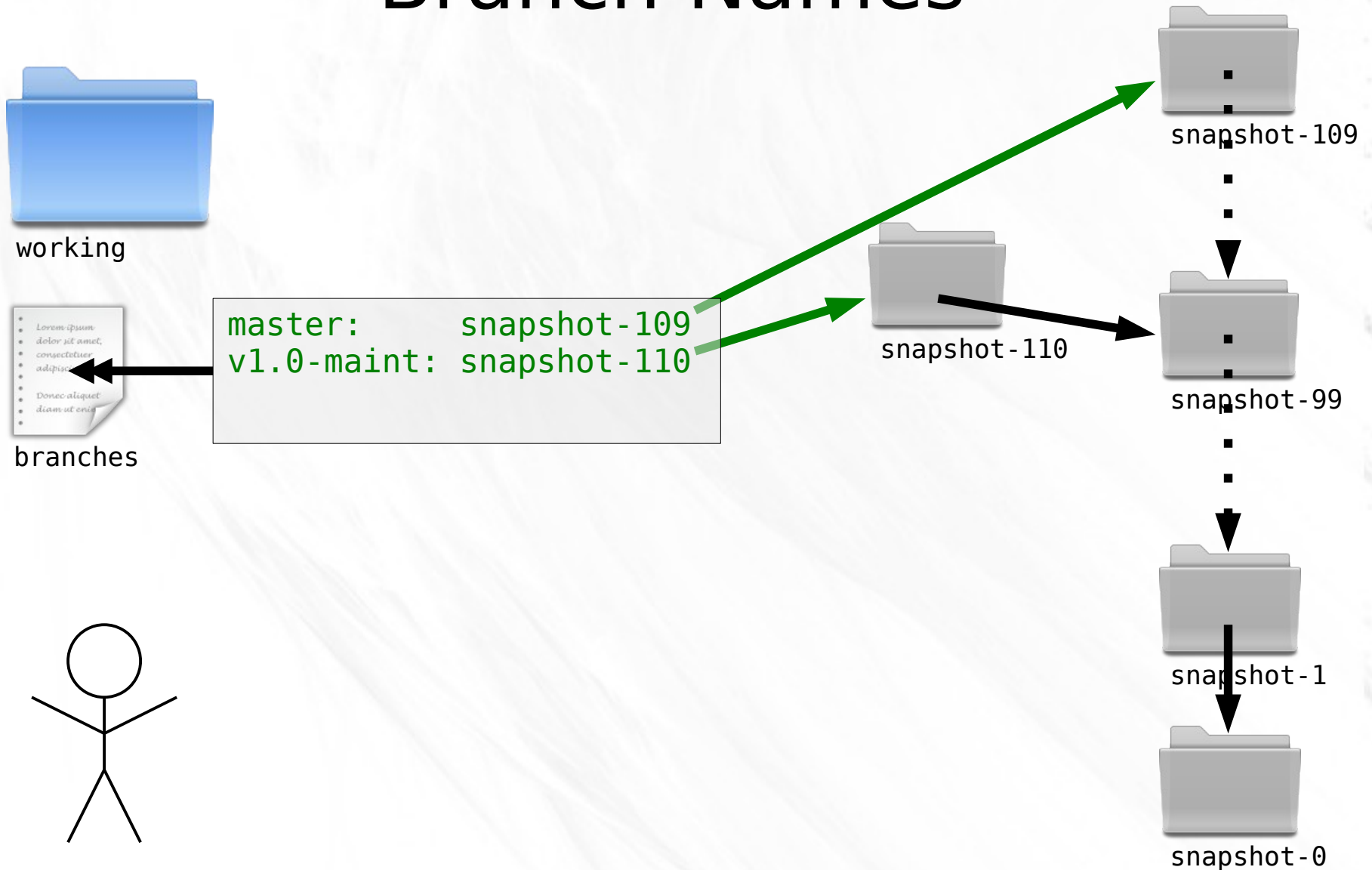


This is the "master" branch. It contains: snapshot-109 (and its ancestors)

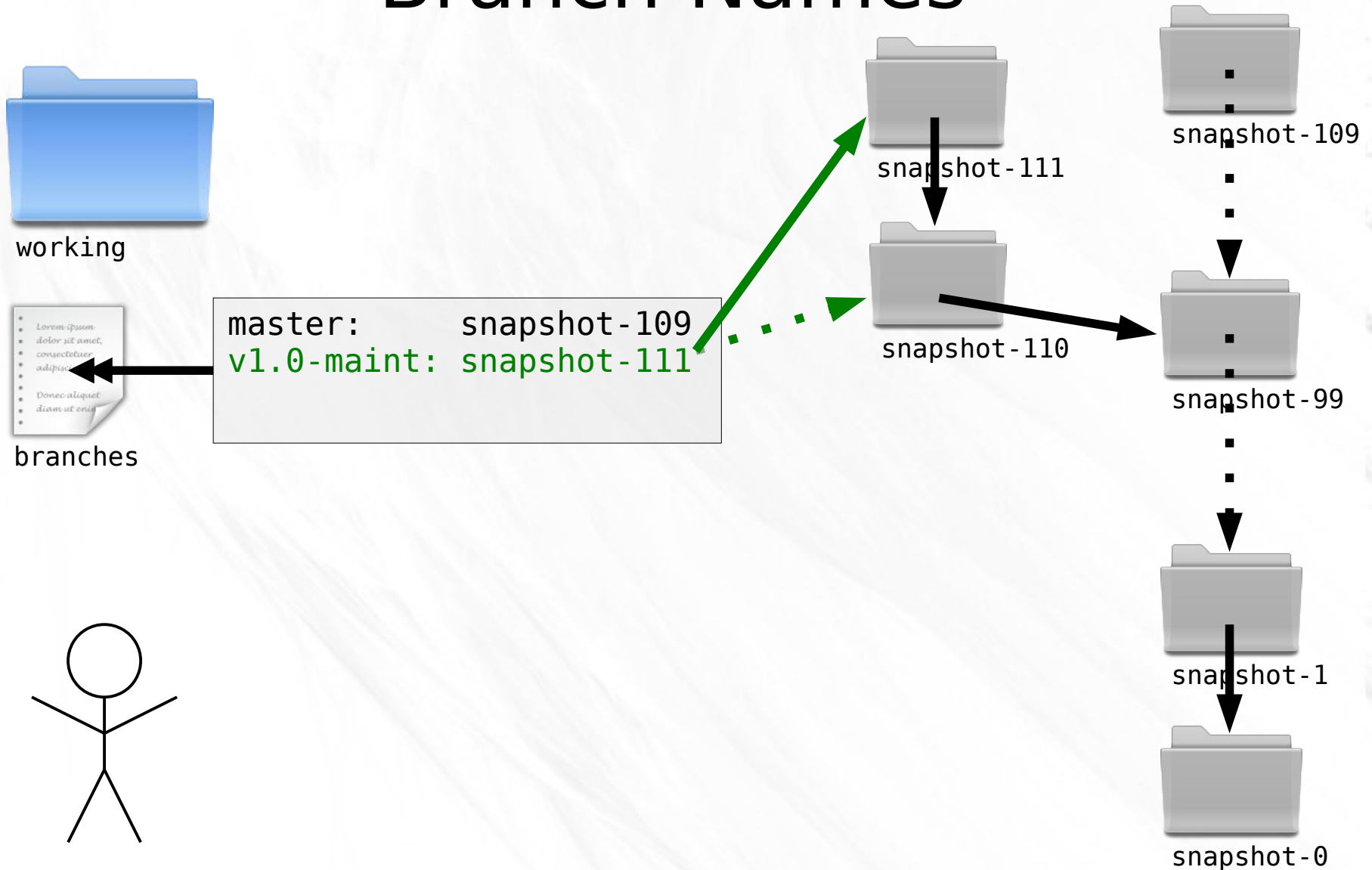
This is the "Version 1.0 Maintenance" Branch. It contains: snapshot-110 (and its ancestors)



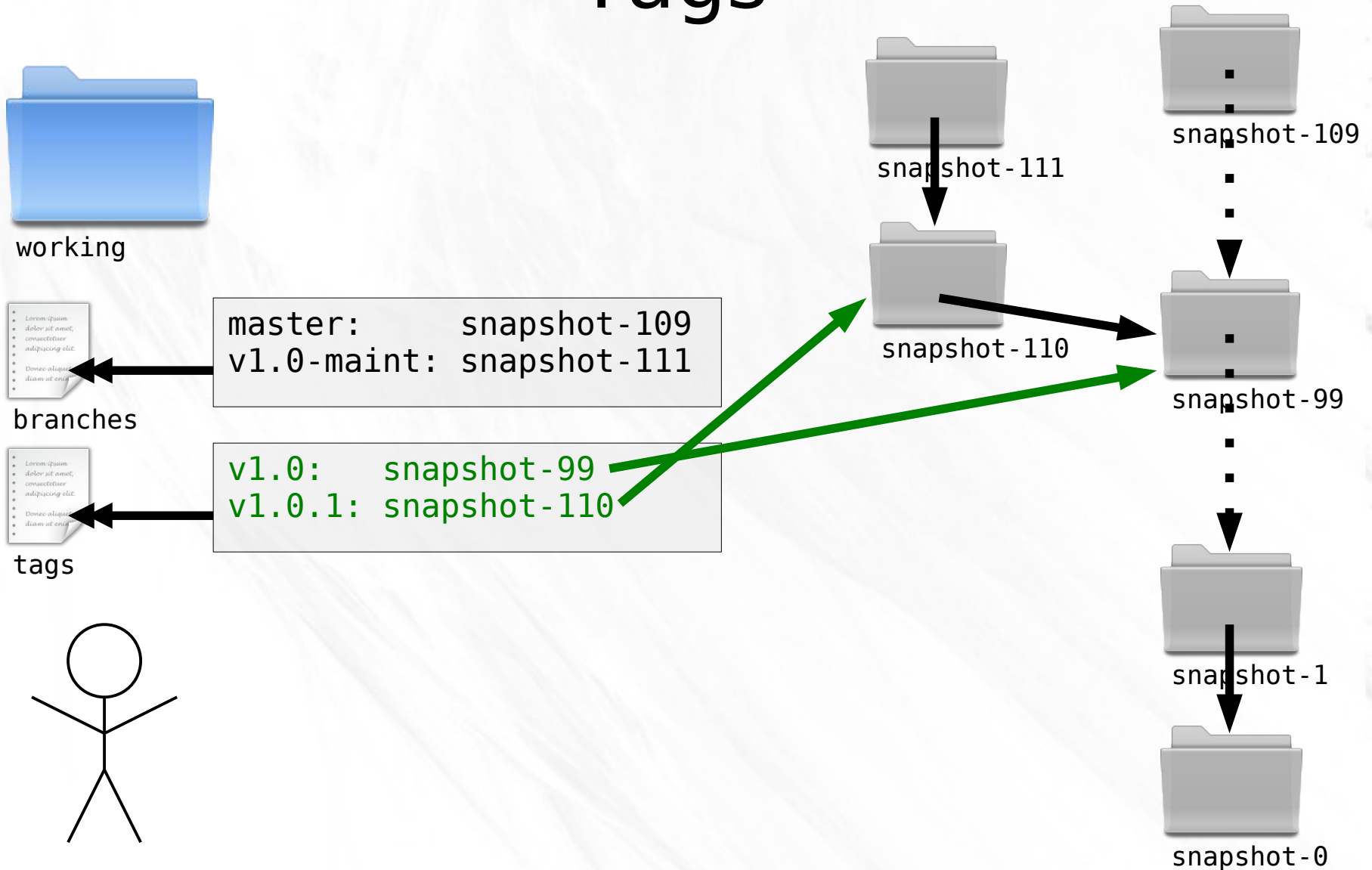
Branch Names



Branch Names



Tags



Distributed



working

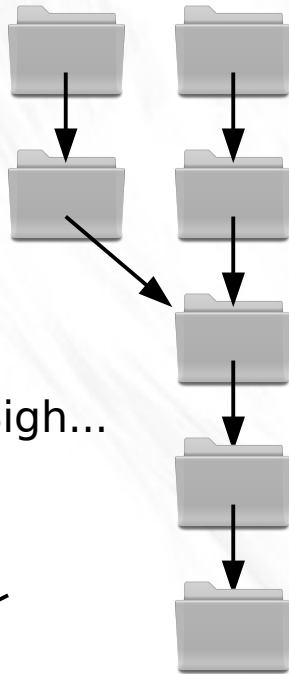
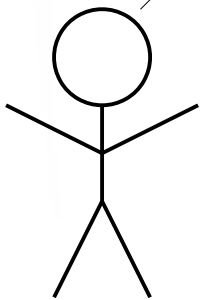


branches

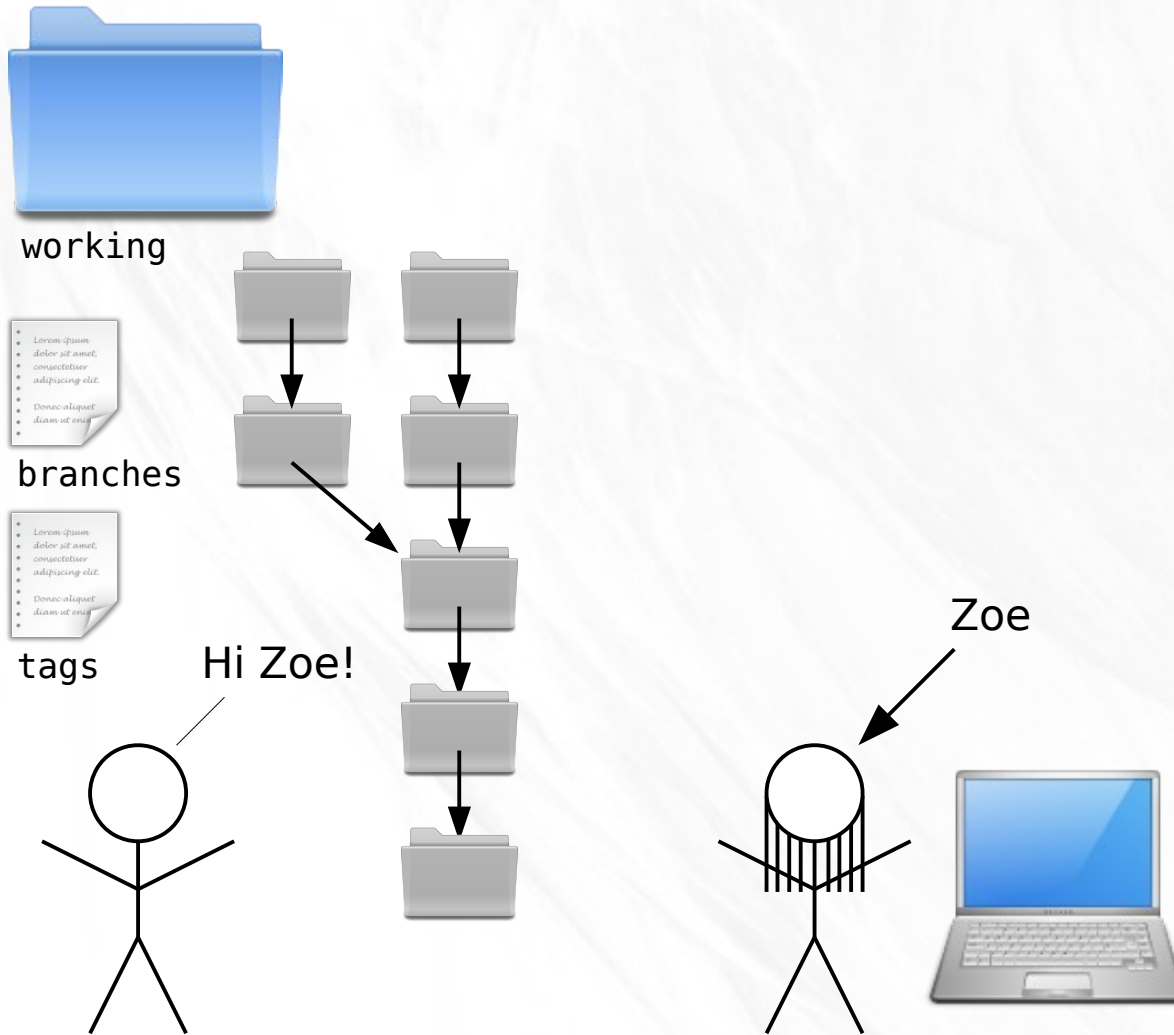


tags

Sigh...



Distributed



Distributed



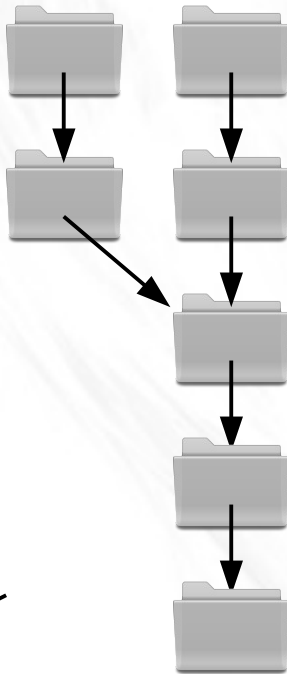
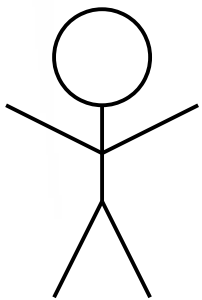
working



branches



tags



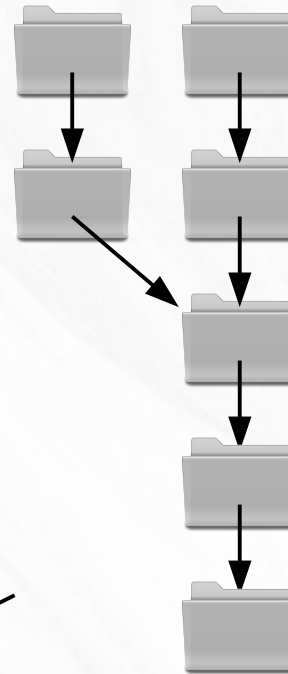
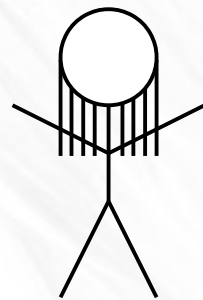
working



branches



tags



Distributed



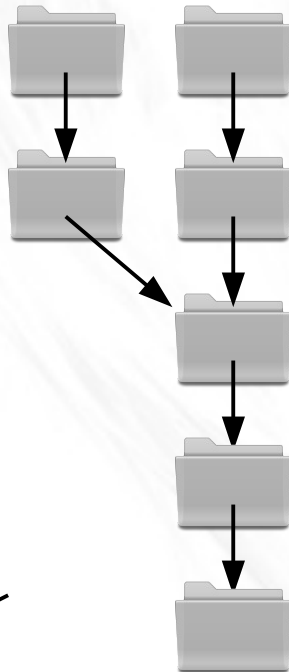
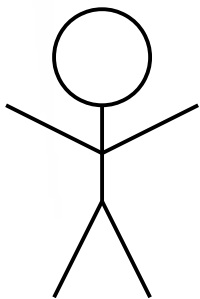
working



branches



tags



working

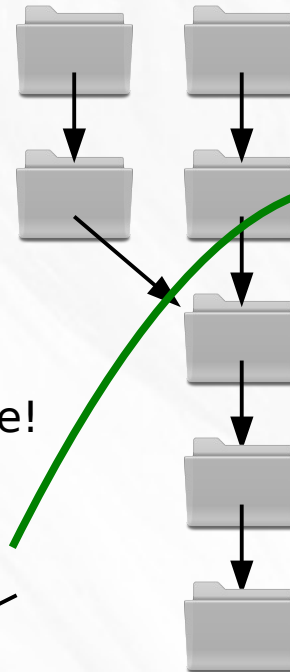
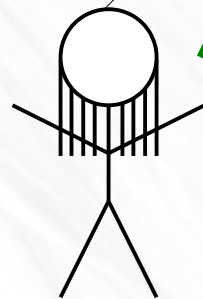


branches

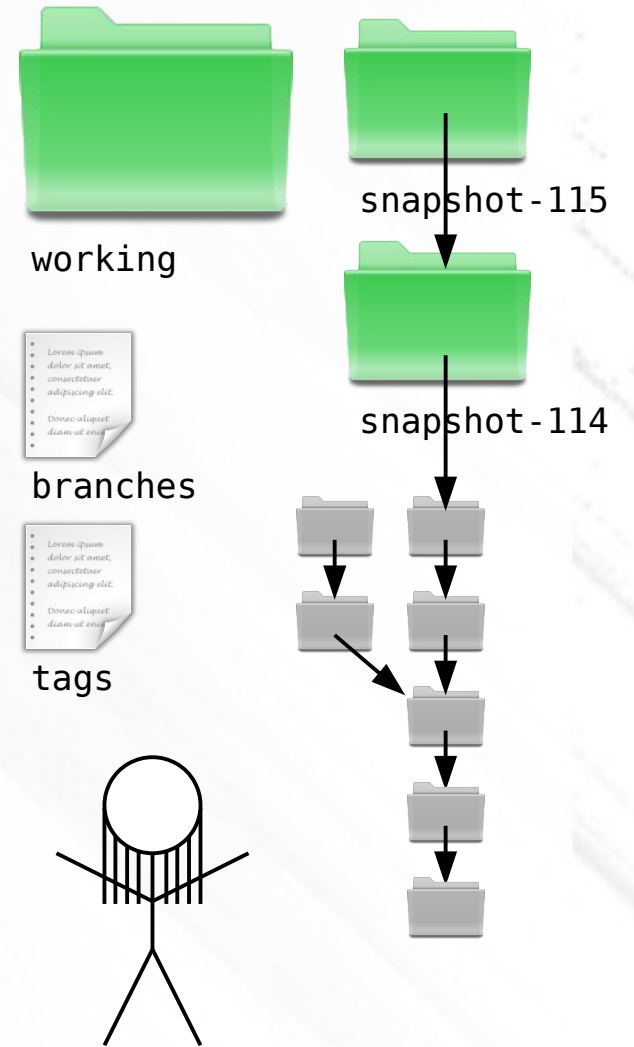
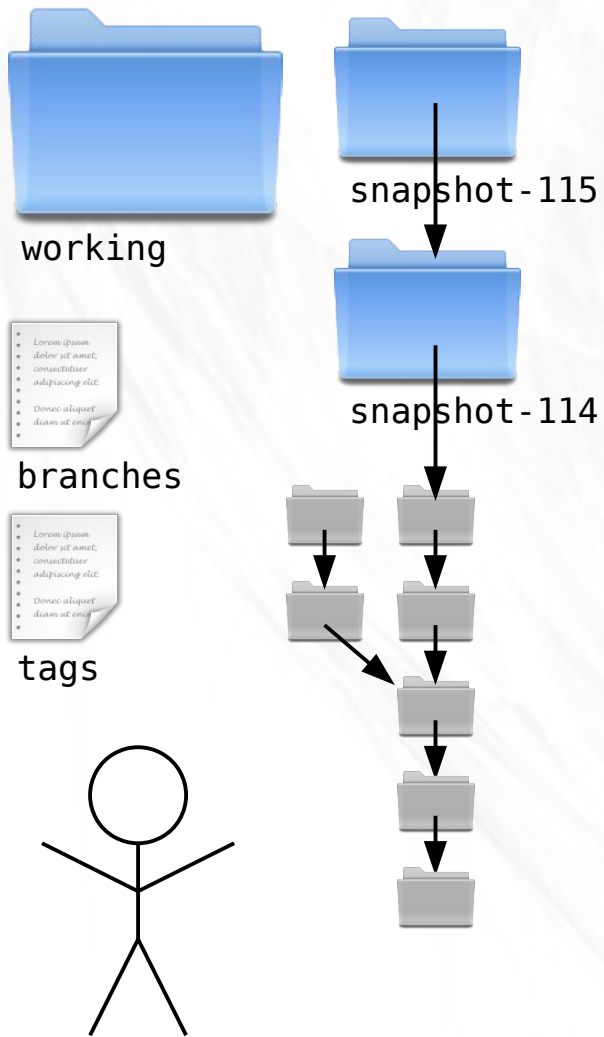


tags

Bye!



Distributed



Distributed



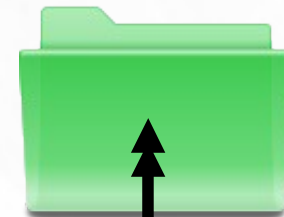
snapshot-114



message

```
2009-05-22 12:12:12
parent: snapshot-113
author: Me <me@me.me>
```

Blarfle, a cool new feature; extends the existing blorg.



snapshot-114



message

```
2009-05-21 23:45:01
parent: snapshot-113
author: Zoe <zoe@z.oe>
```

Introduced a new foo, and reset the bar to xyzzy.

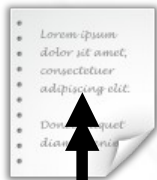
Distributed



8ba3441b6b89cad23387ee875f2ae55069291f4b



SHA1



message

```
2009-05-22 12:12:12
parent: snapshot-113
author: Me <me@me.me>
```

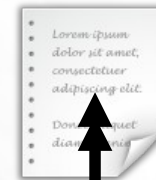
```
Blarfle, a cool new
feature; extends the
existing blorg.
```



db9ecb5b5a6294a8733503ab57577db96ff2249e



SHA1

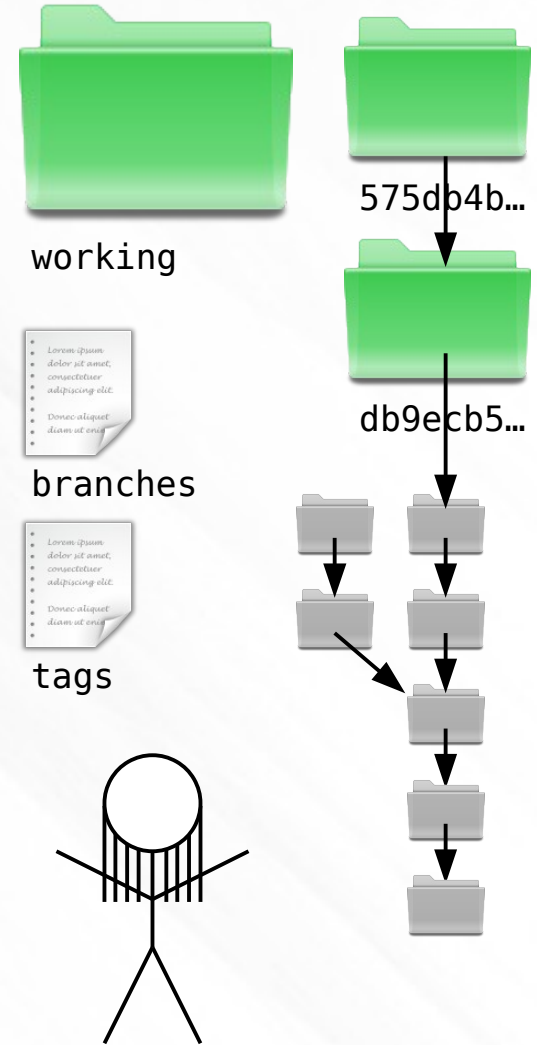
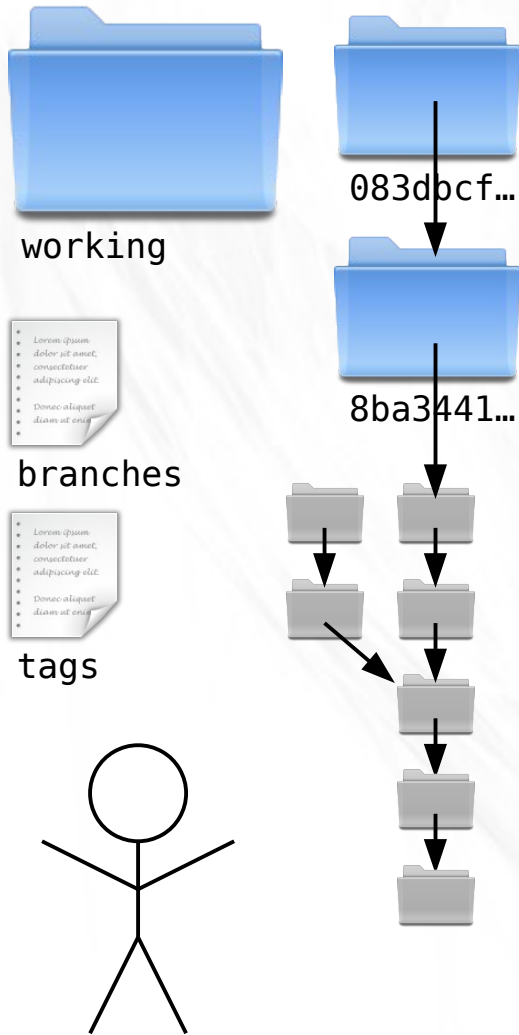


message

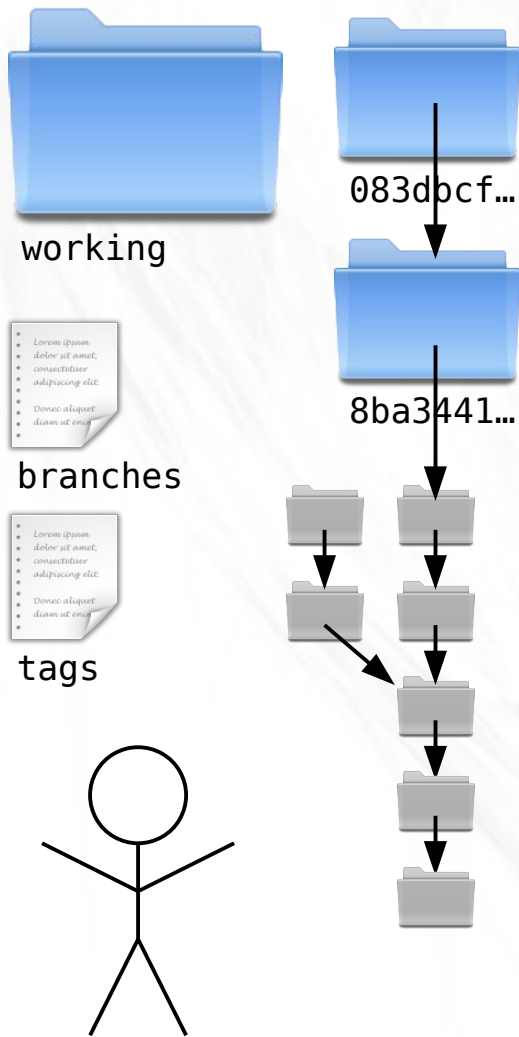
```
2009-05-21 23:45:01
parent: snapshot-113
author: Zoe <zoe@z.oe>
```

```
Introduced a new foo,
and reset the bar to
xyzyzy.
```

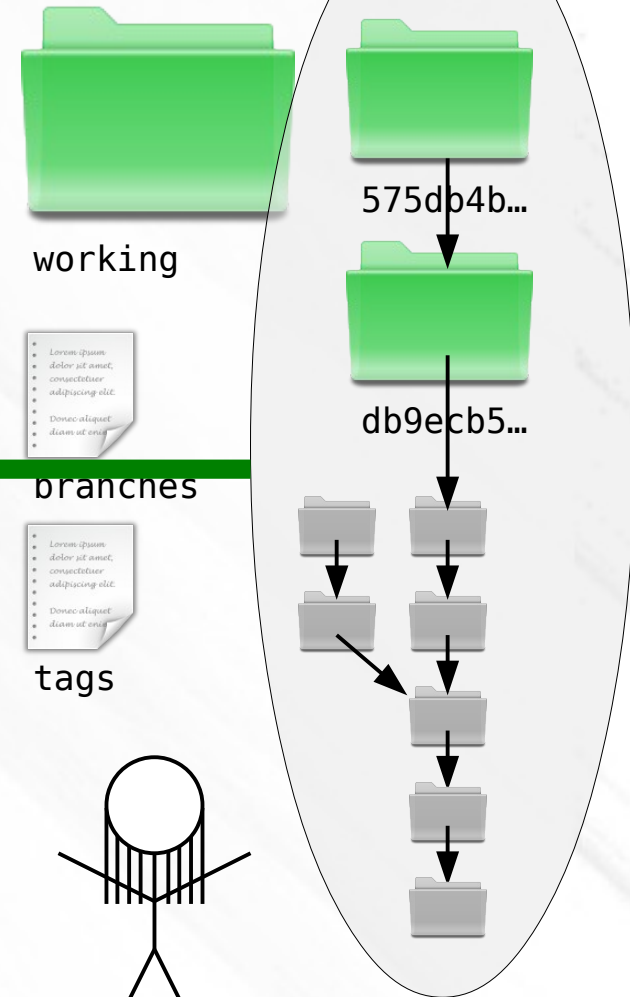

Distributed



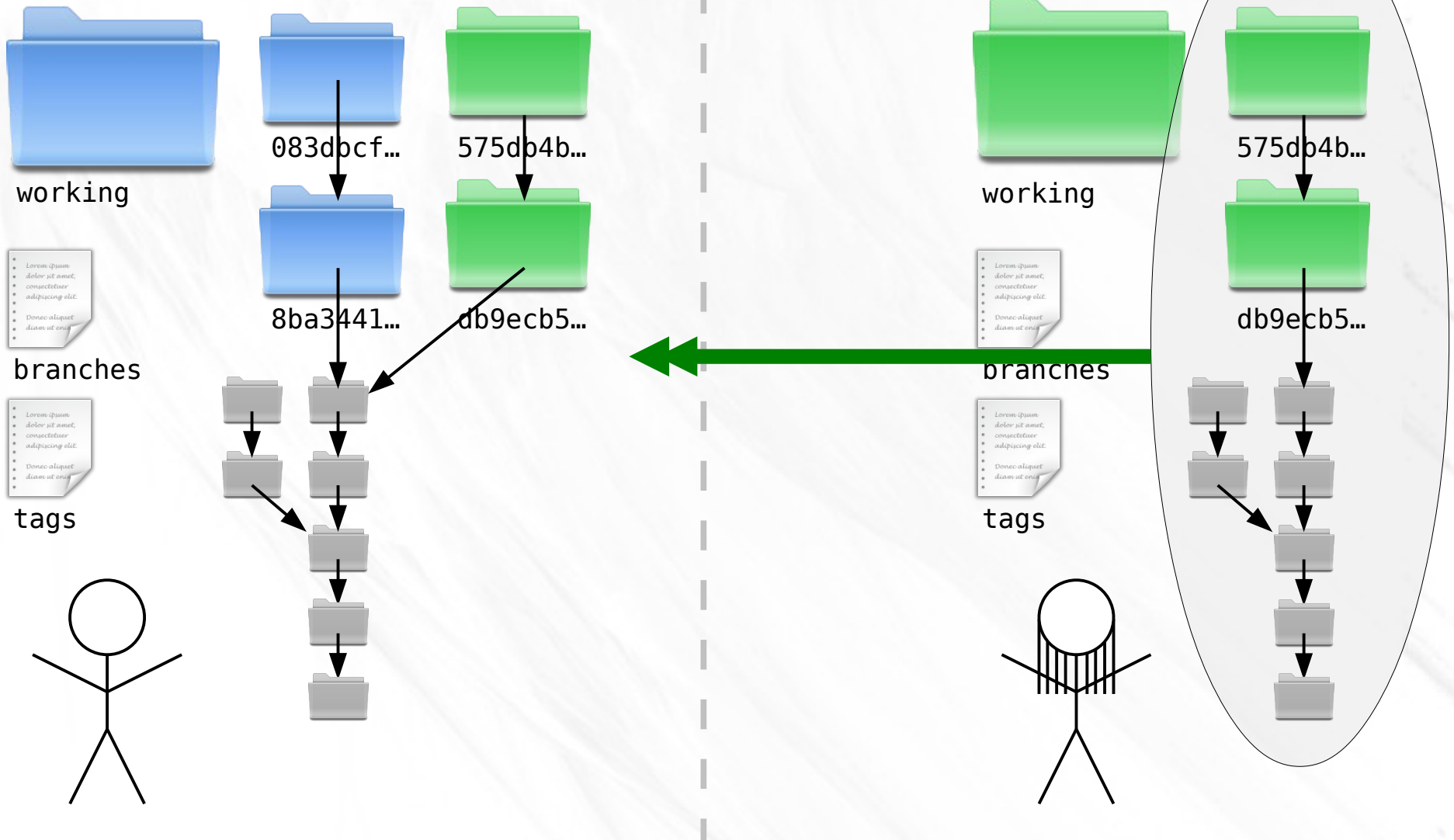
Distributed



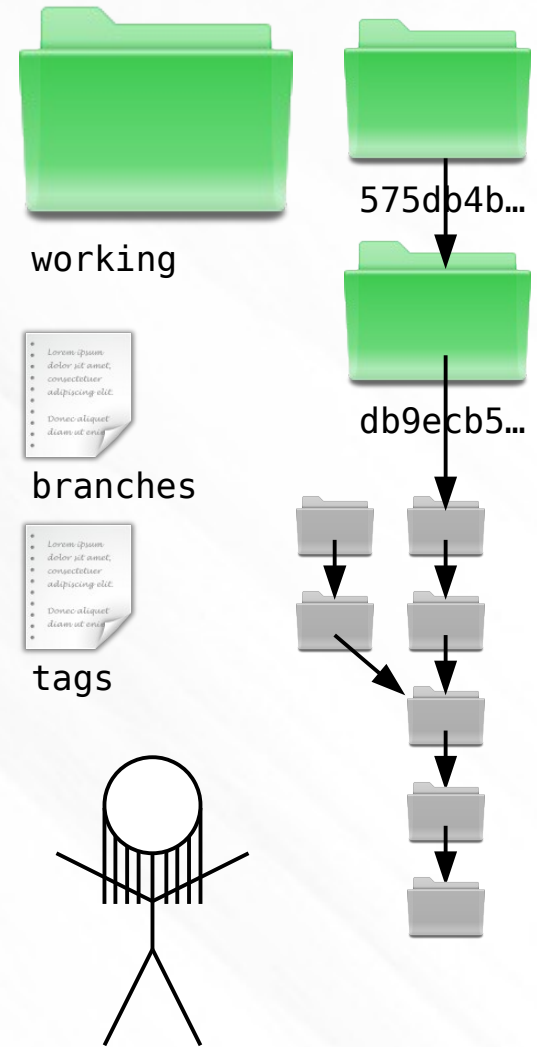
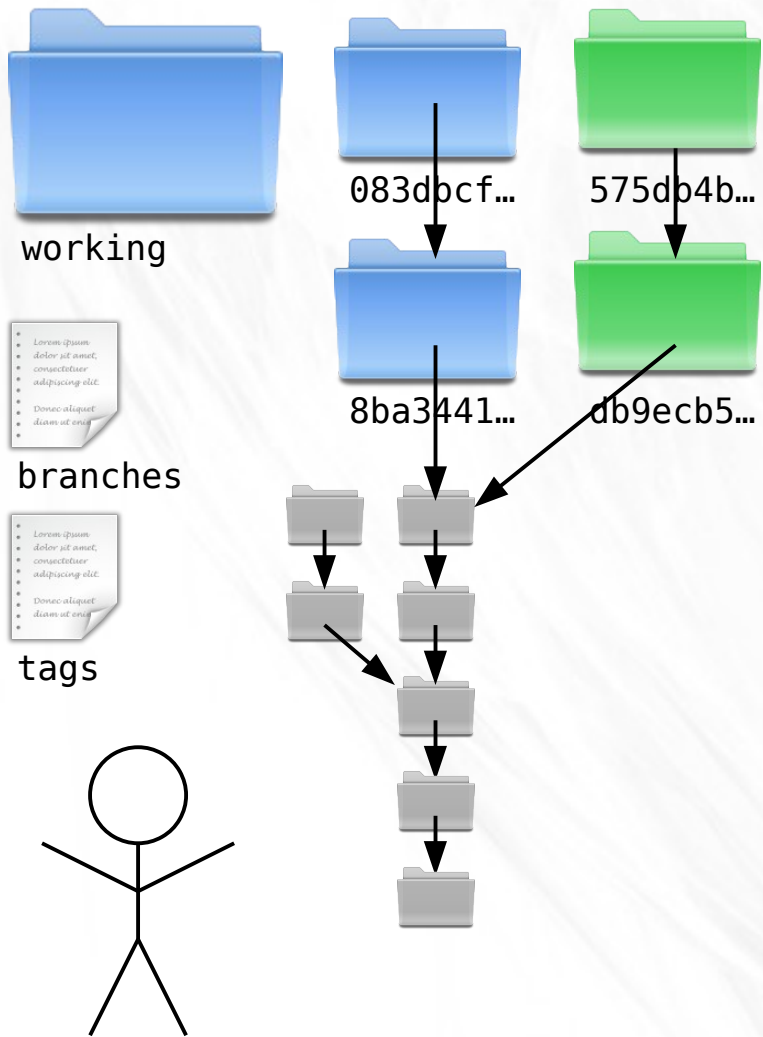
?



Distributed



Distributed



Offline



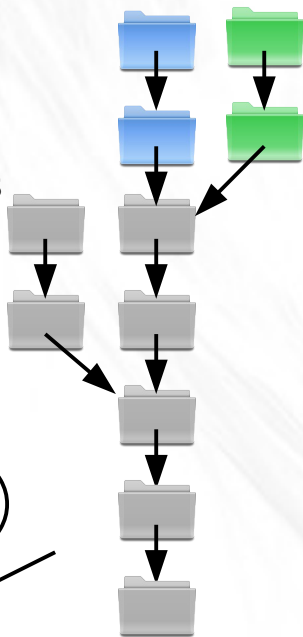
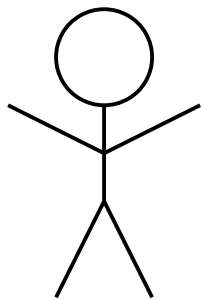
working



branches



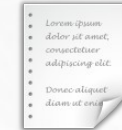
tags



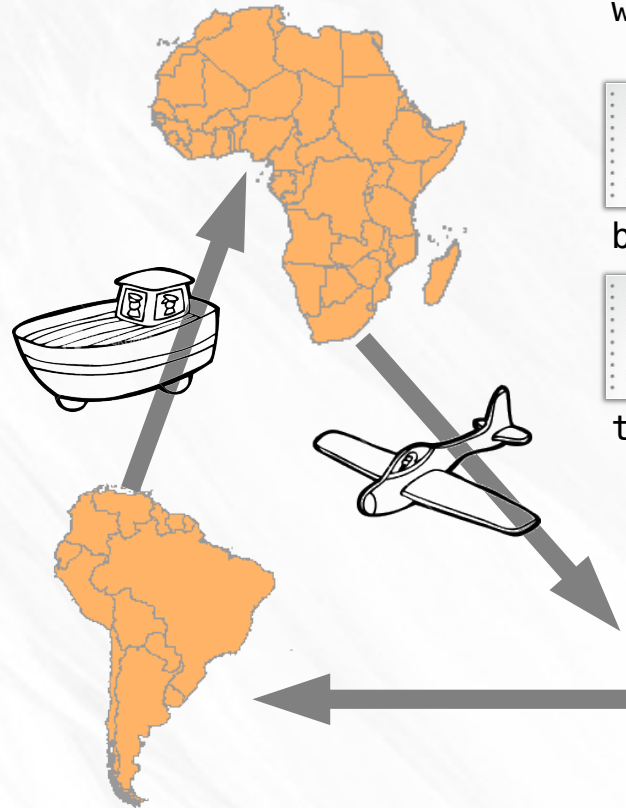
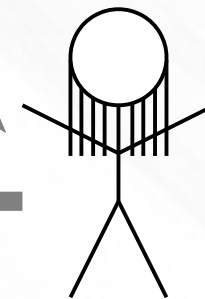
working



branches



tags



w00t!

Offline



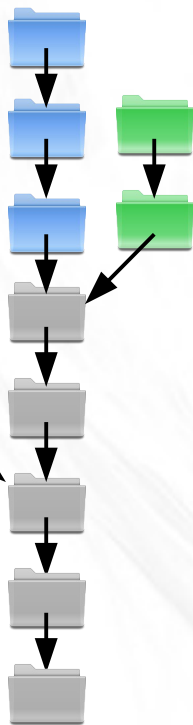
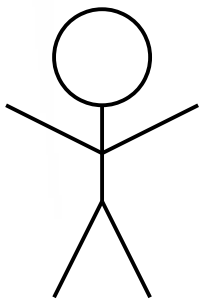
working



branches



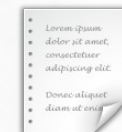
tags



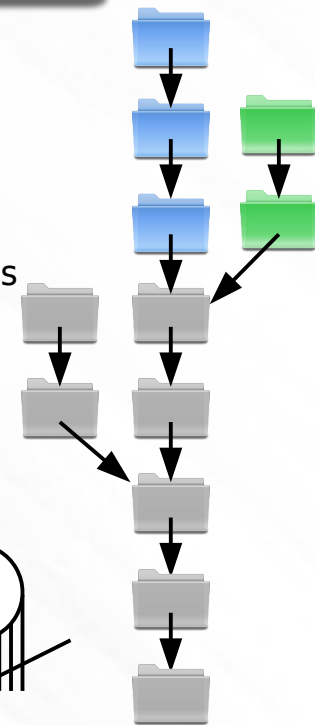
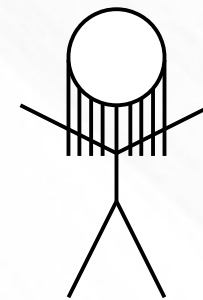
working



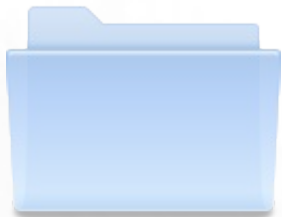
branches



tags



(simpler drawings)



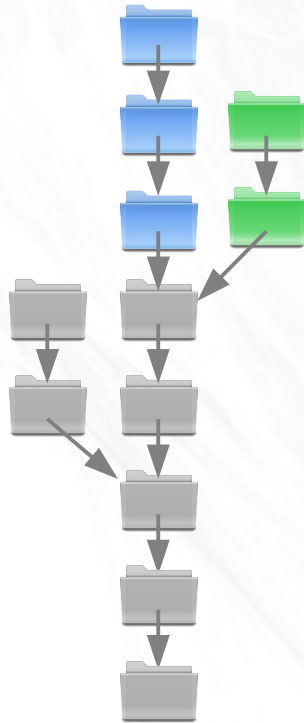
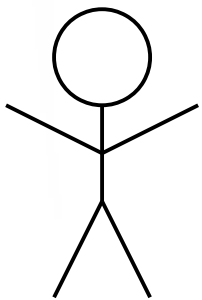
working



branches



tags



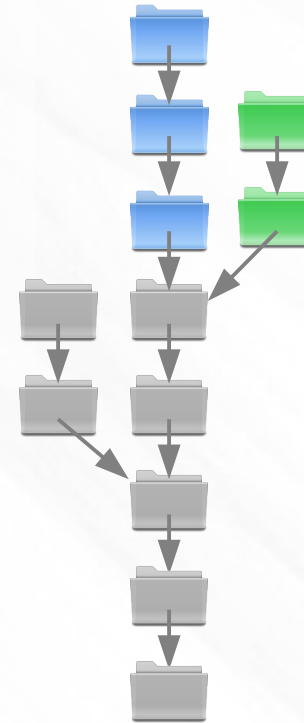
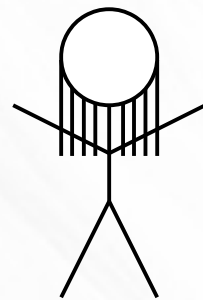
working



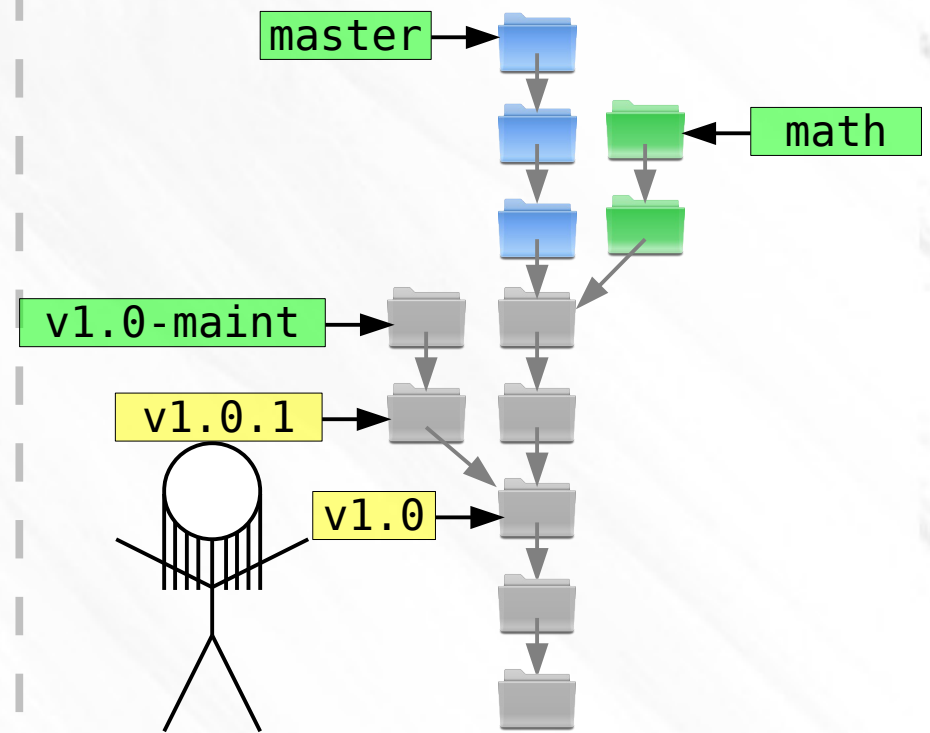
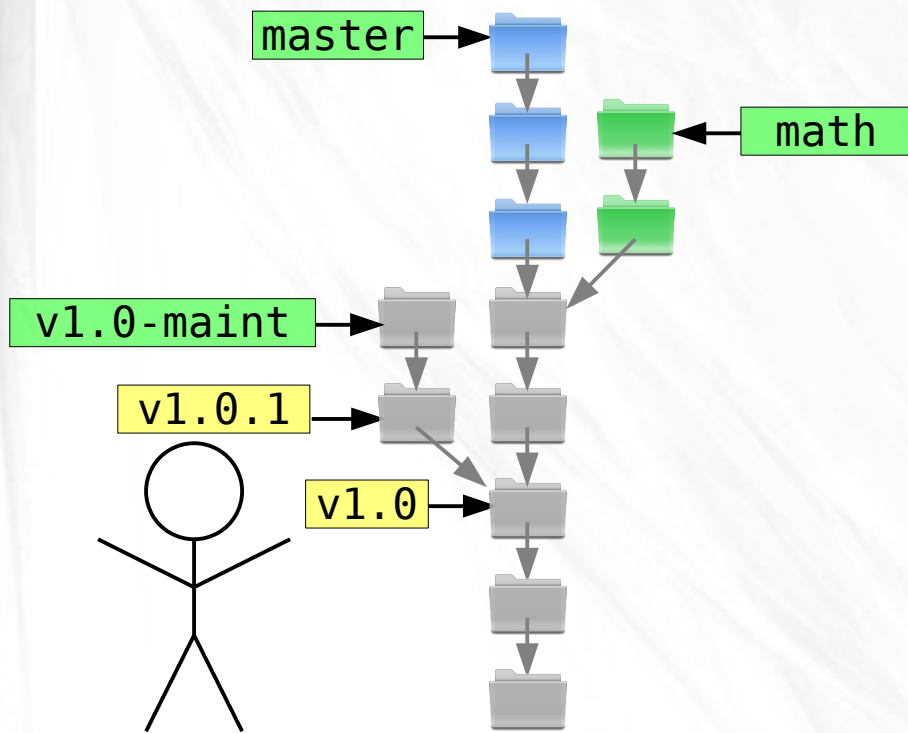
branches



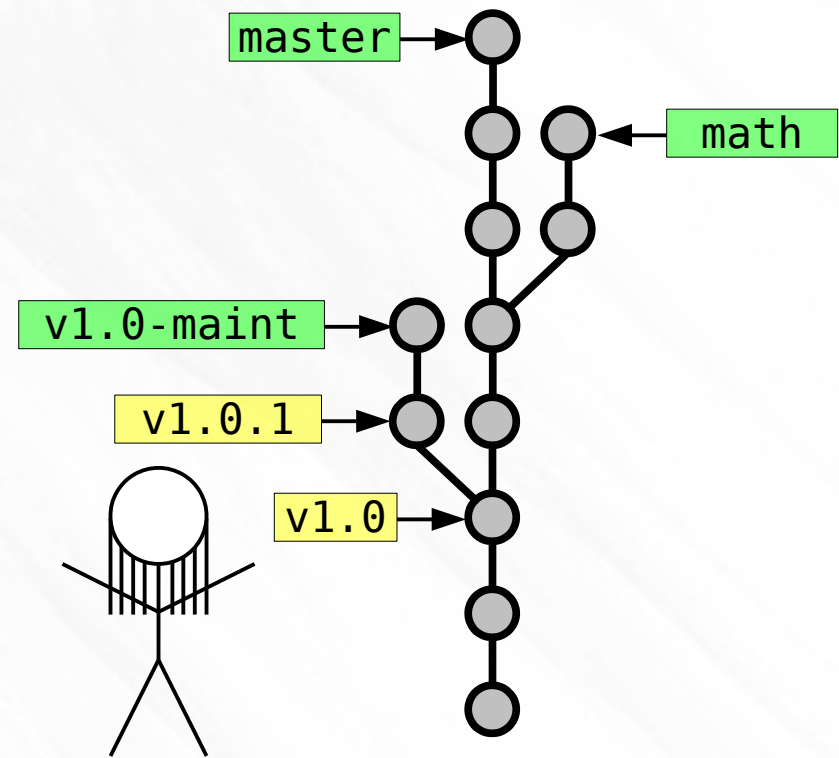
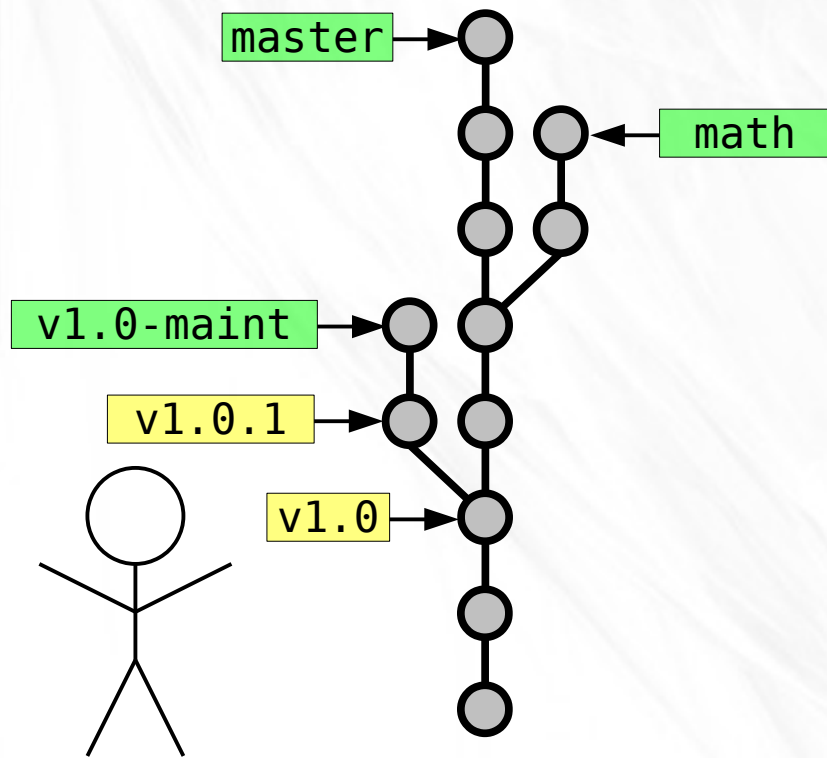
tags



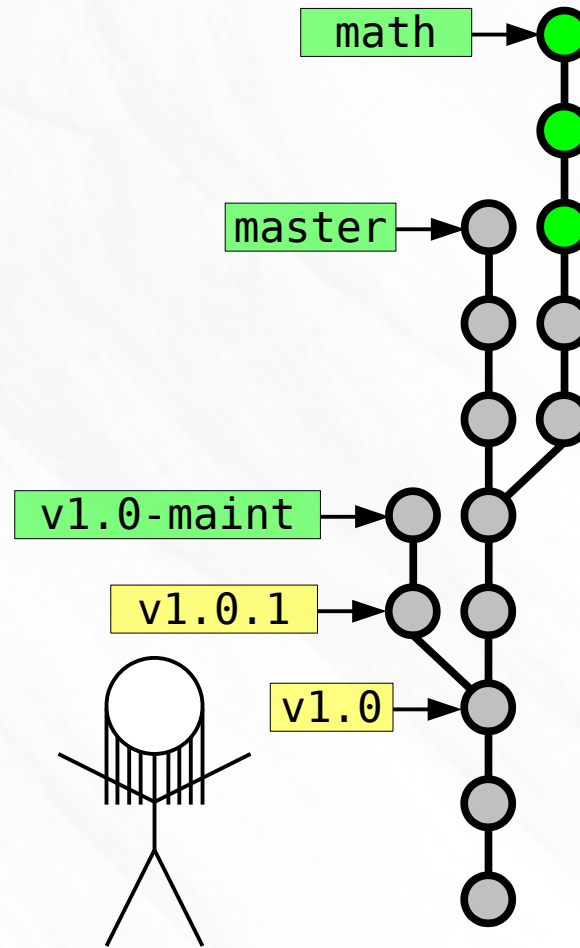
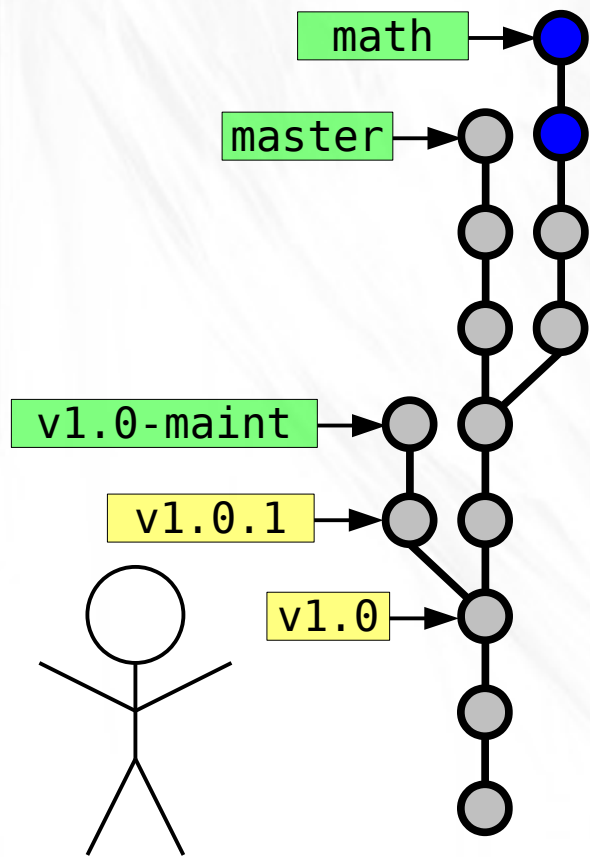
(simpler drawings)



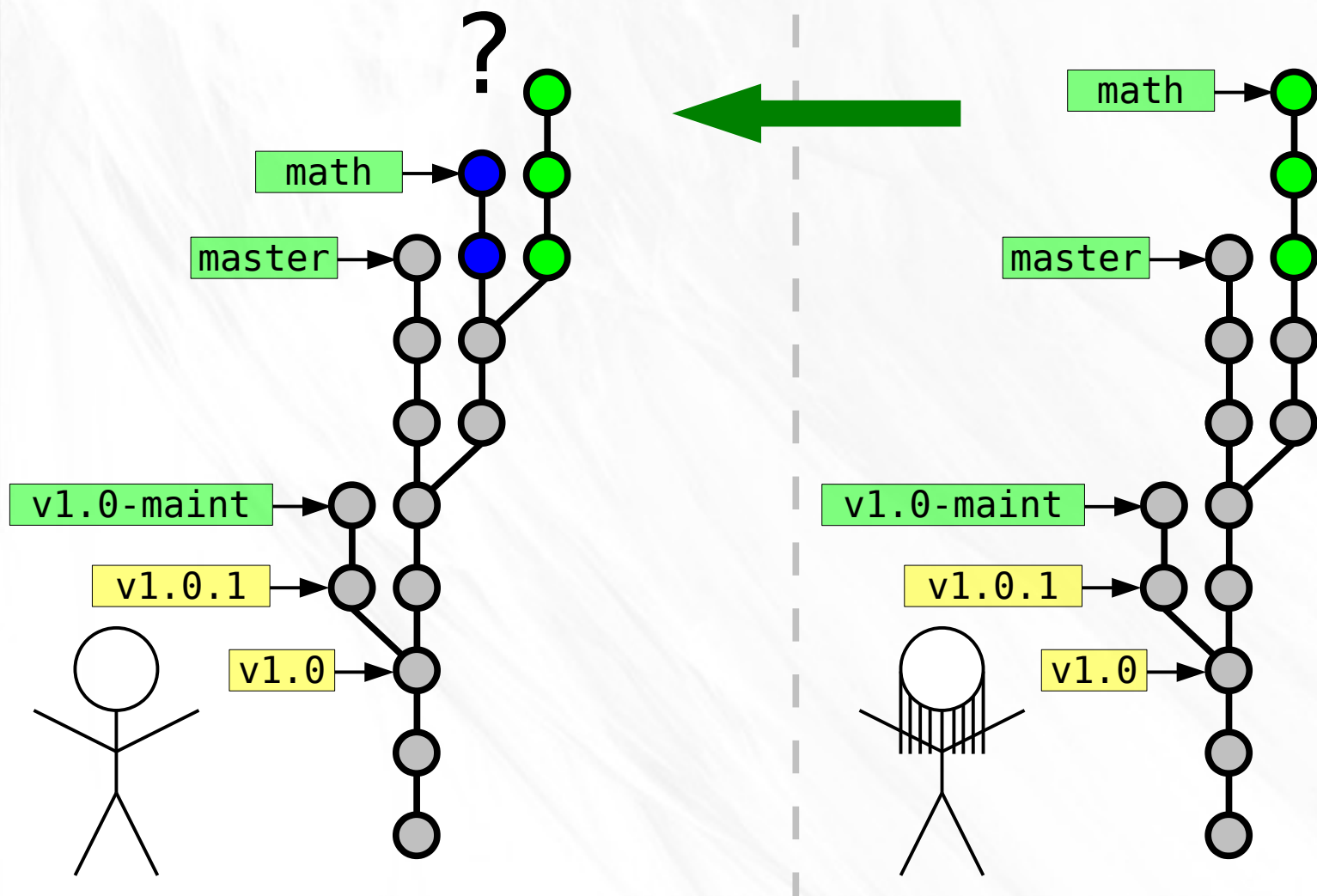
(simpler drawings)



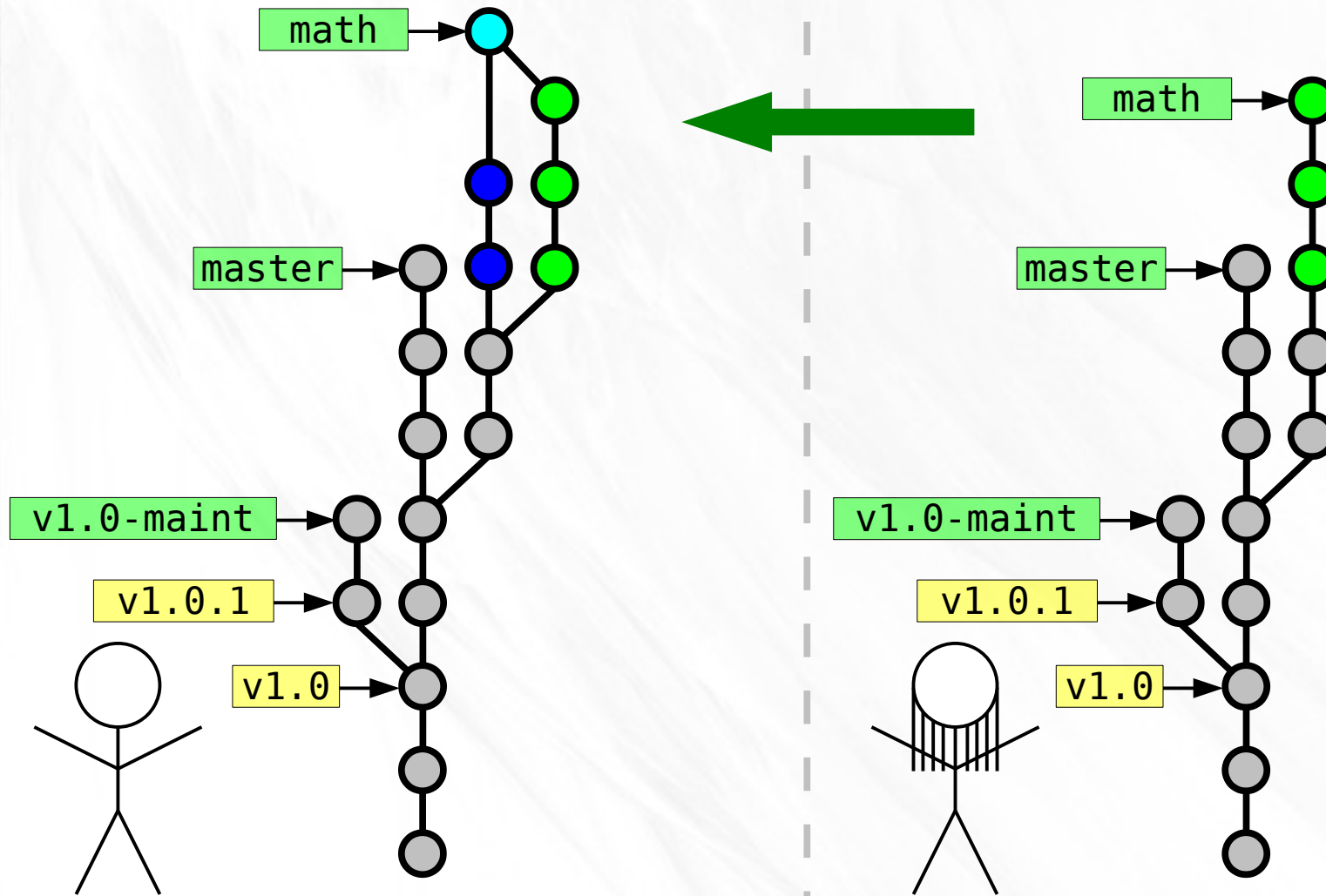
Merges



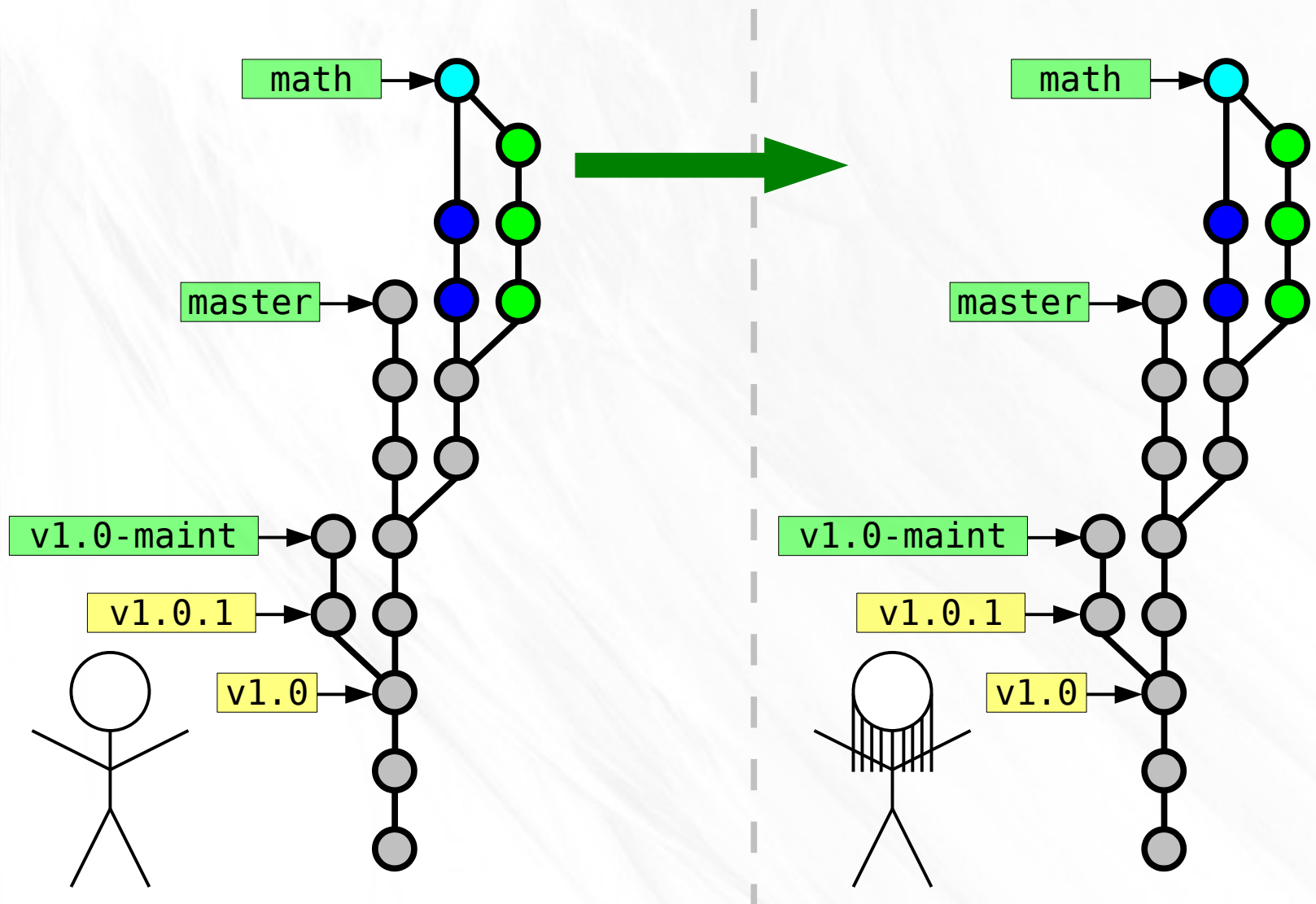
Merges



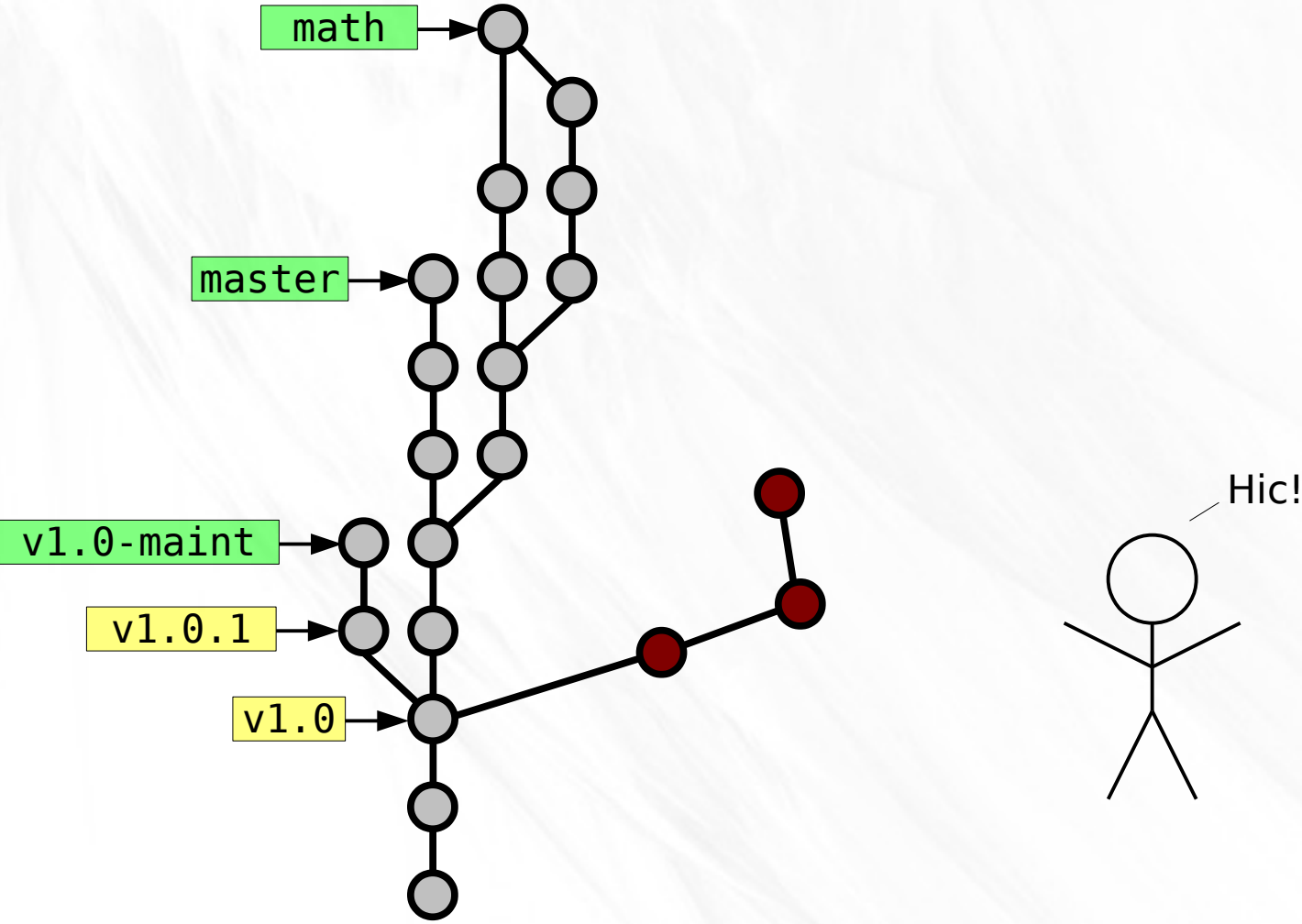
Merges



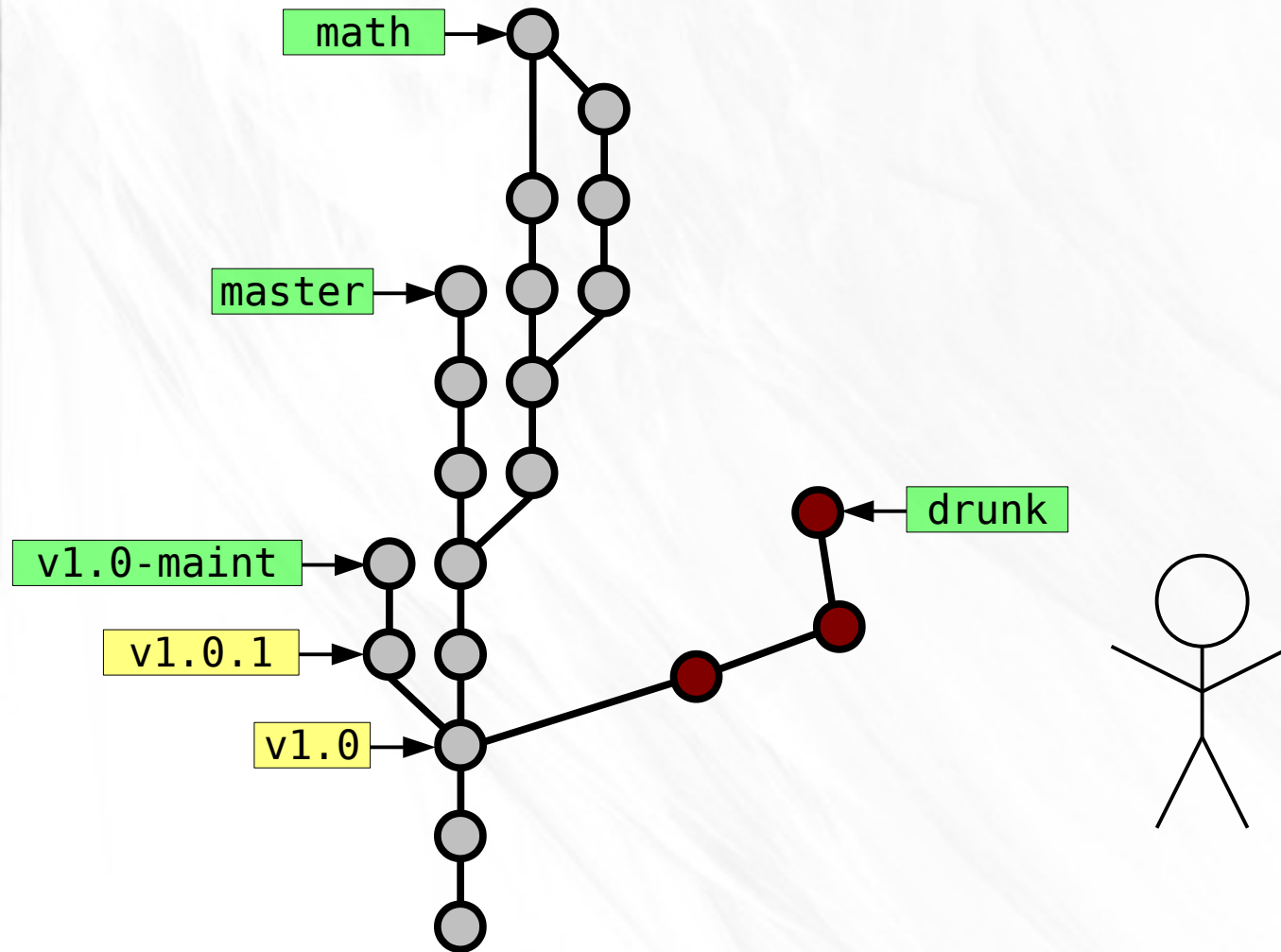
Merges



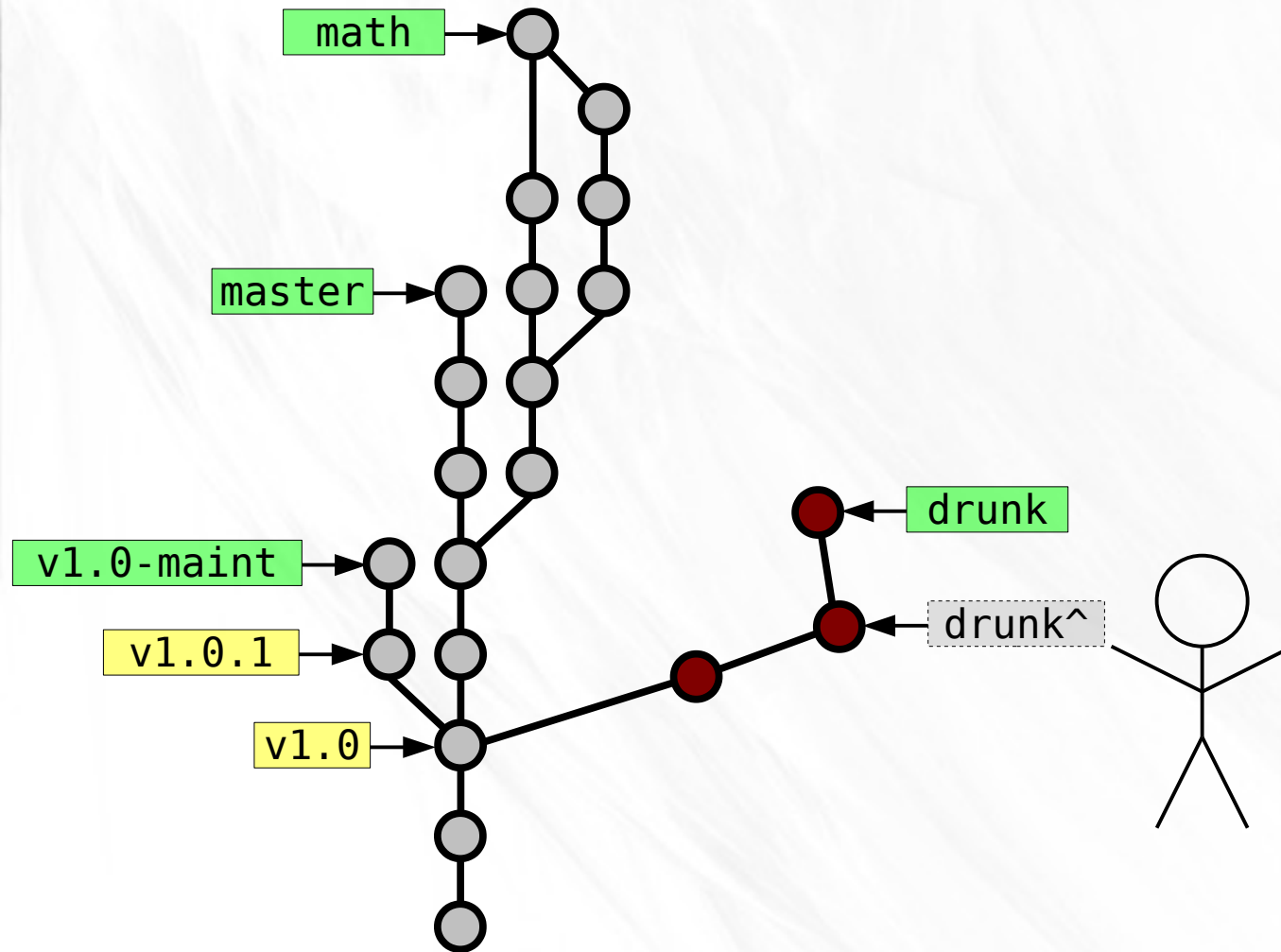
Rewriting History



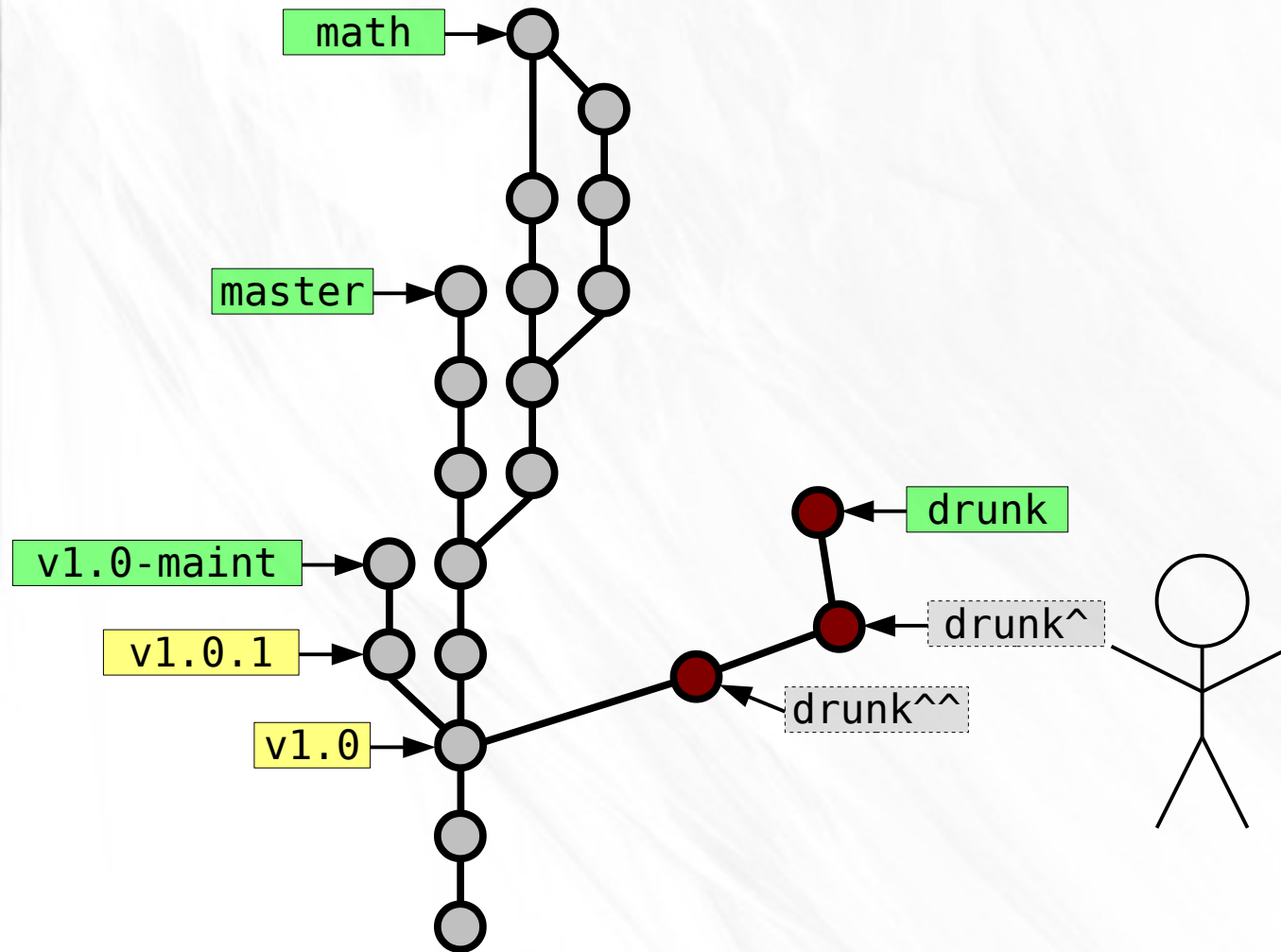
Rewriting History



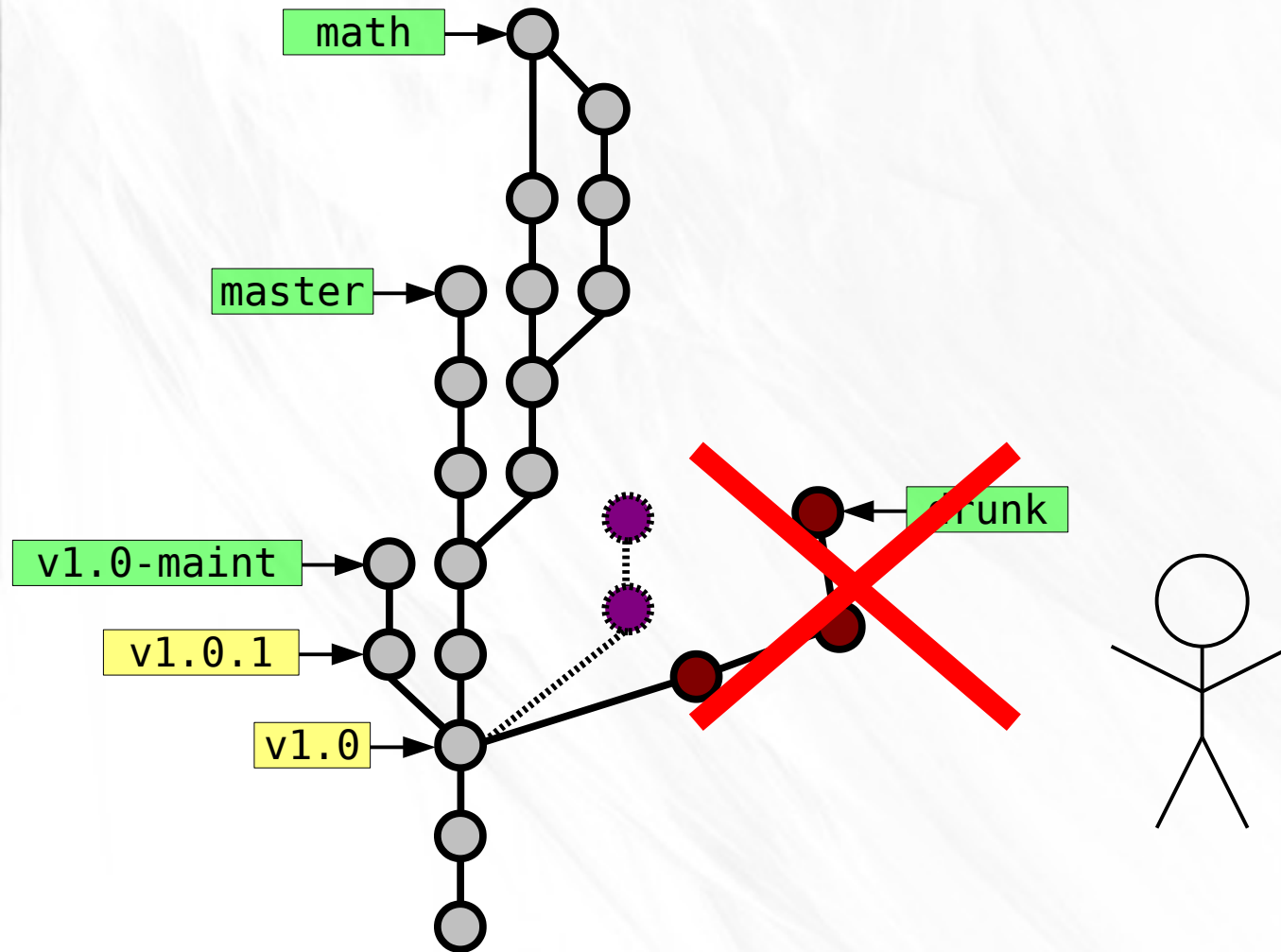
Rewriting History



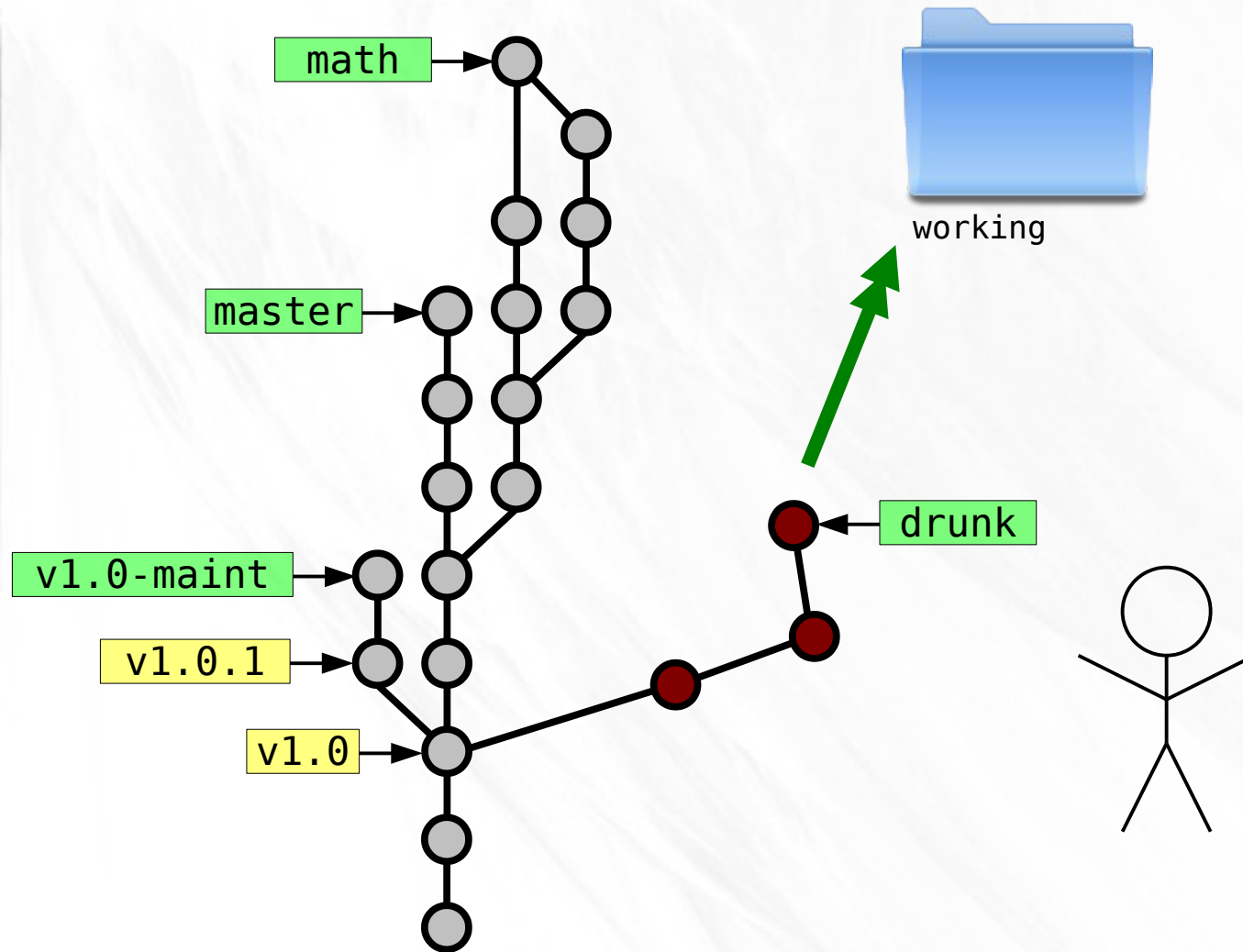
Rewriting History



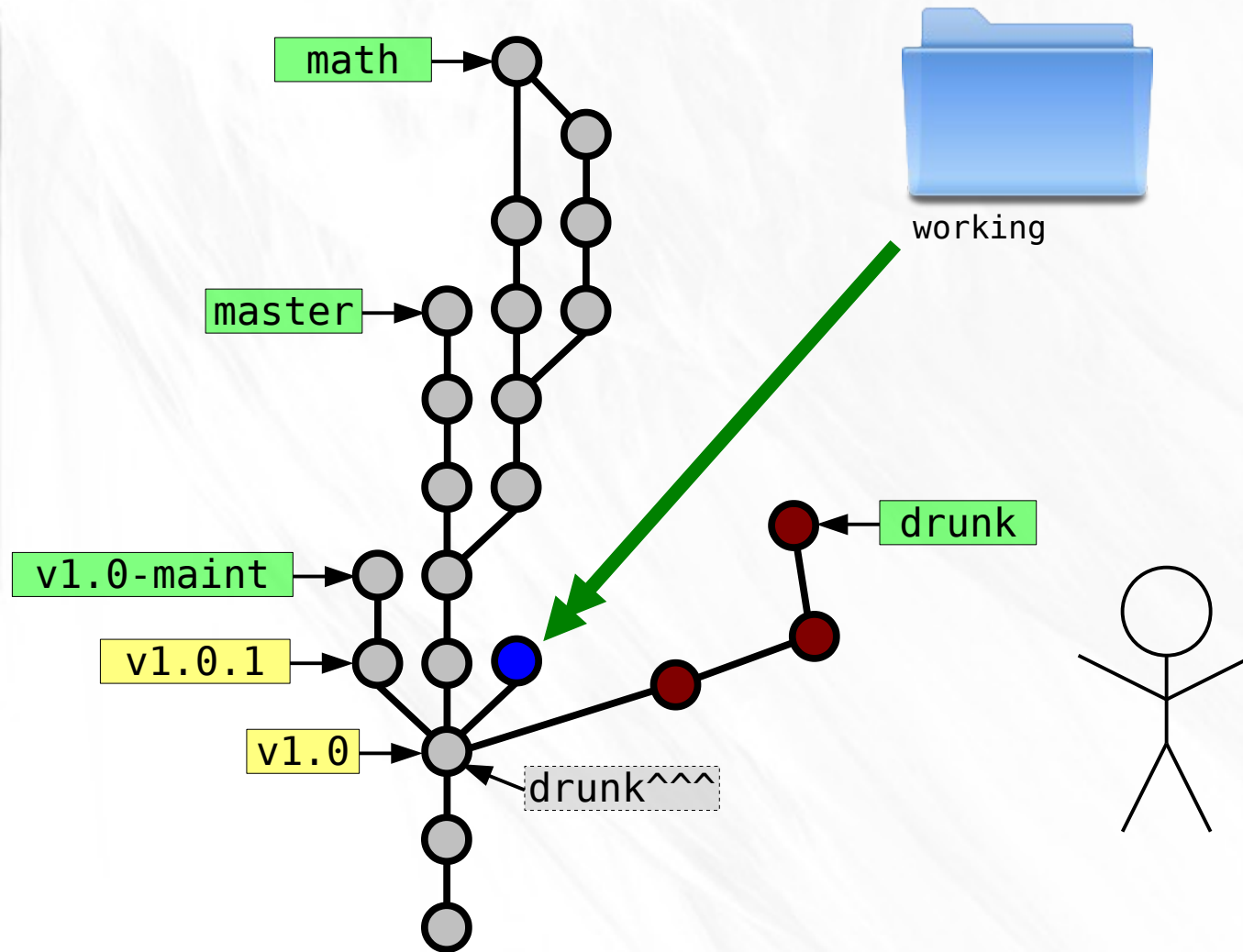
Rewriting History



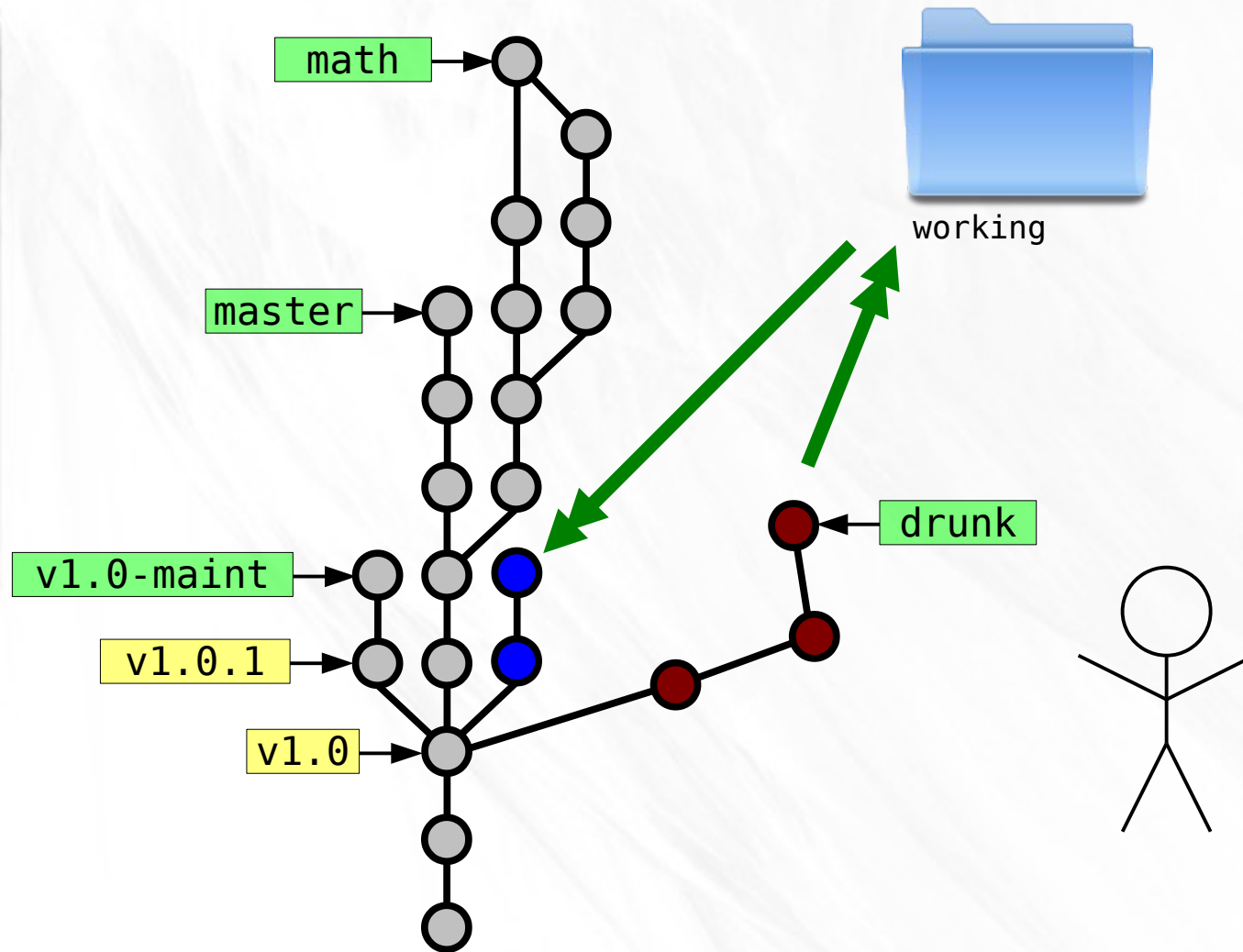
Rewriting History



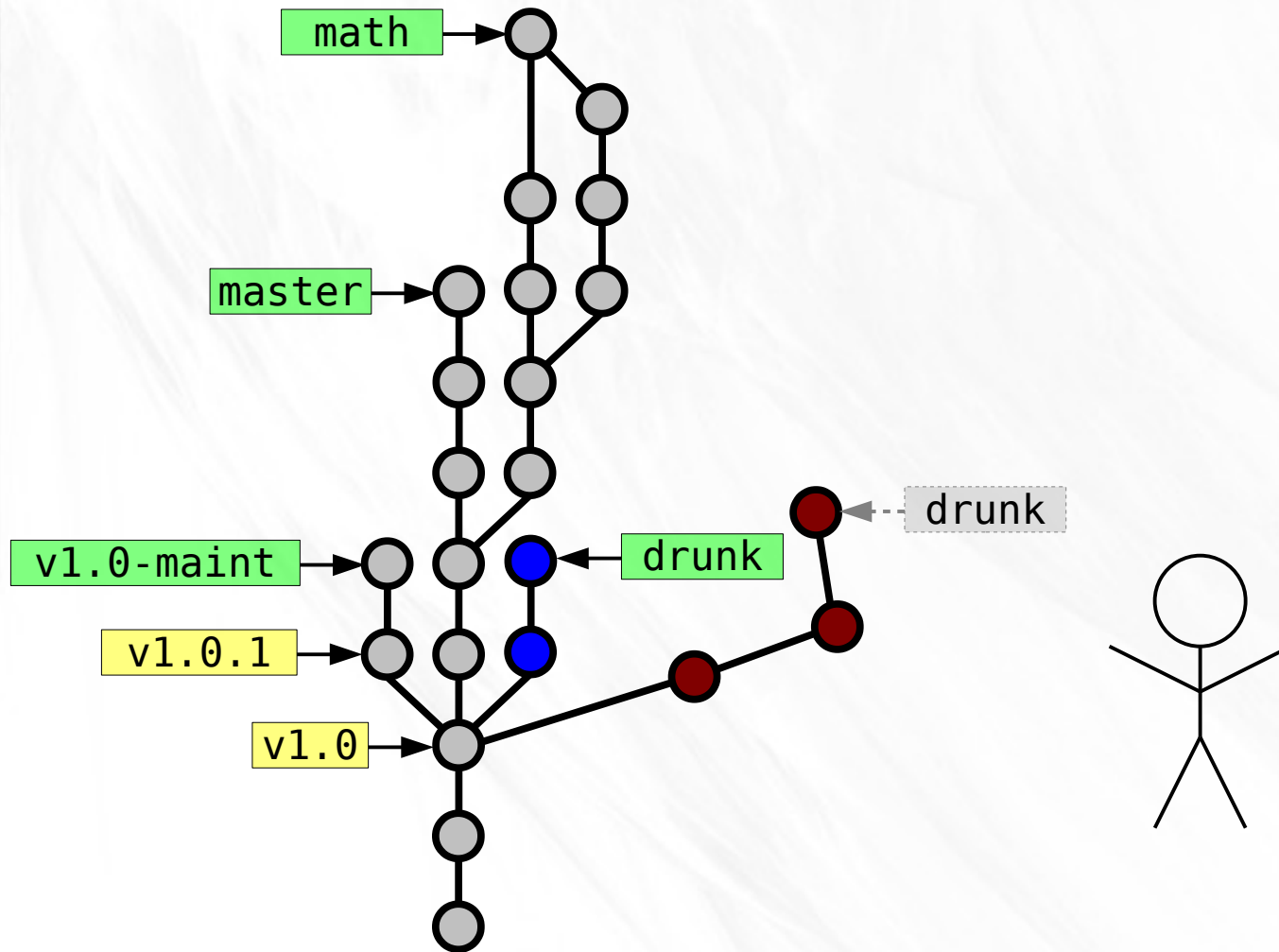
Rewriting History



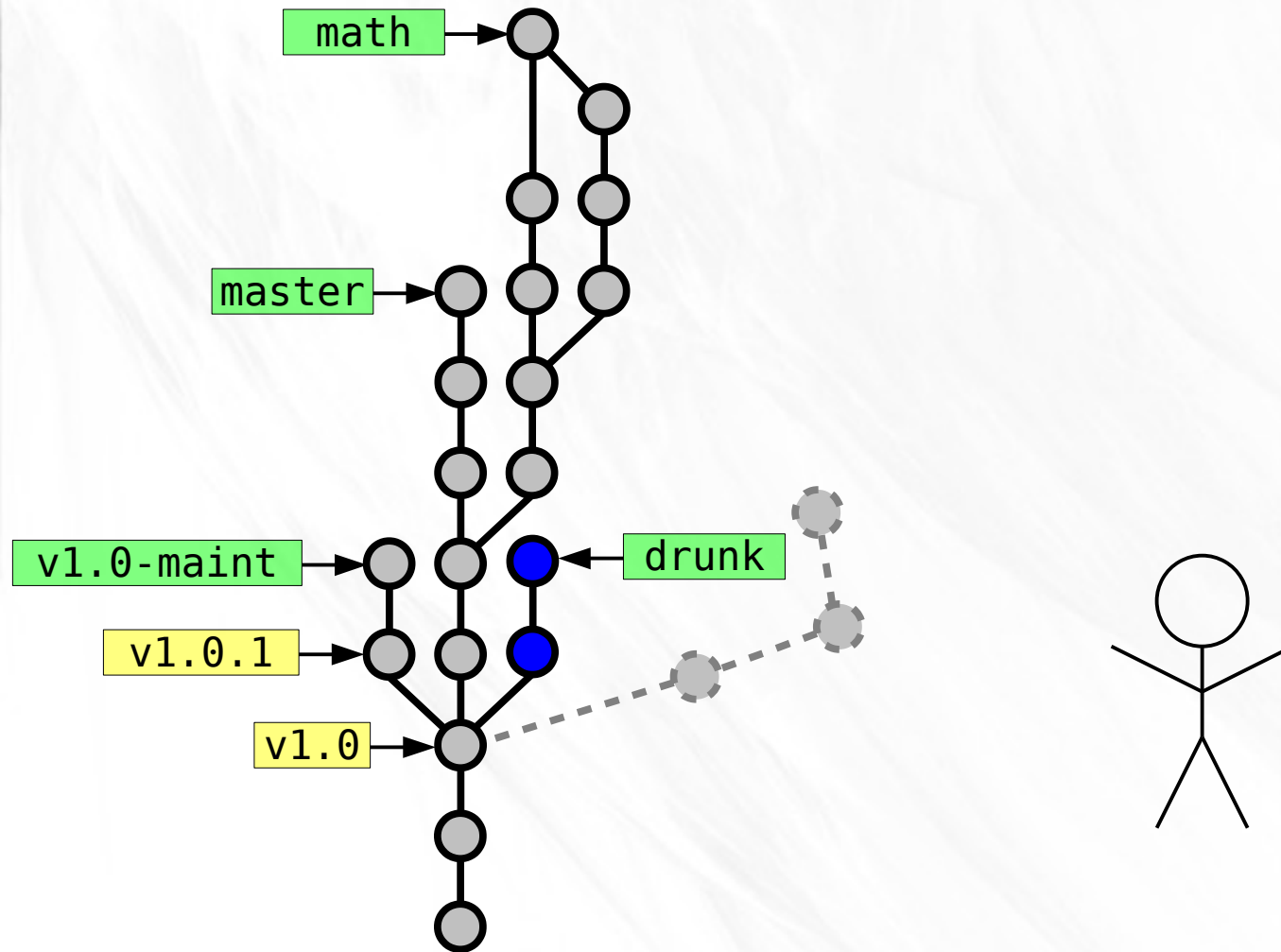
Rewriting History



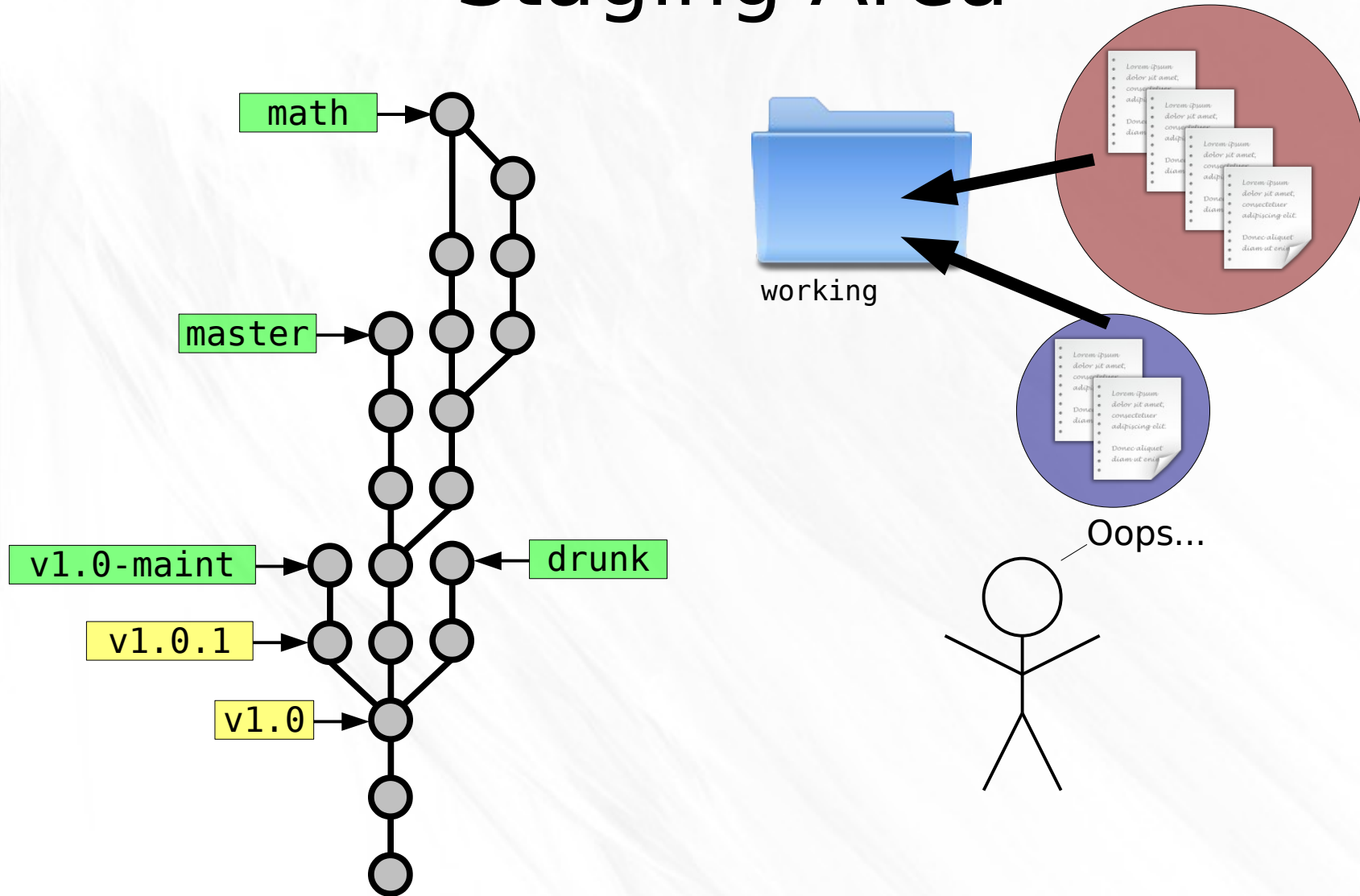
Rewriting History



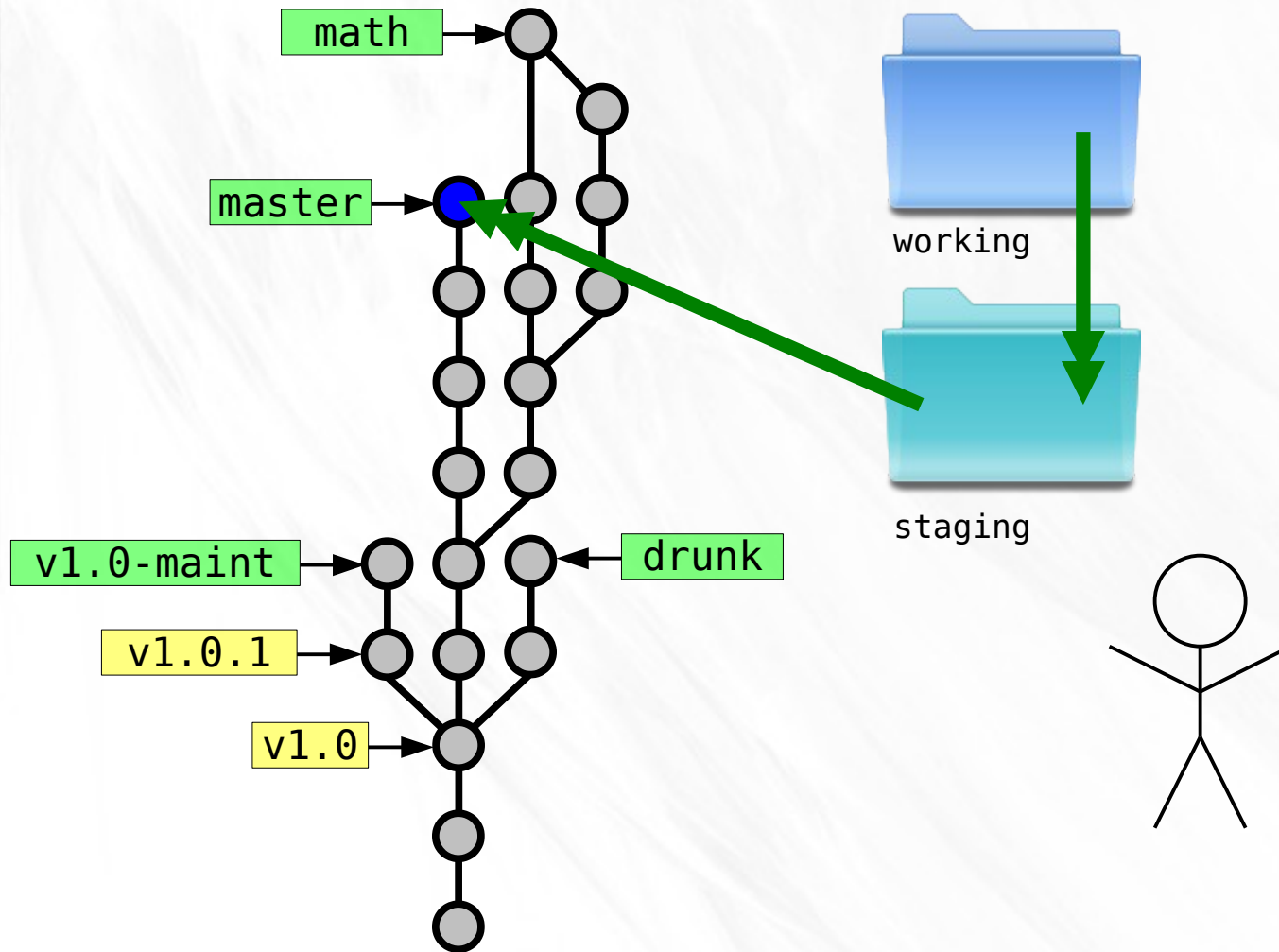
Rewriting History



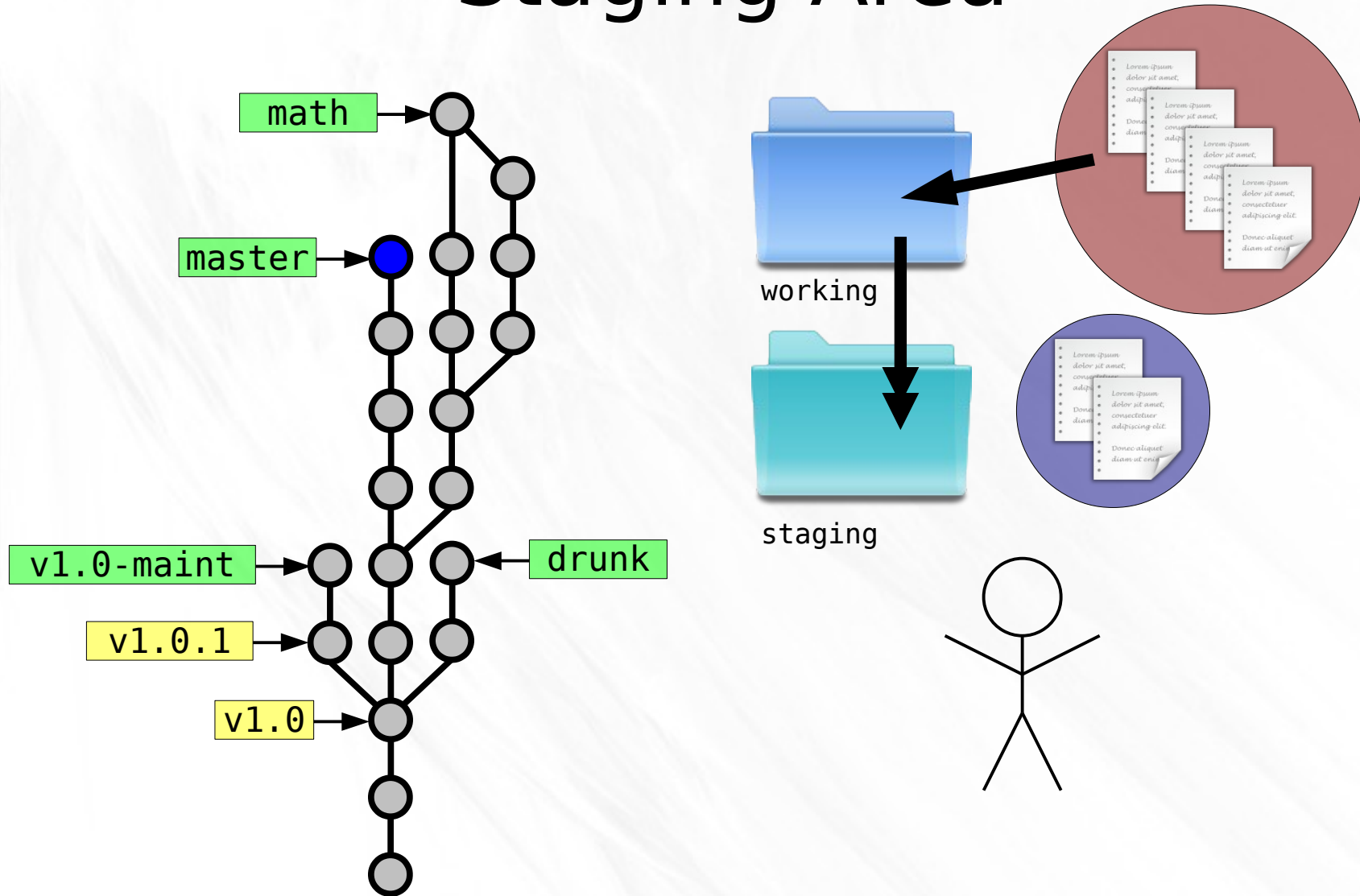
Staging Area



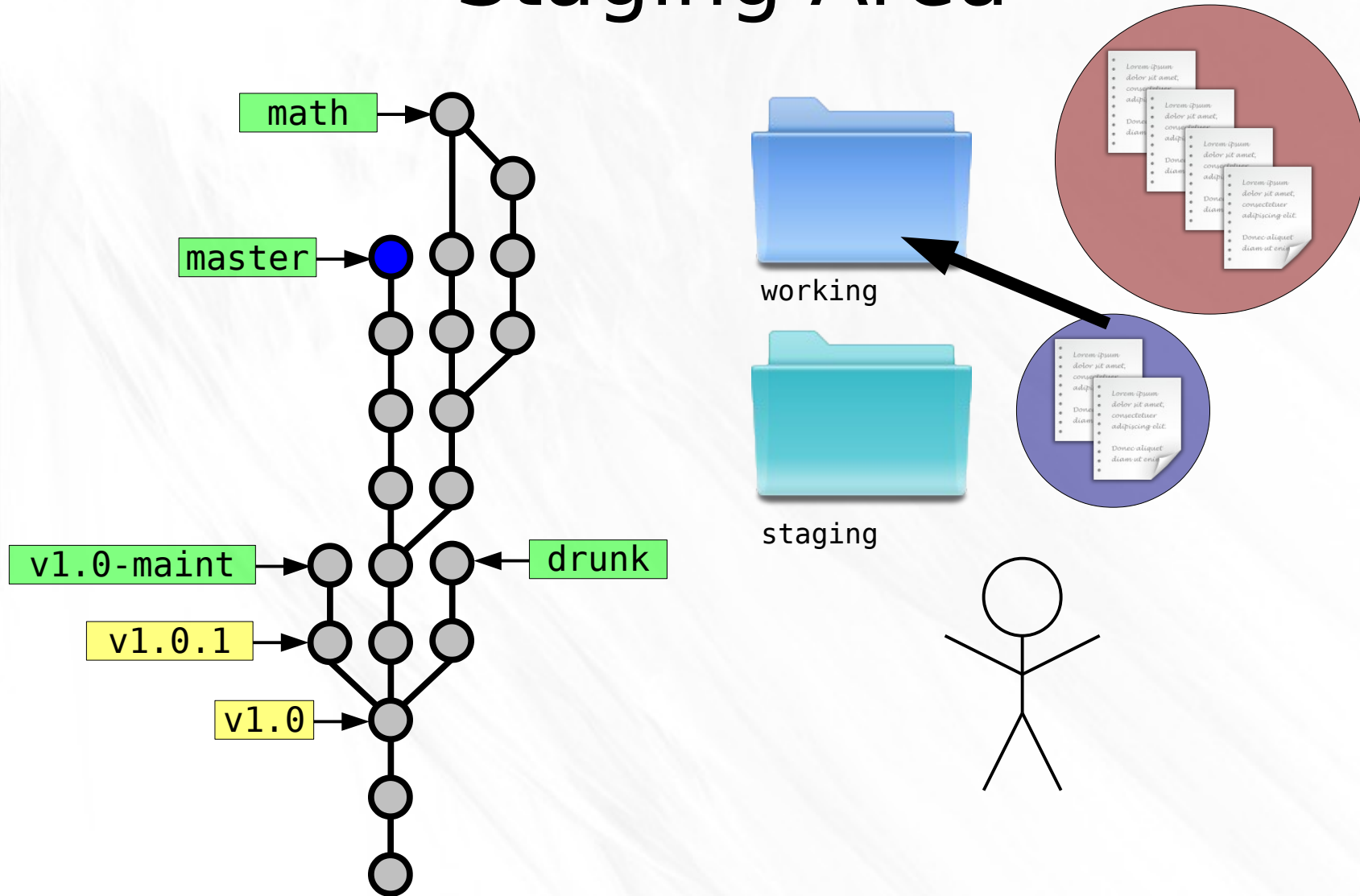
Staging Area



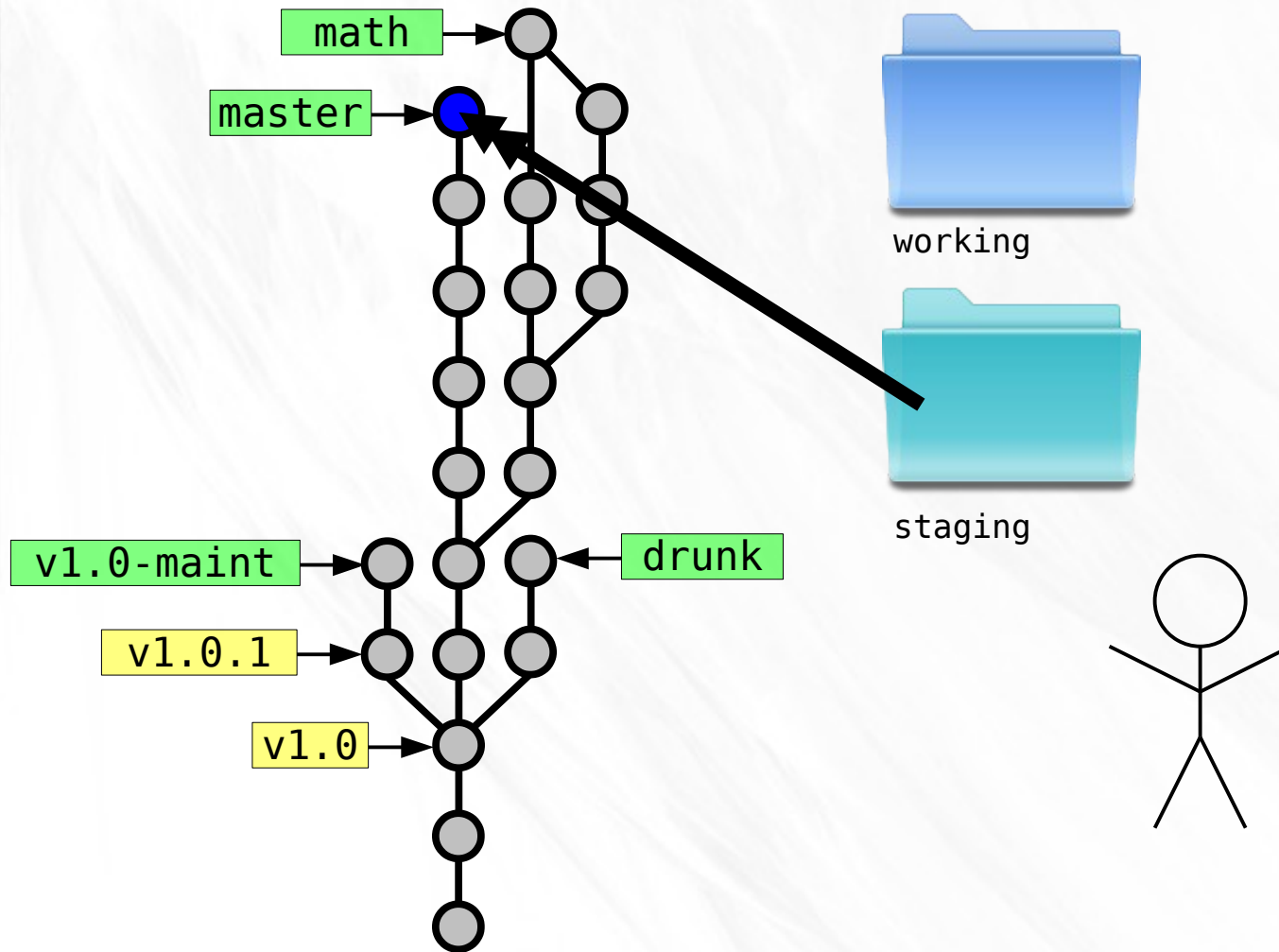
Staging Area



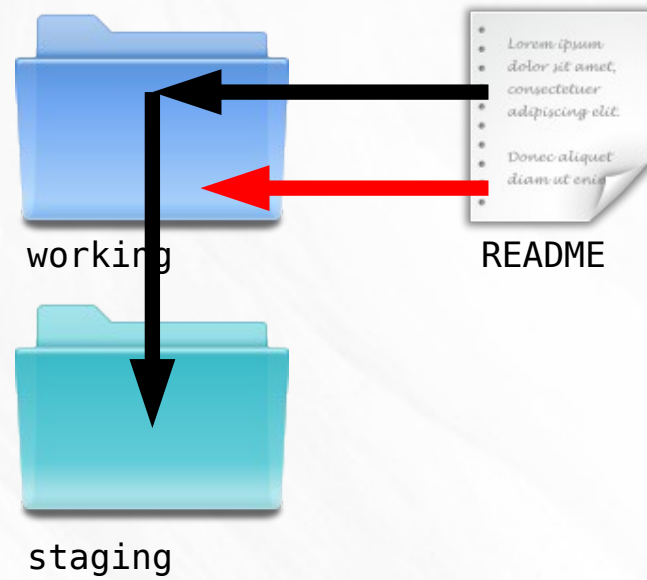
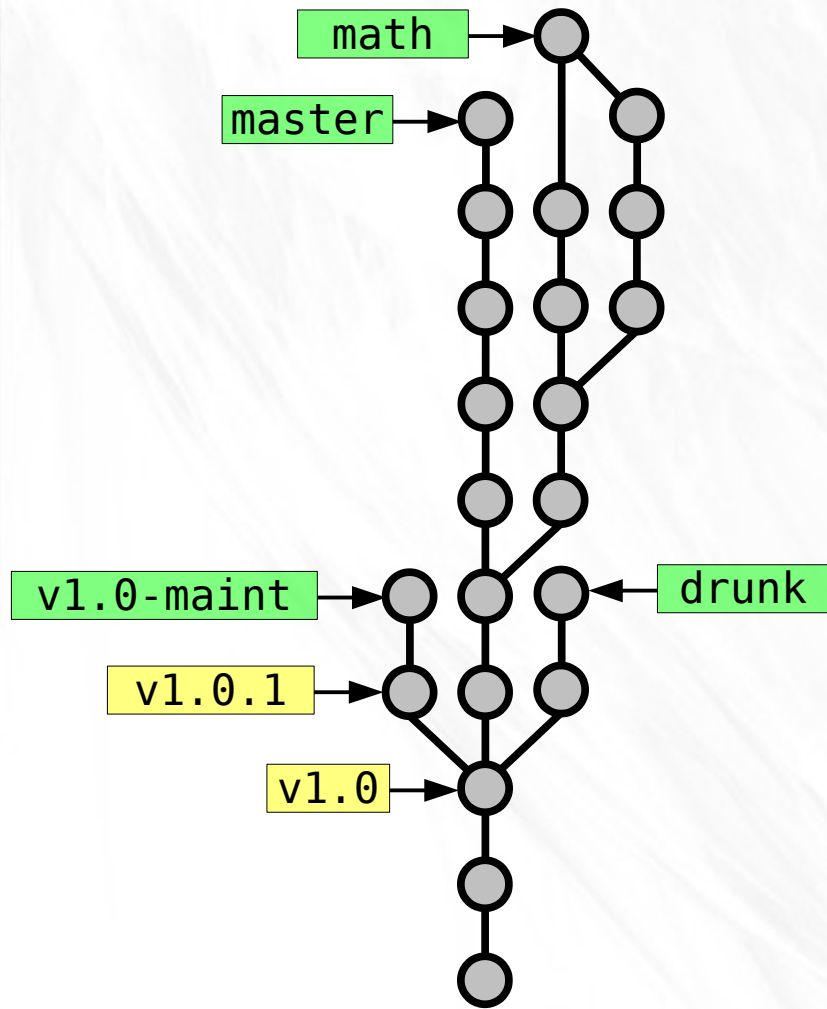
Staging Area



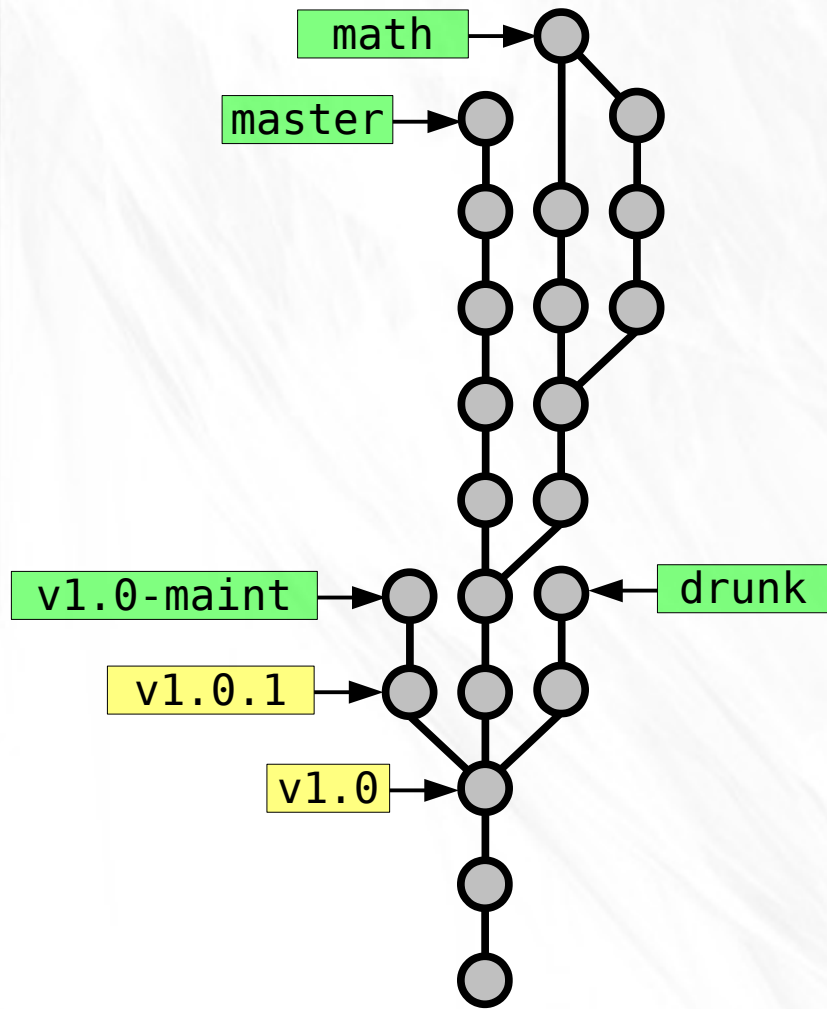
Staging Area



Staging Area



Diffs



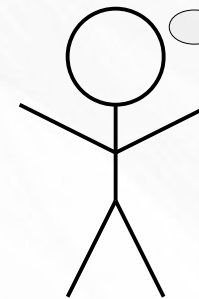
working



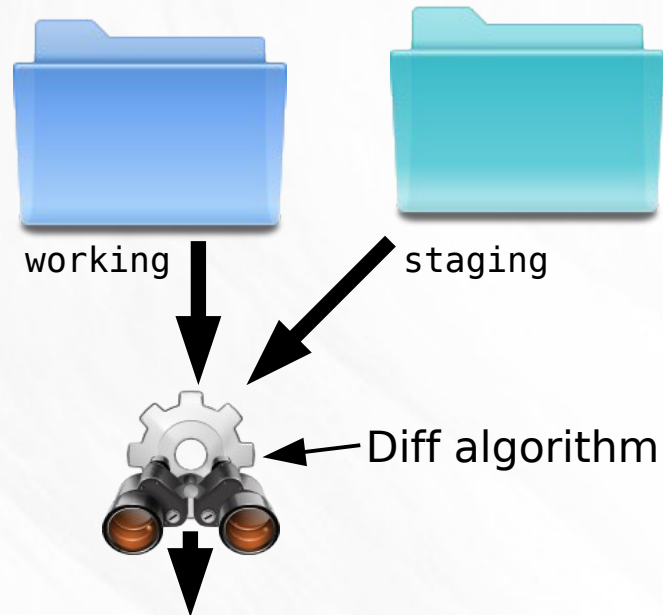
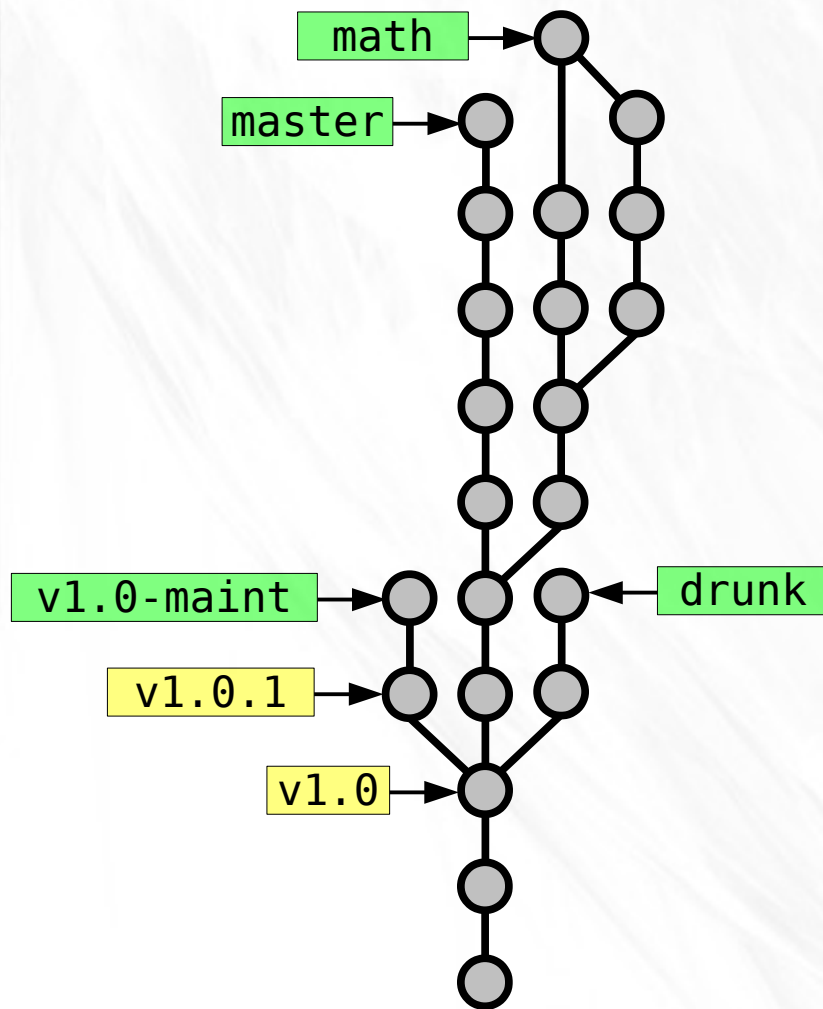
staging

What are the changes?

- working vs. staging
- working vs. snapshot X
- staging vs. snapshot X
- snapshot X vs. snapshot Y

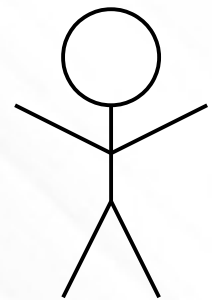


Diffs

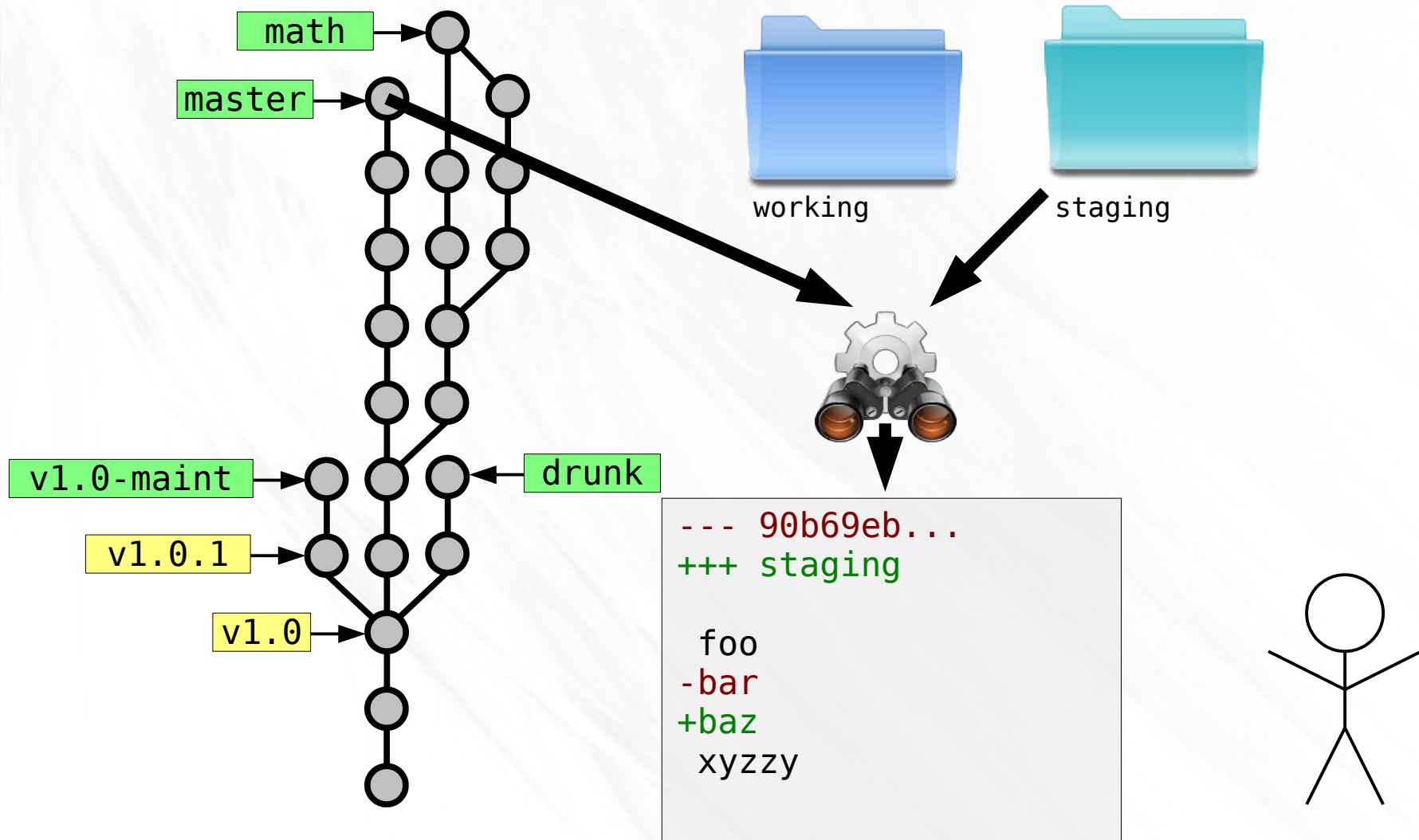


```
--- staging  
+++ working
```

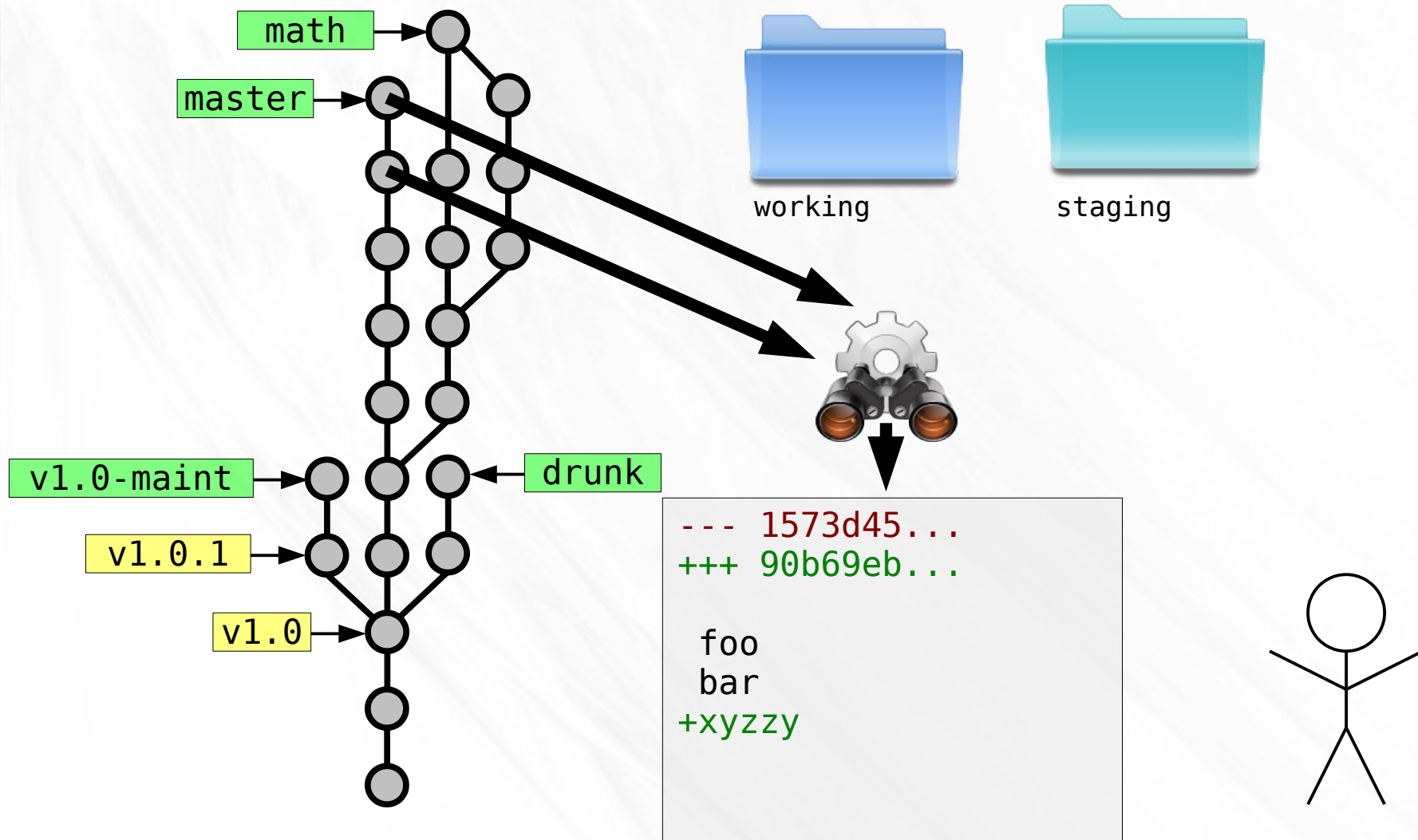
```
foo  
-baz  
+bazzle  
xyzy
```



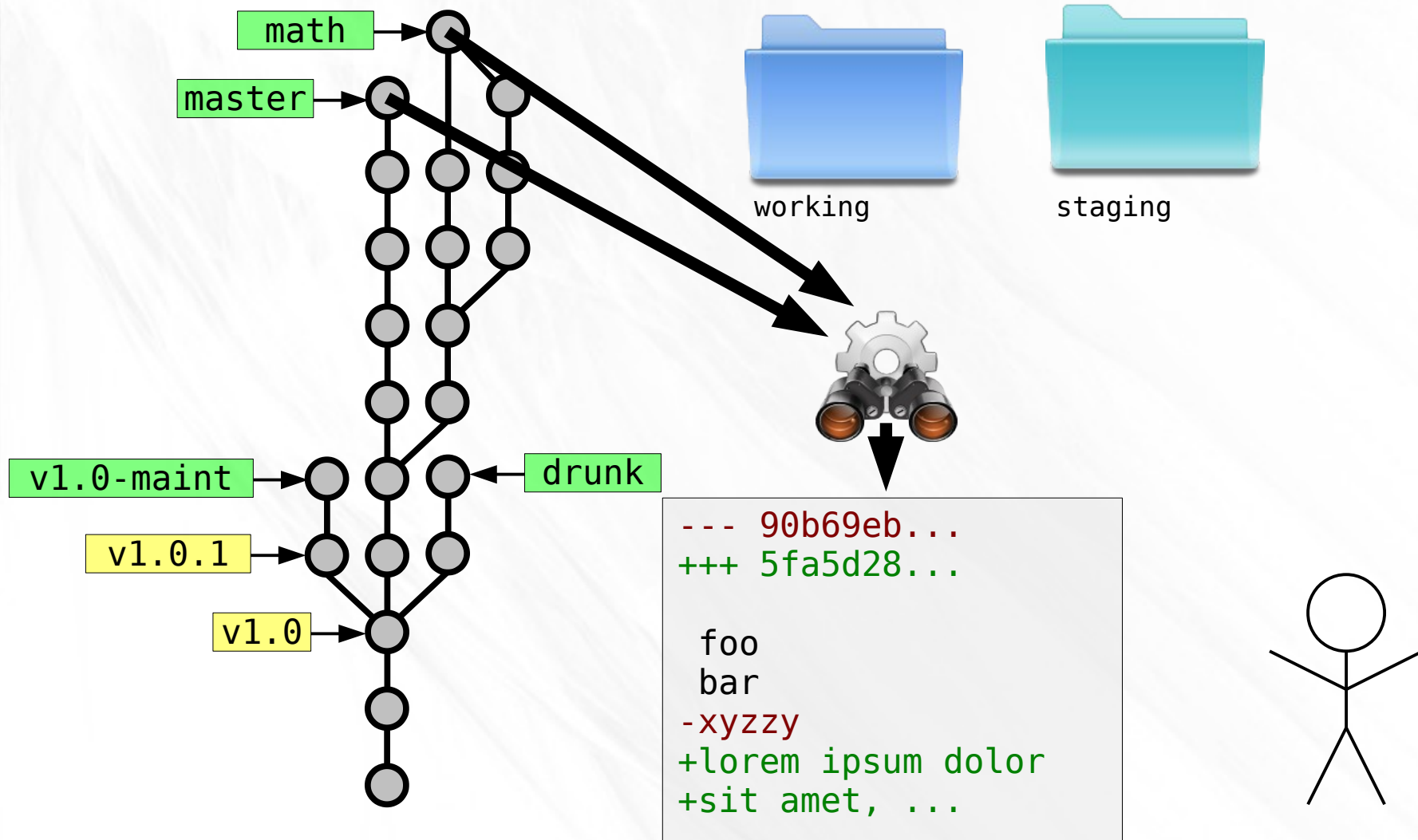
Diffs



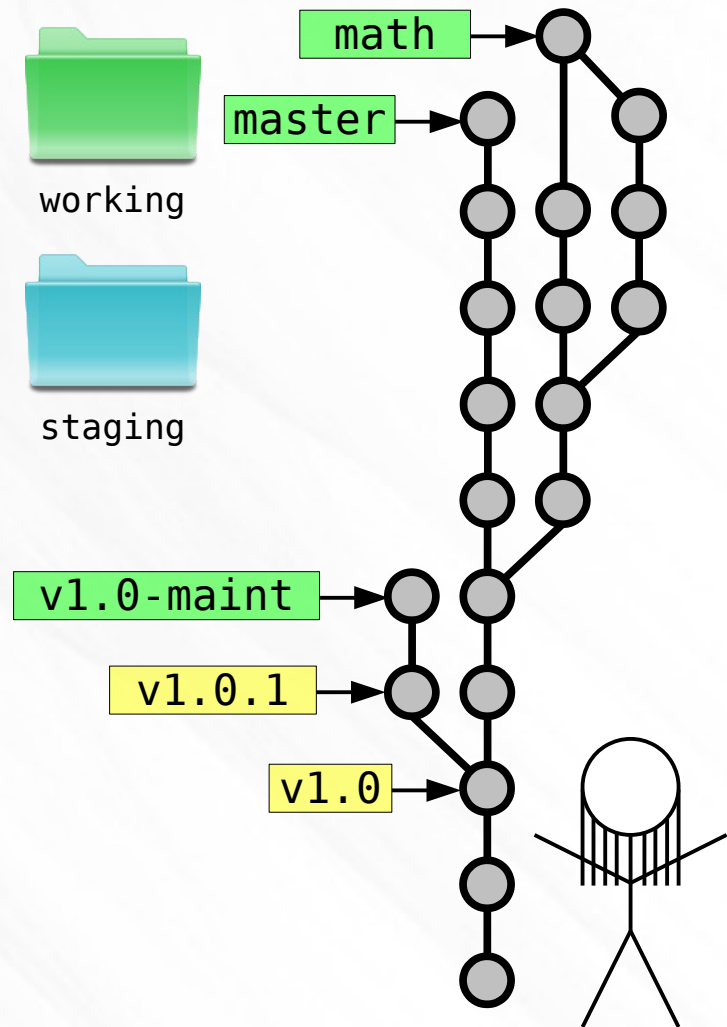
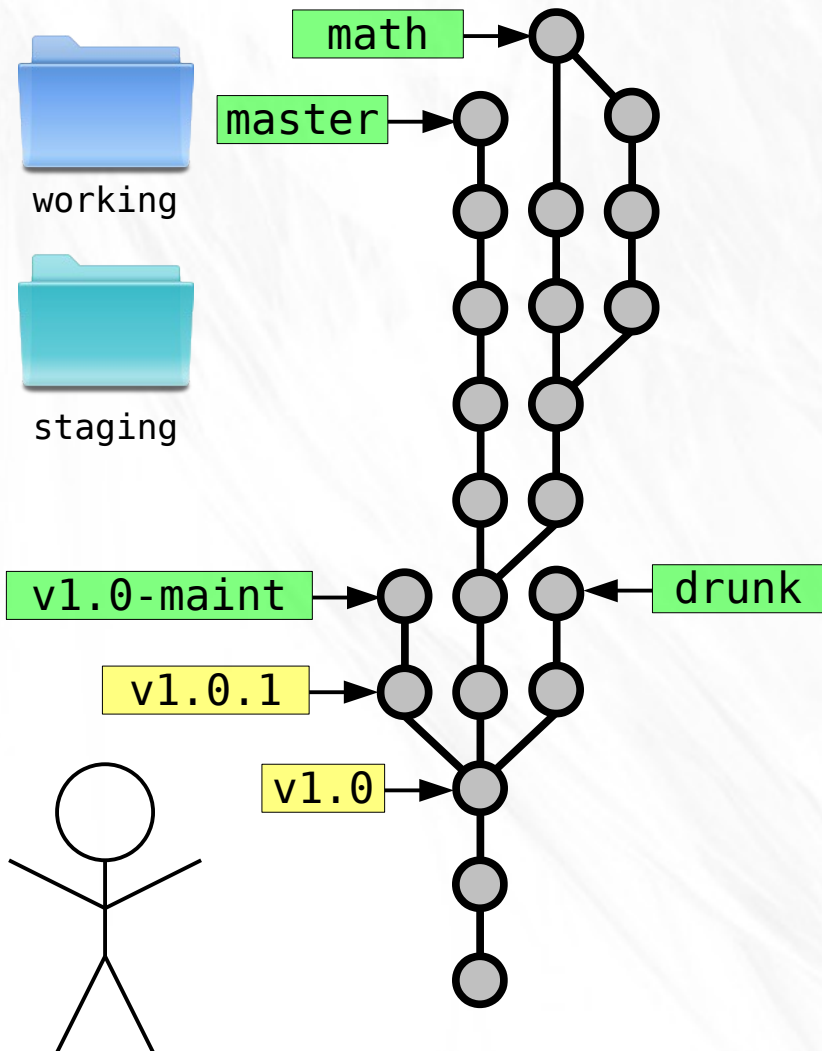
Diffs



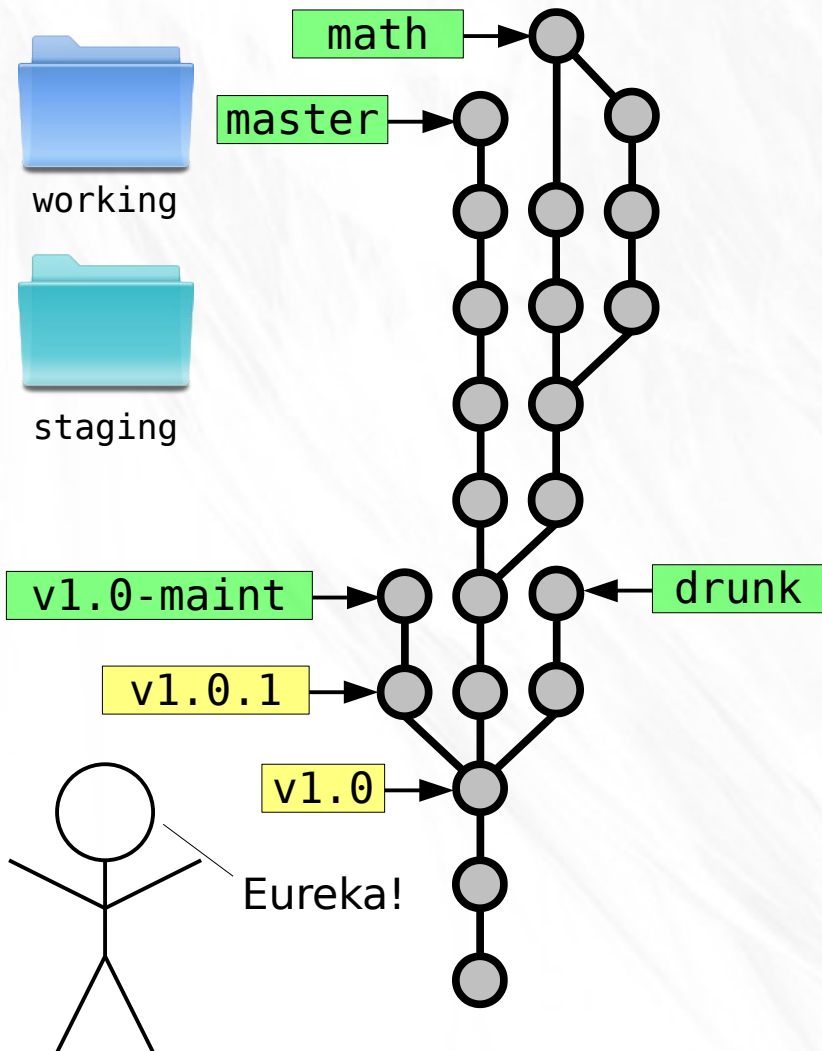
Diffs



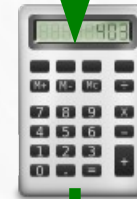
Eliminating Duplication



Eliminating Duplication



• Lorem ipsum
• dolor sit amet,
• consectetur
• adipiscing elit.
• Donec aliquet
• diam ut enim
•

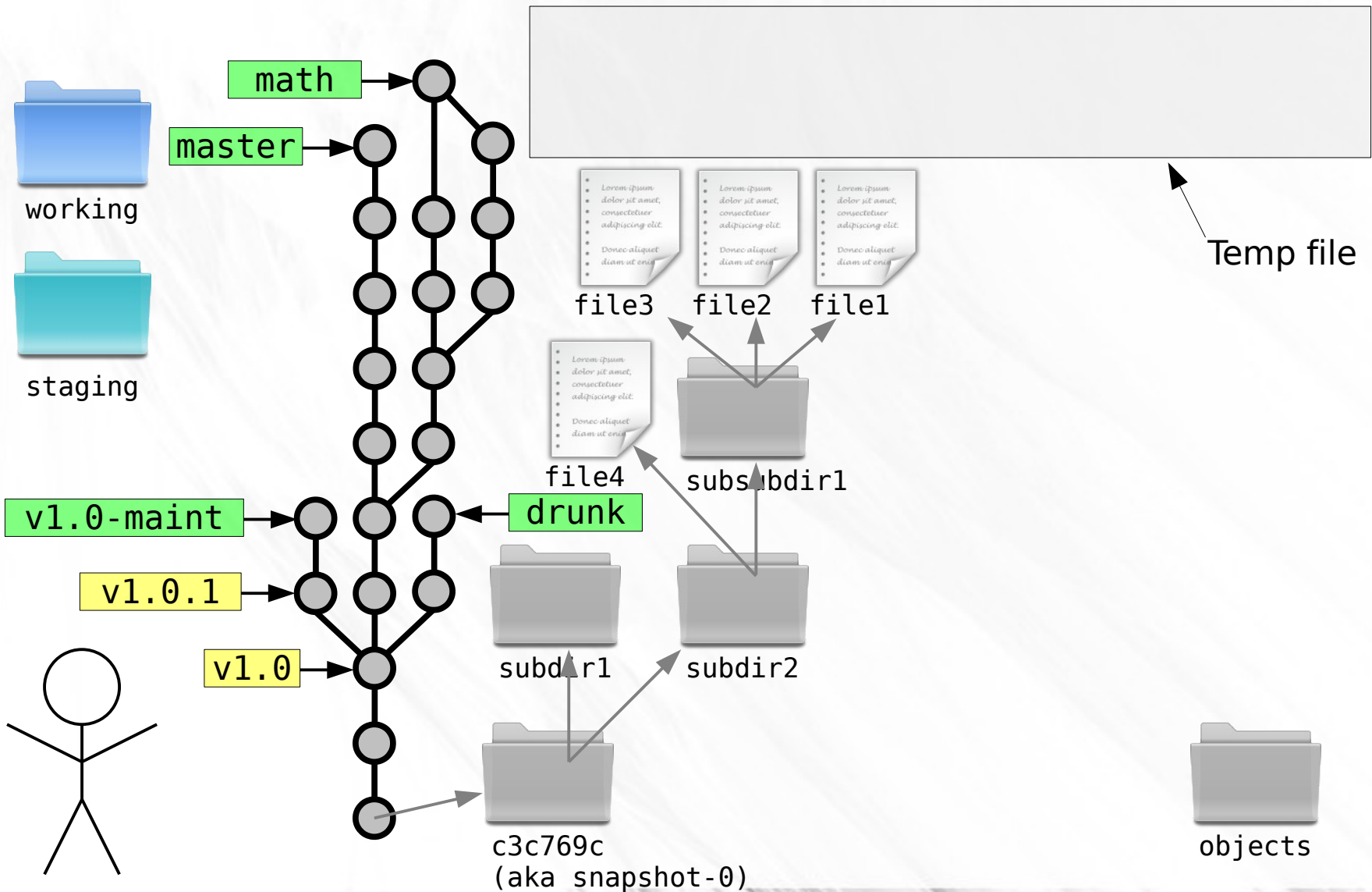


SHA1

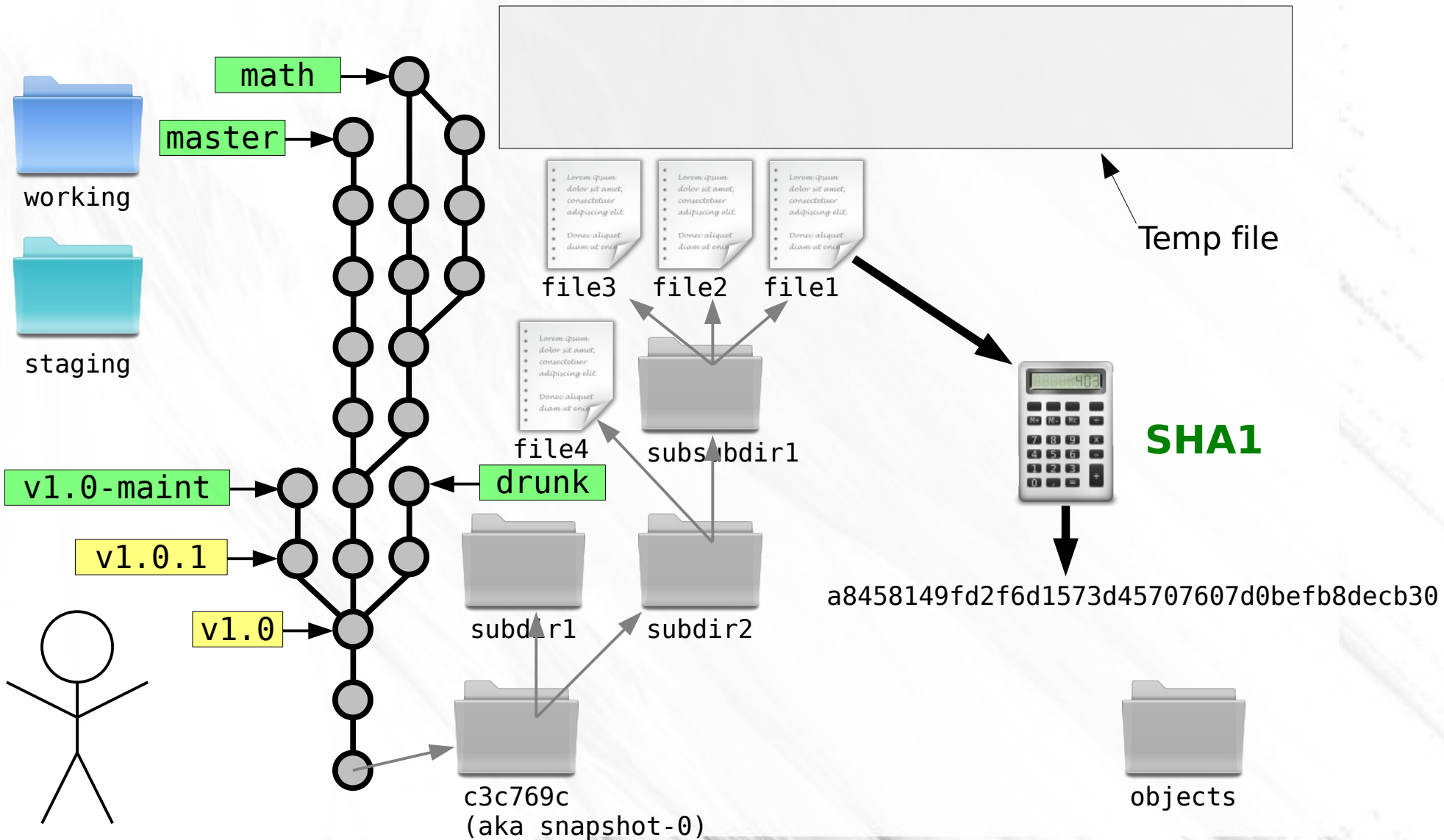
2804133755c3ed396d162028c7b30a1cbcfecded



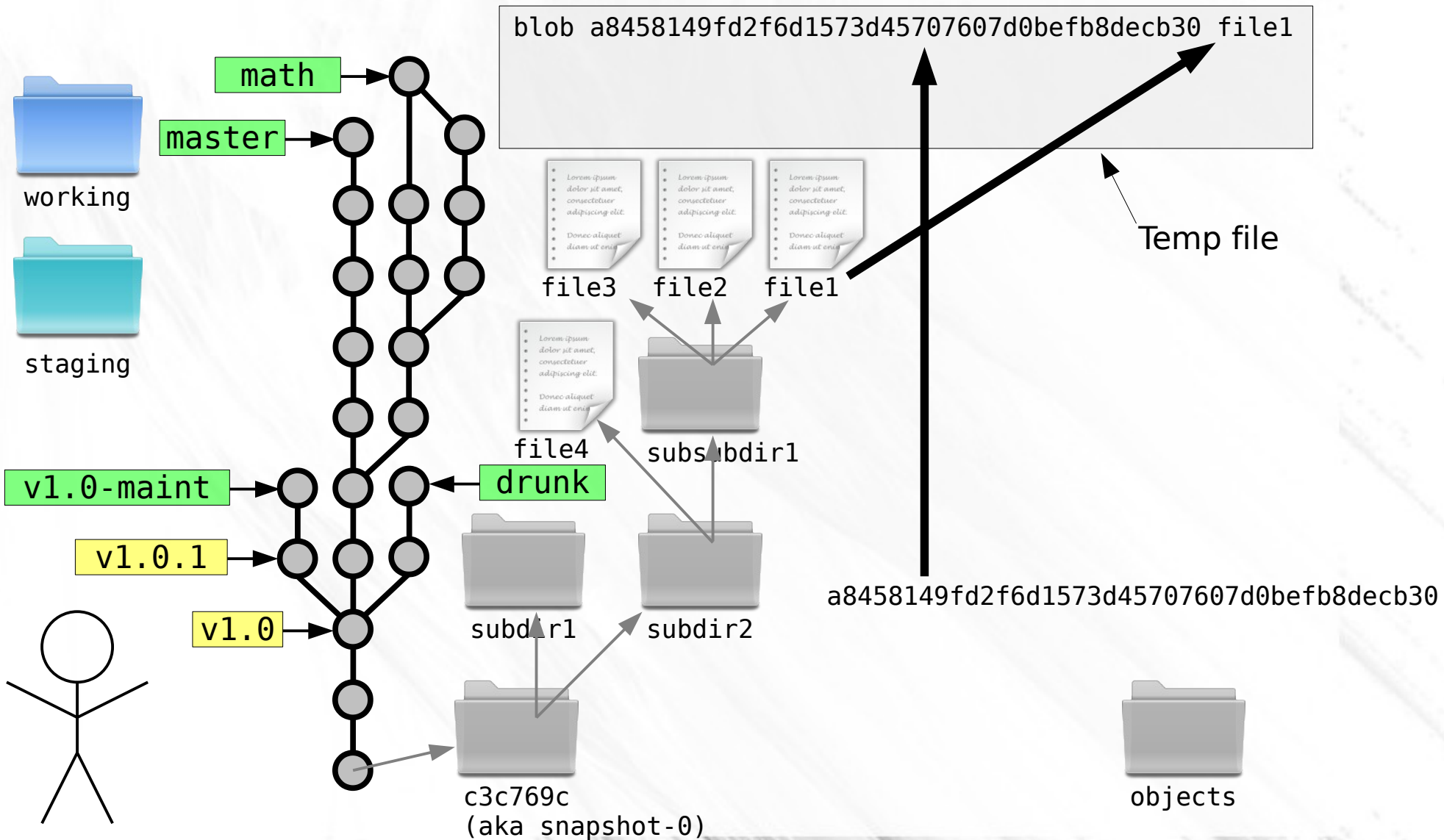
Eliminating Duplication



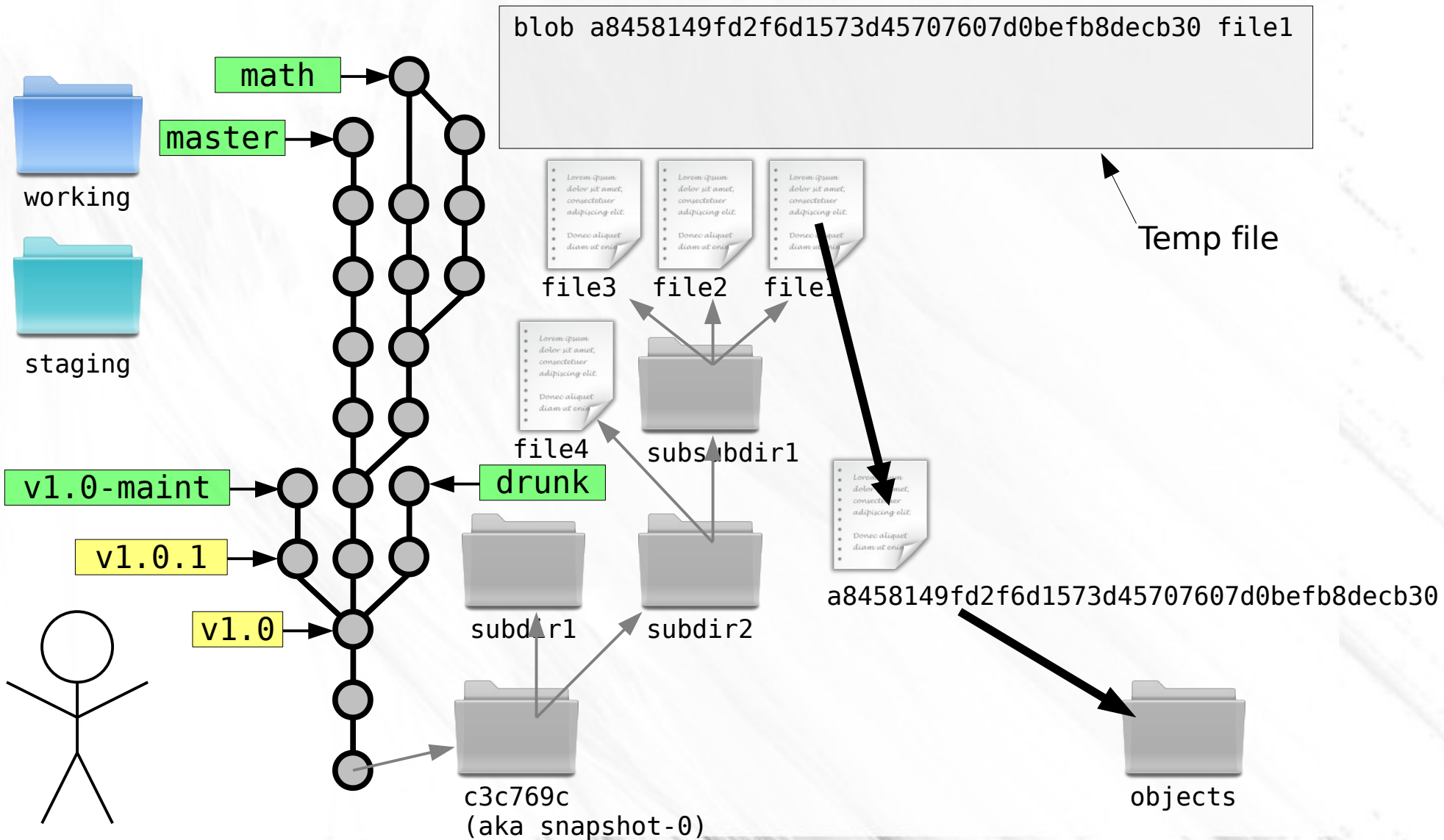
Eliminating Duplication



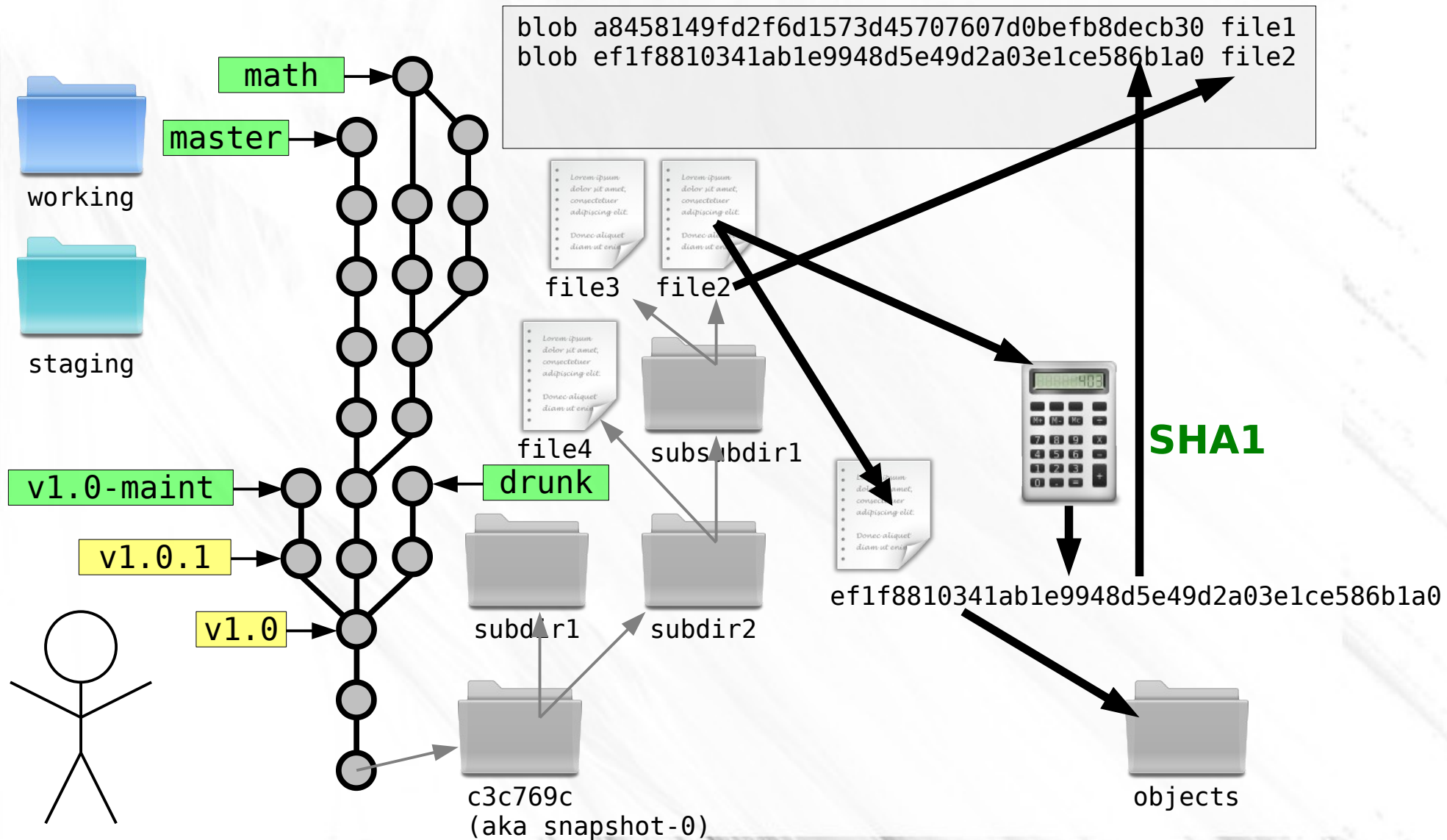
Eliminating Duplication



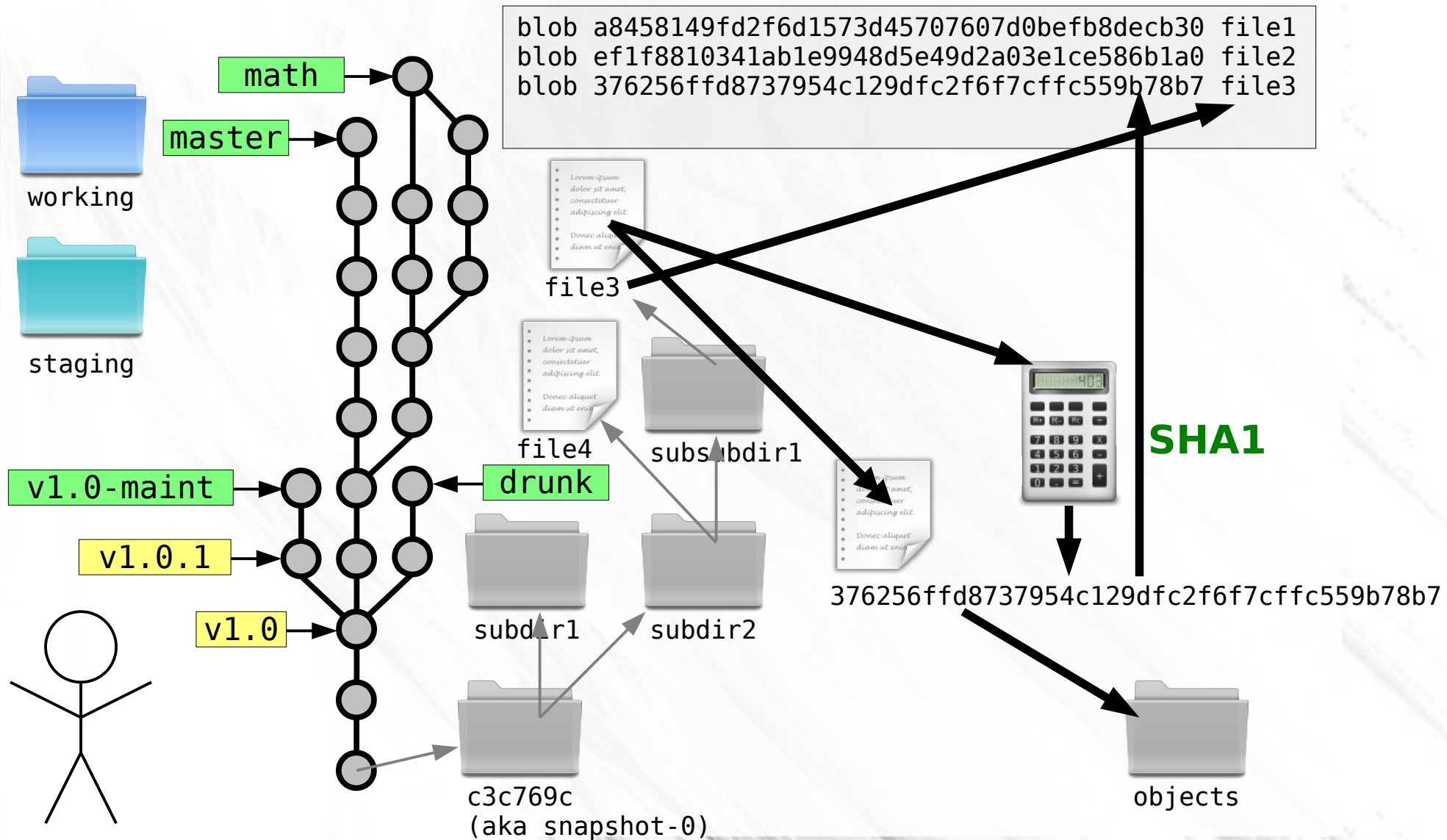
Eliminating Duplication



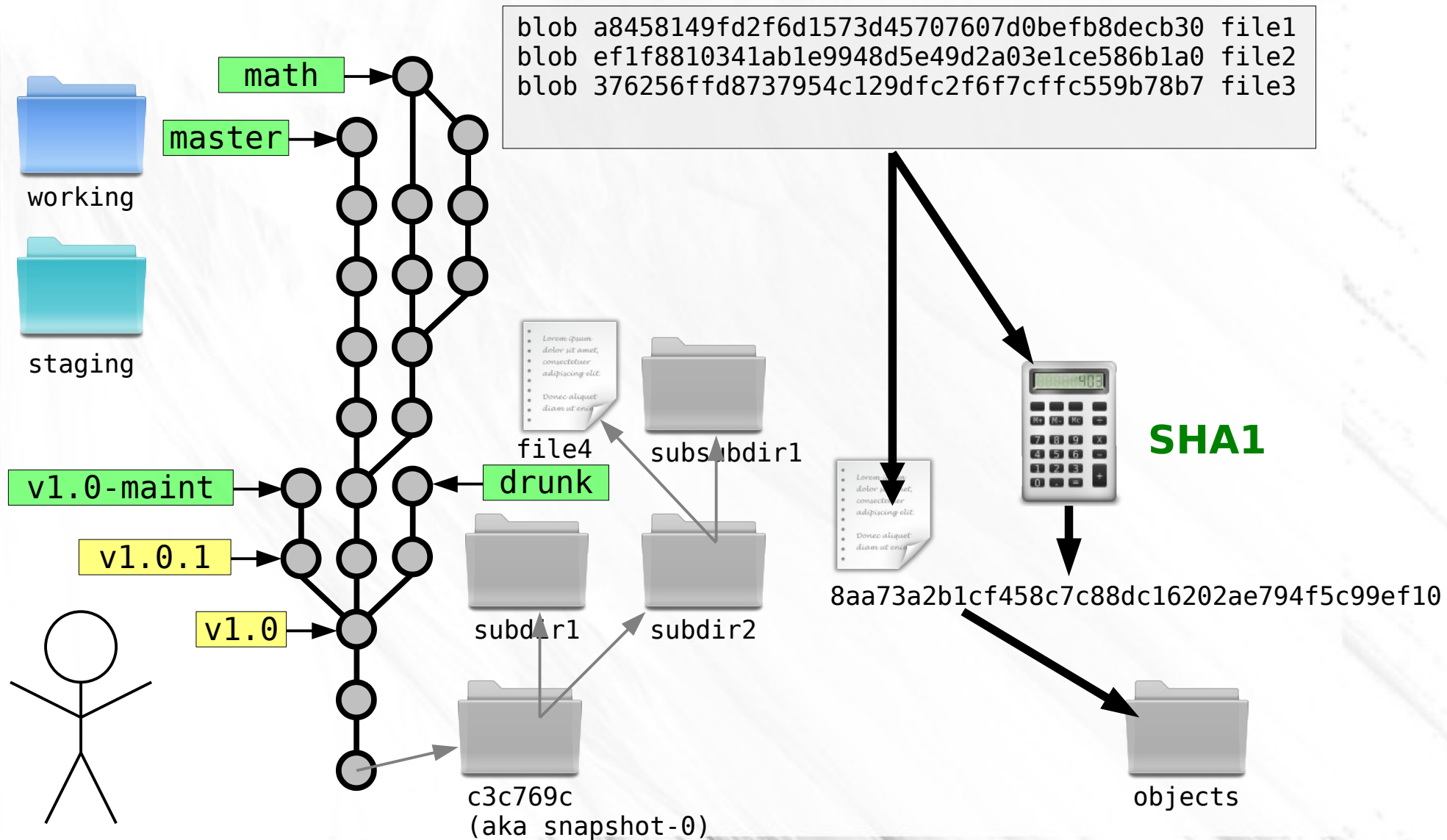
Eliminating Duplication



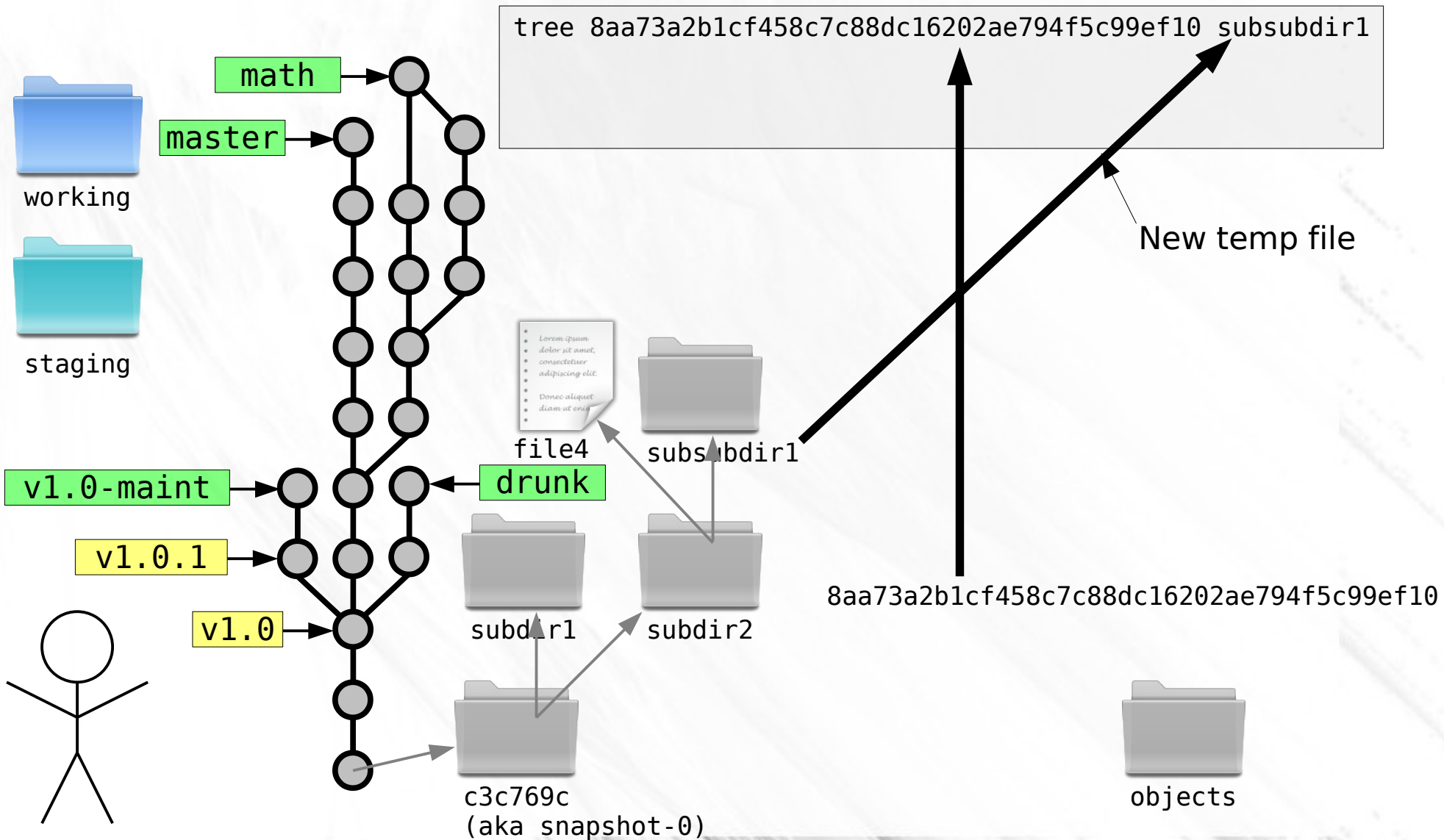
Eliminating Duplication



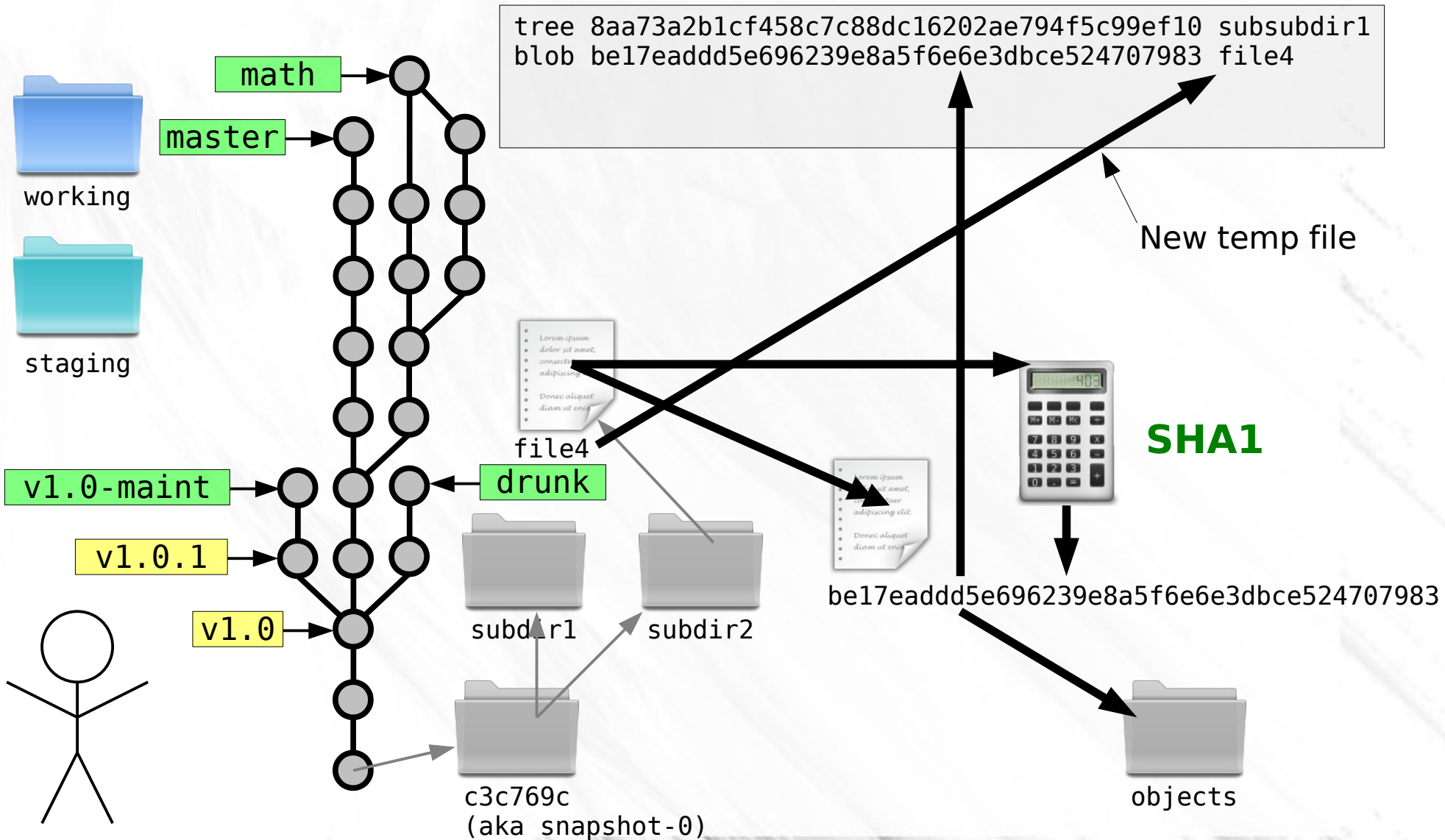
Eliminating Duplication



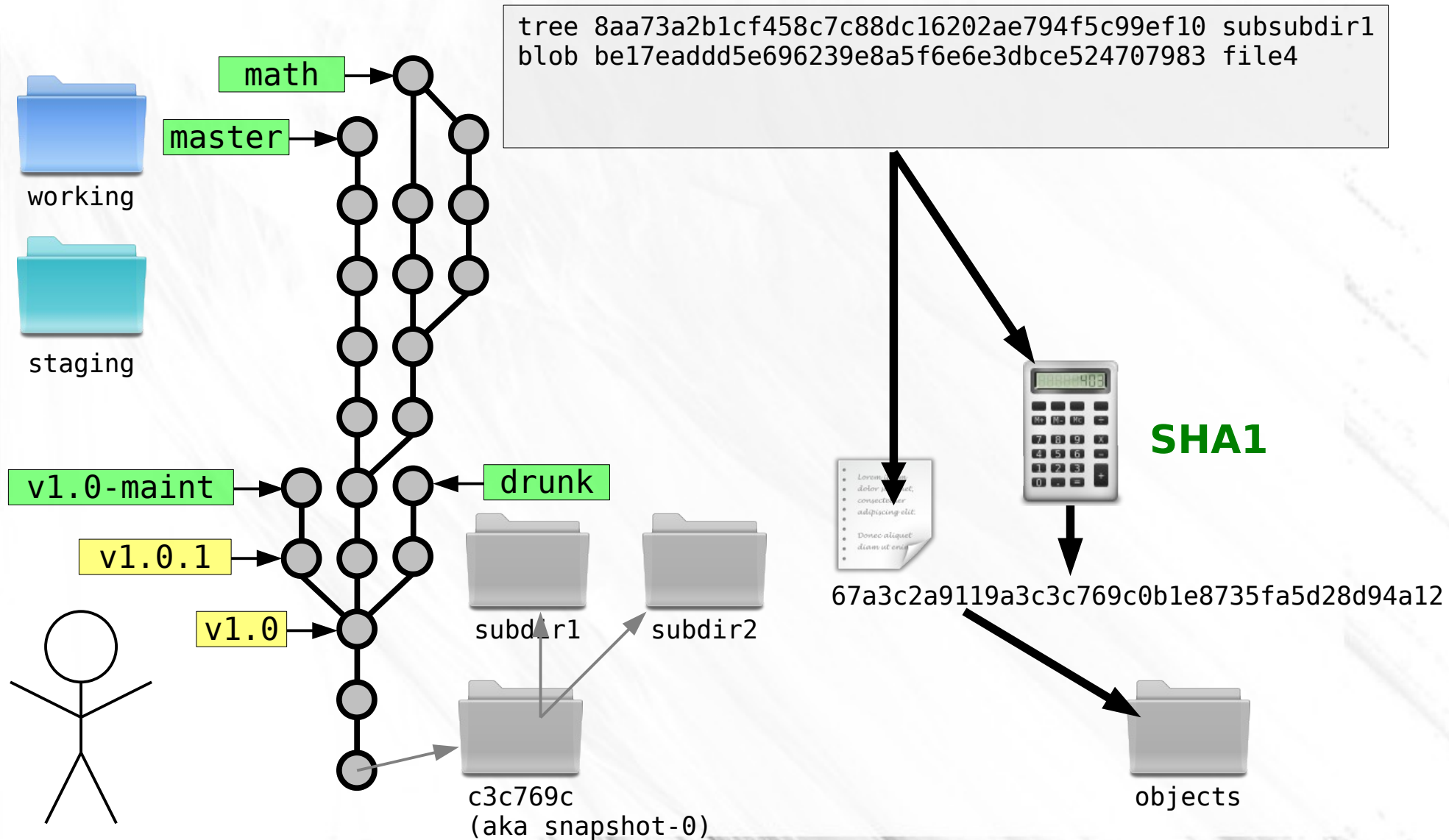
Eliminating Duplication



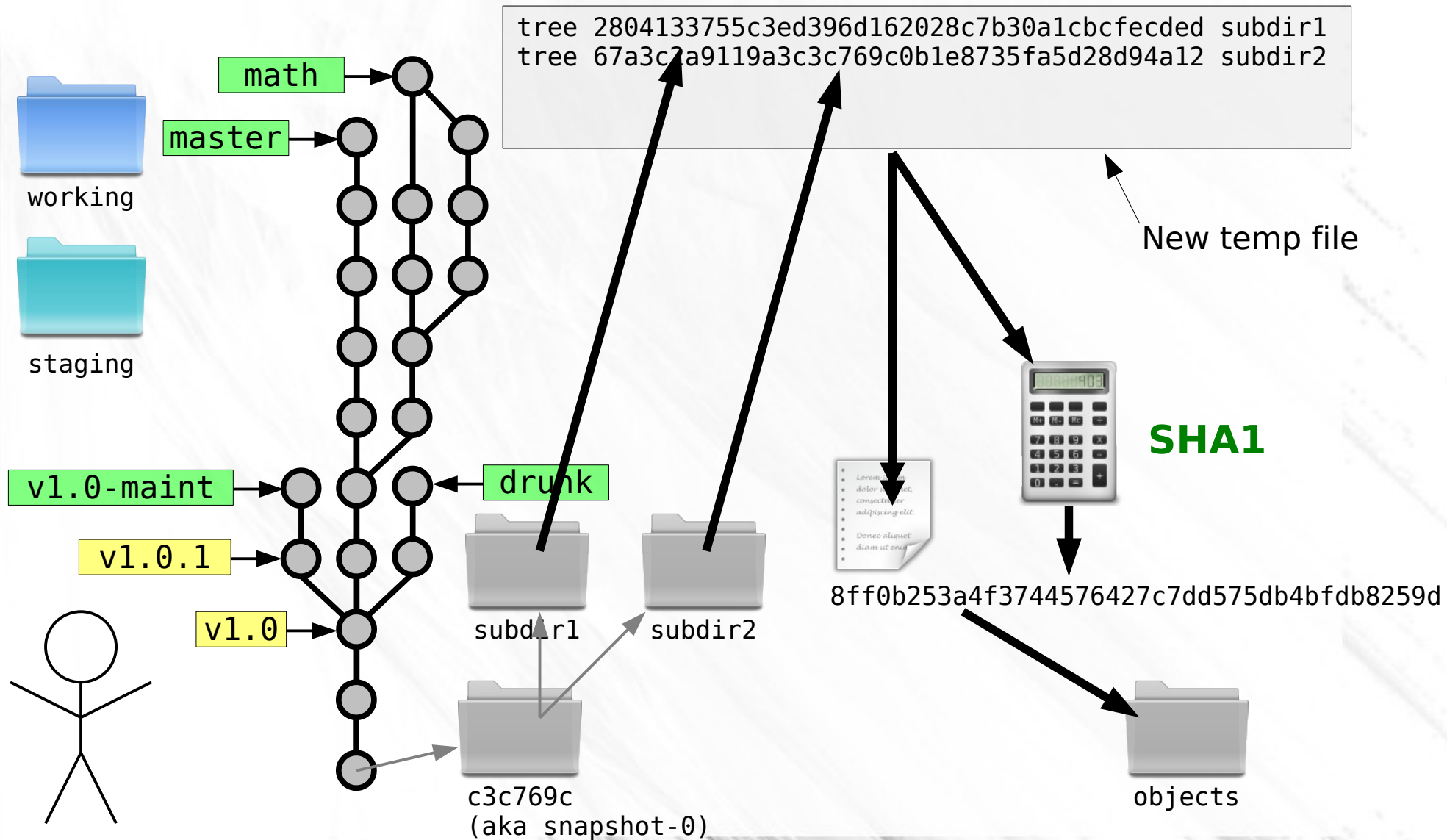
Eliminating Duplication



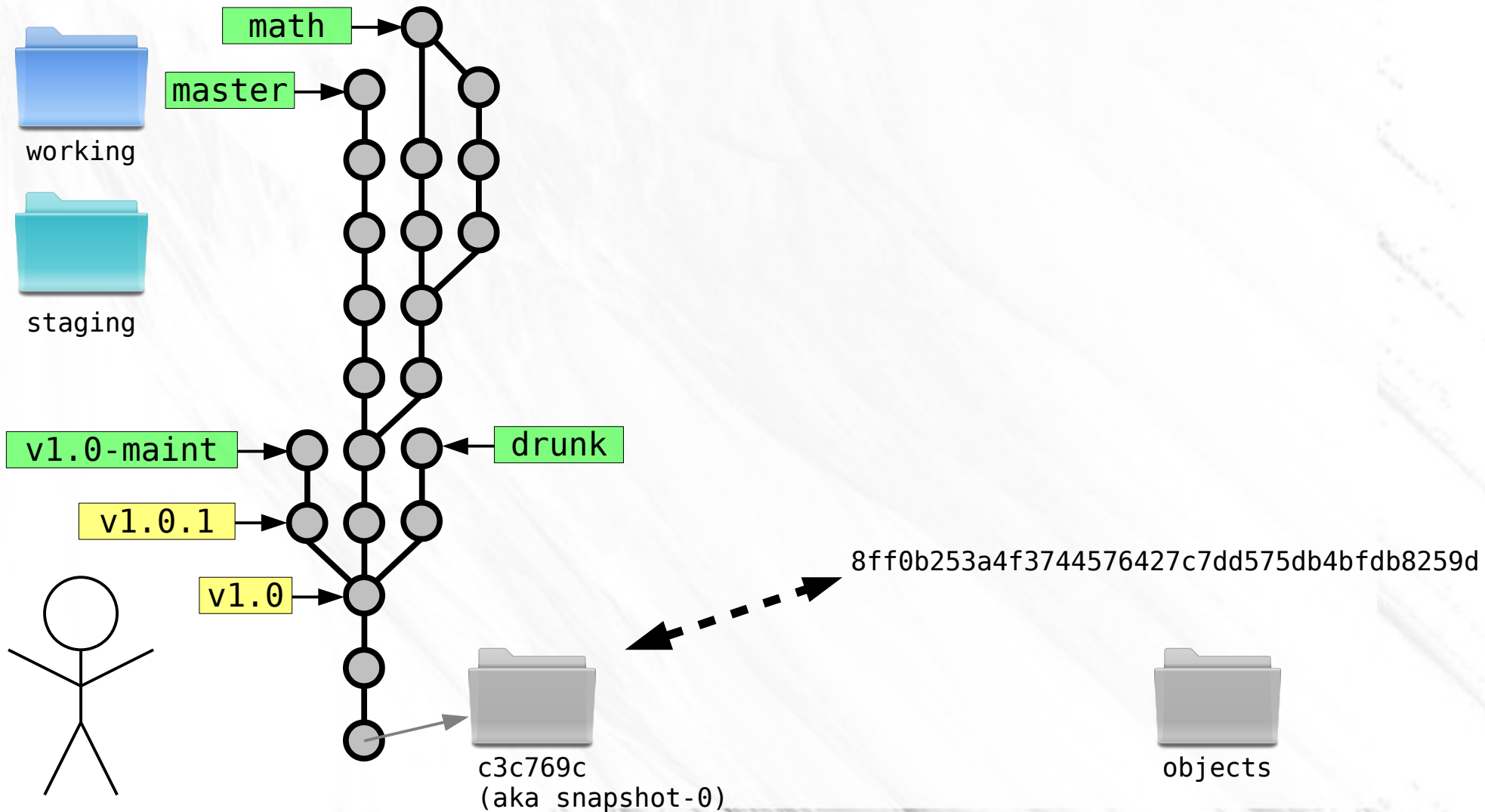
Eliminating Duplication



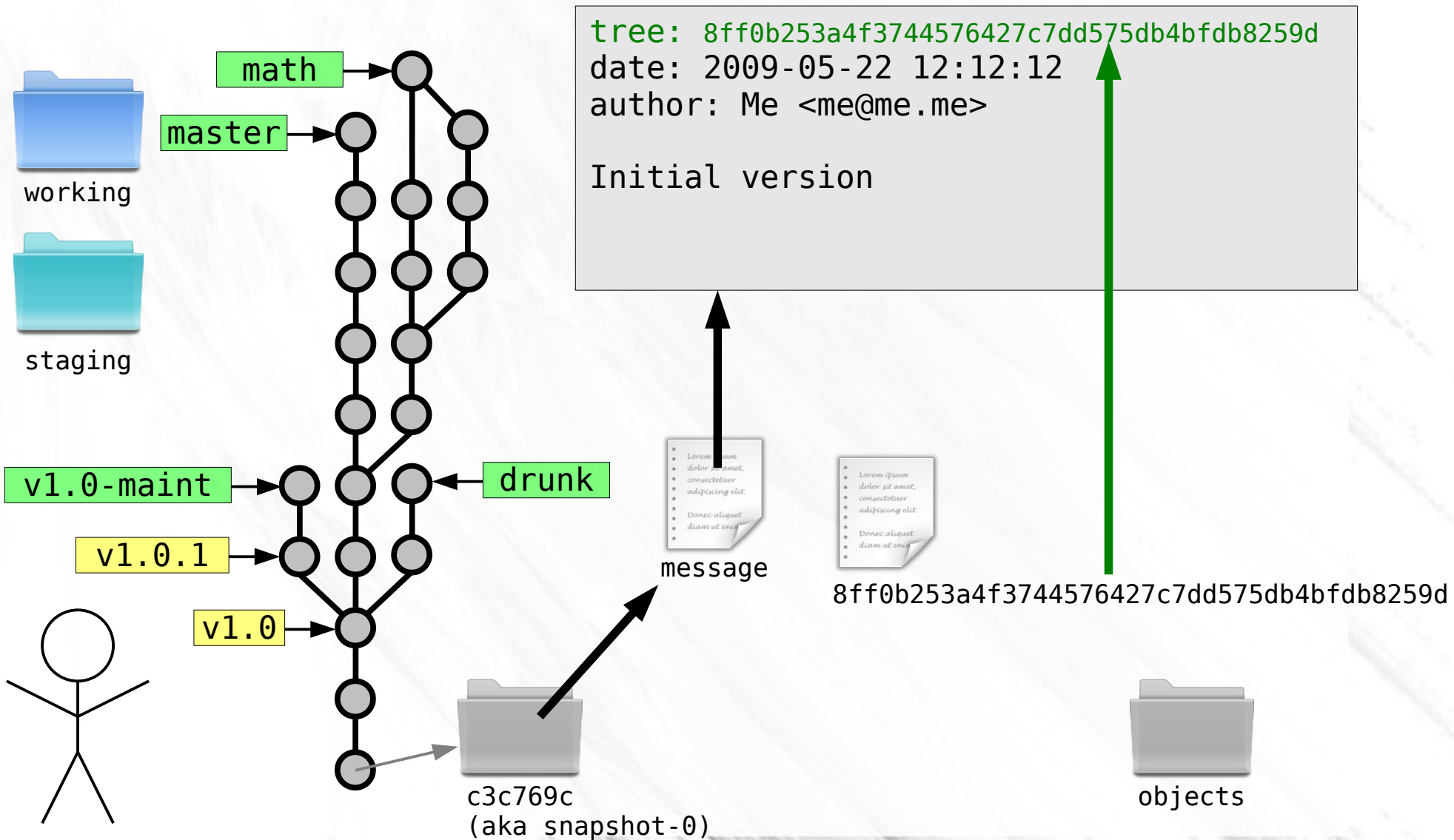
Eliminating Duplication



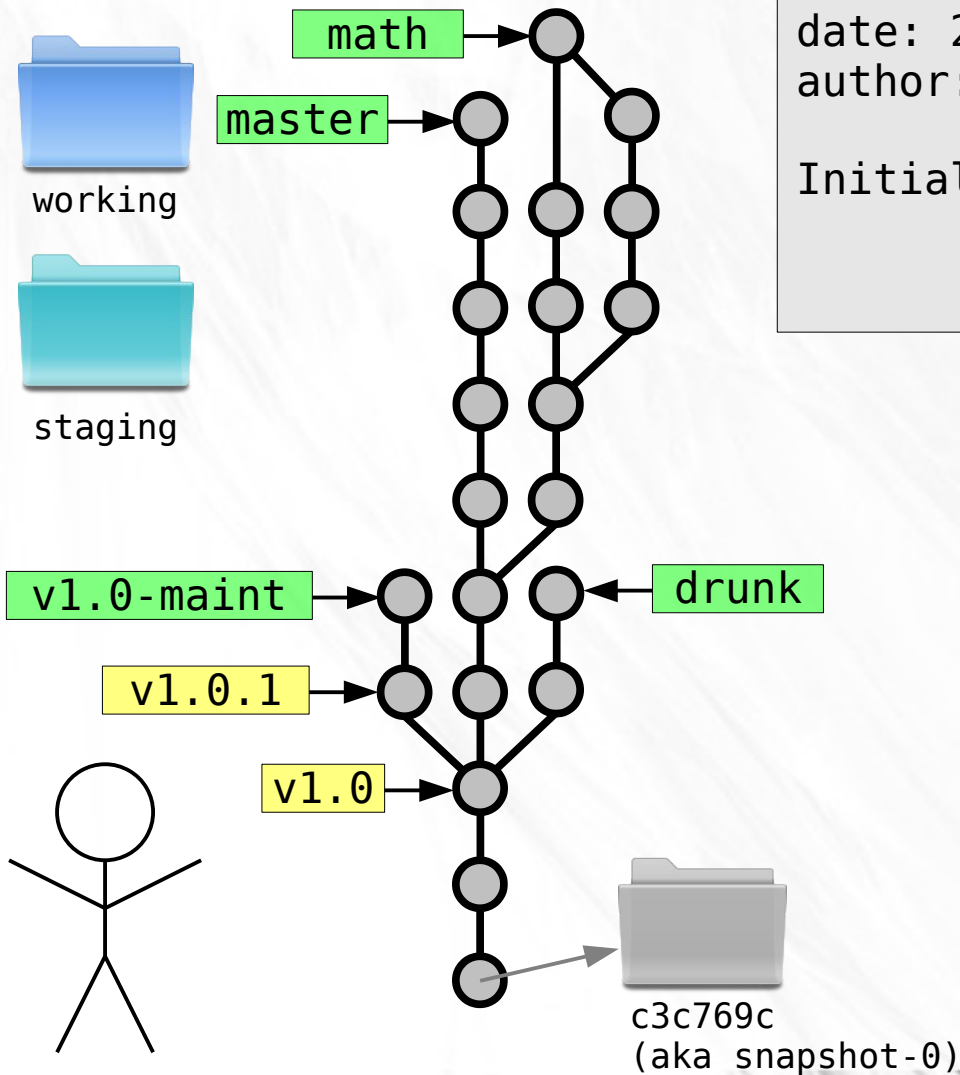
Eliminating Duplication



Eliminating Duplication

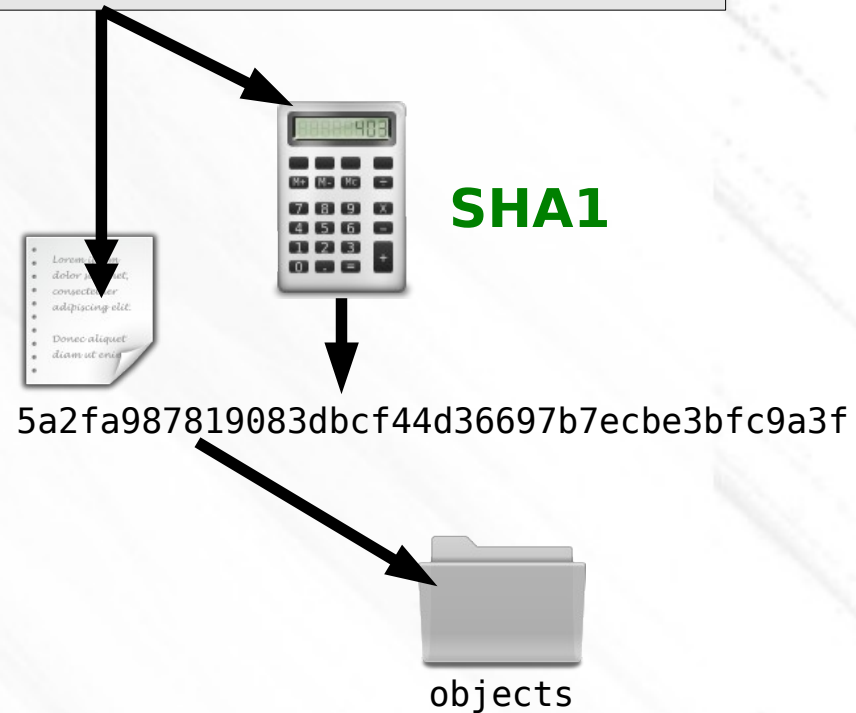


Eliminating Duplication

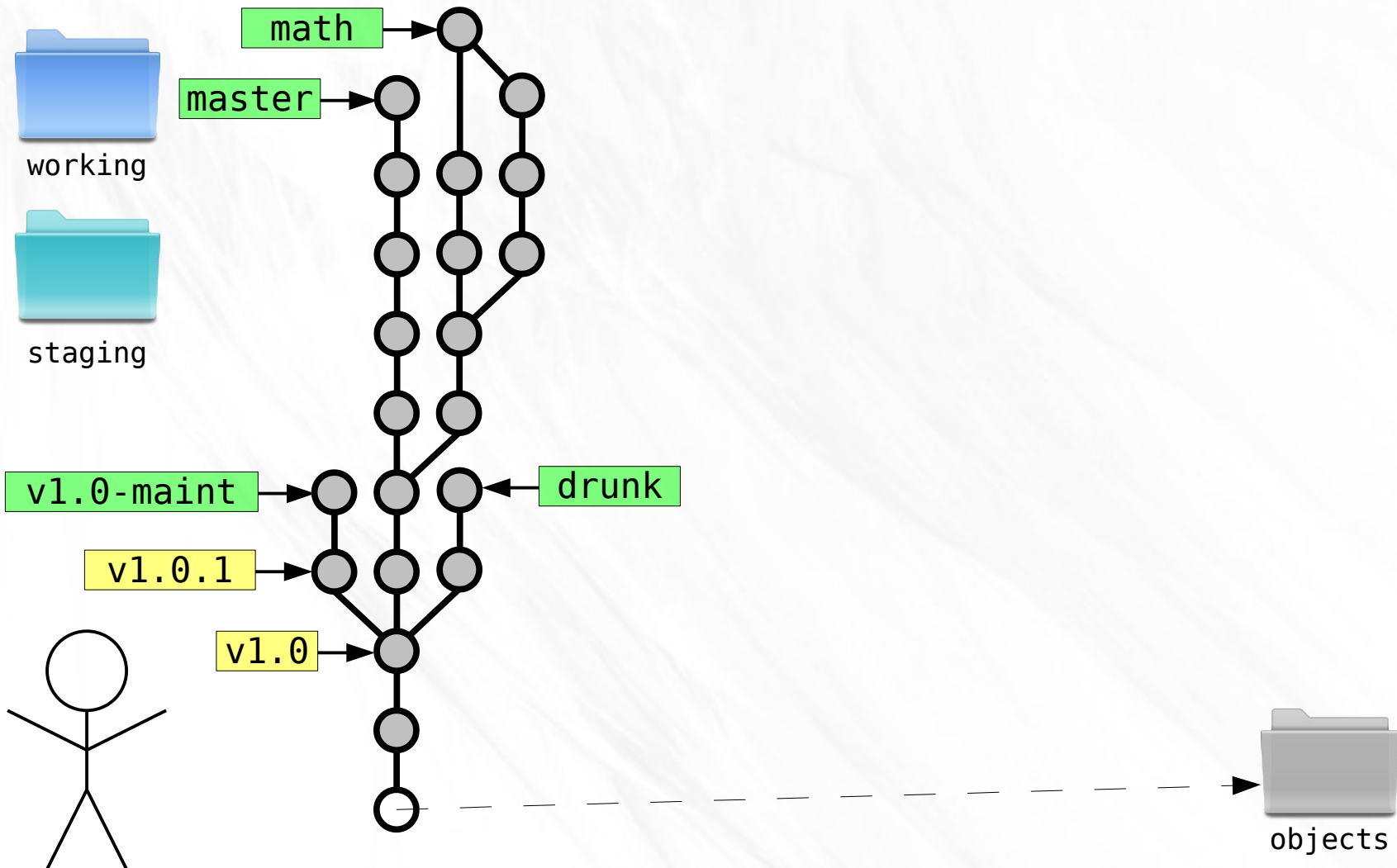


```
tree: 8ff0b253a4f3744576427c7dd575db4bfdb8259d
date: 2009-05-22 12:12:12
author: Me <me@me.me>

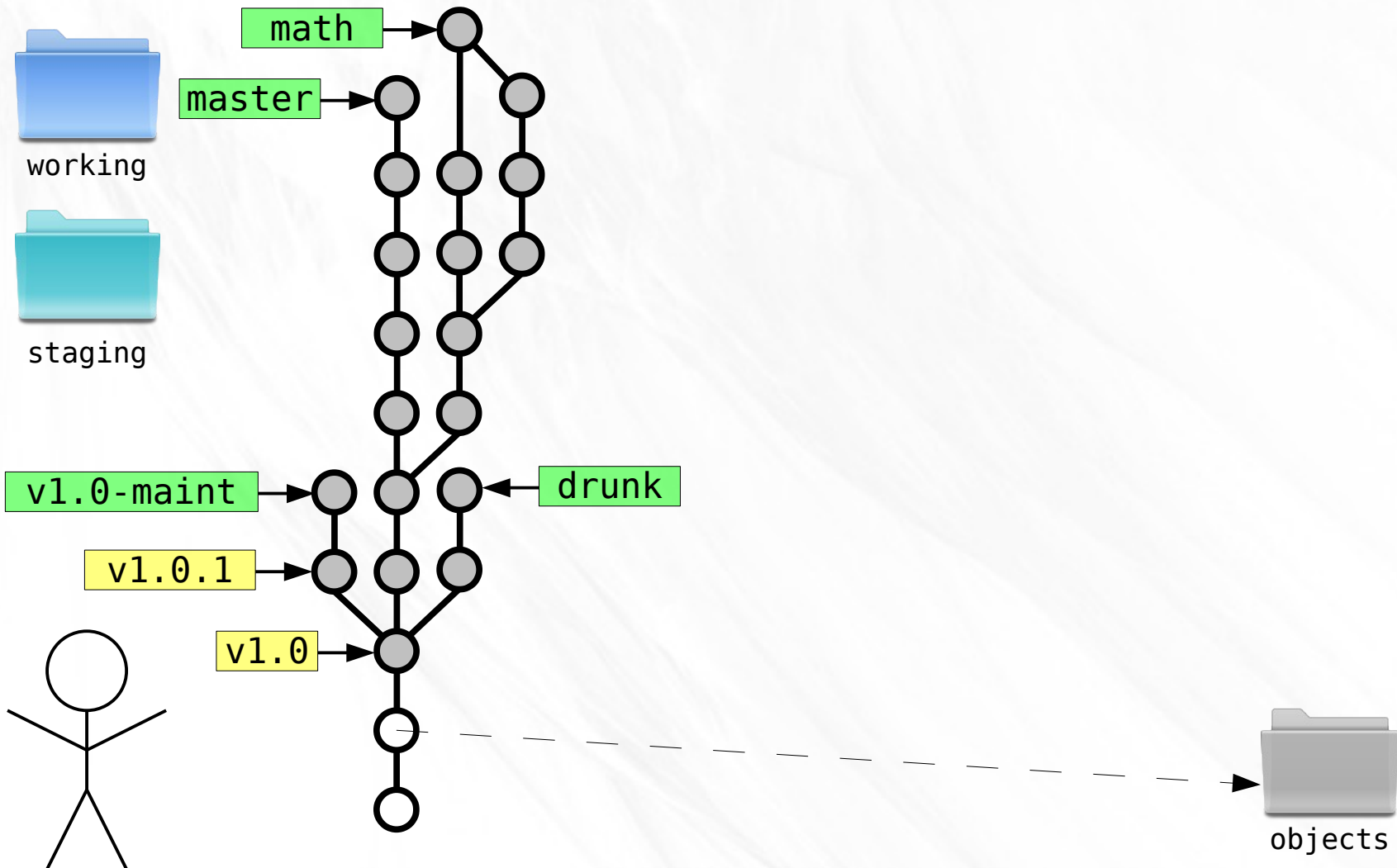
Initial version
```



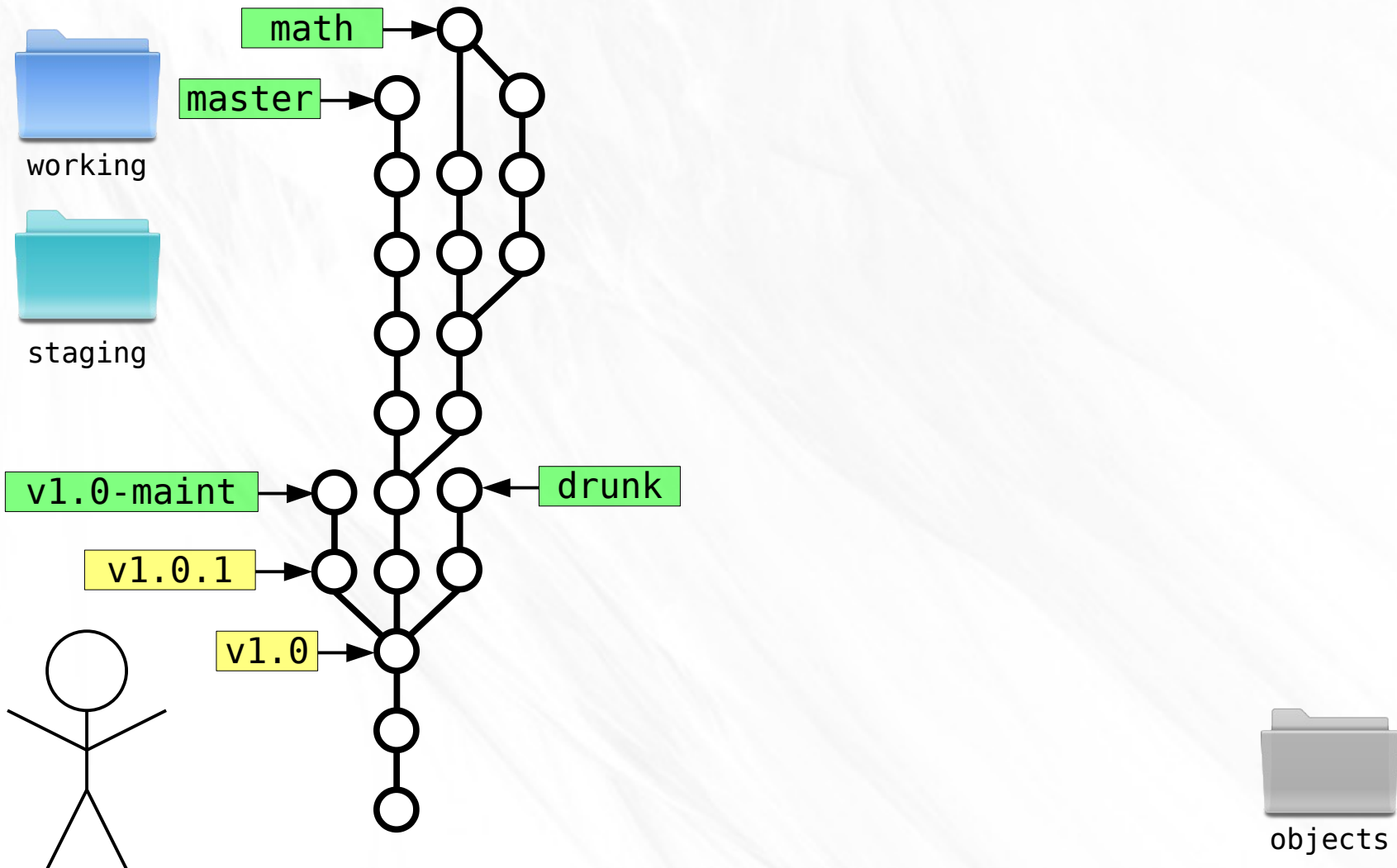
Eliminating Duplication



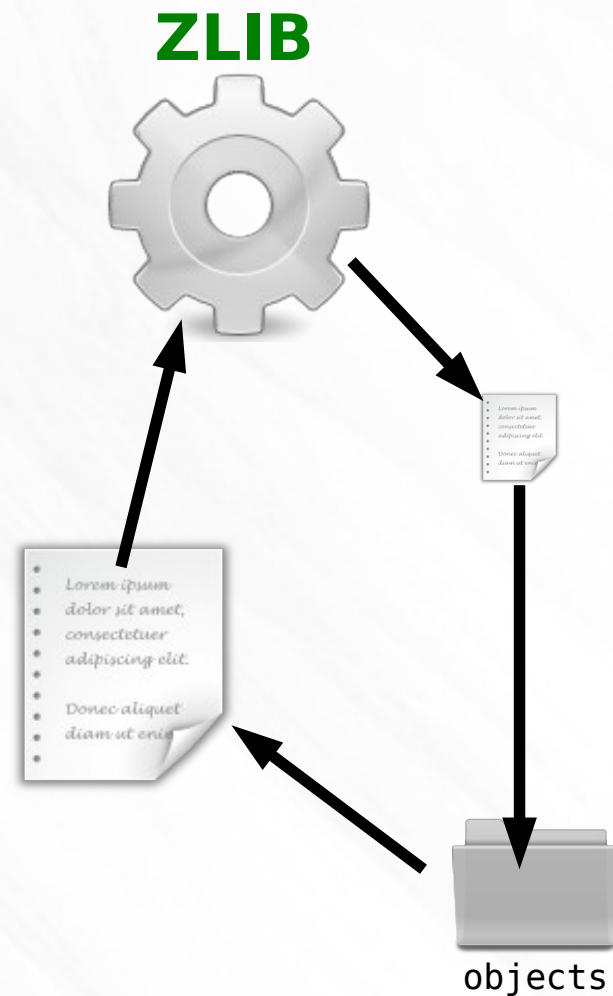
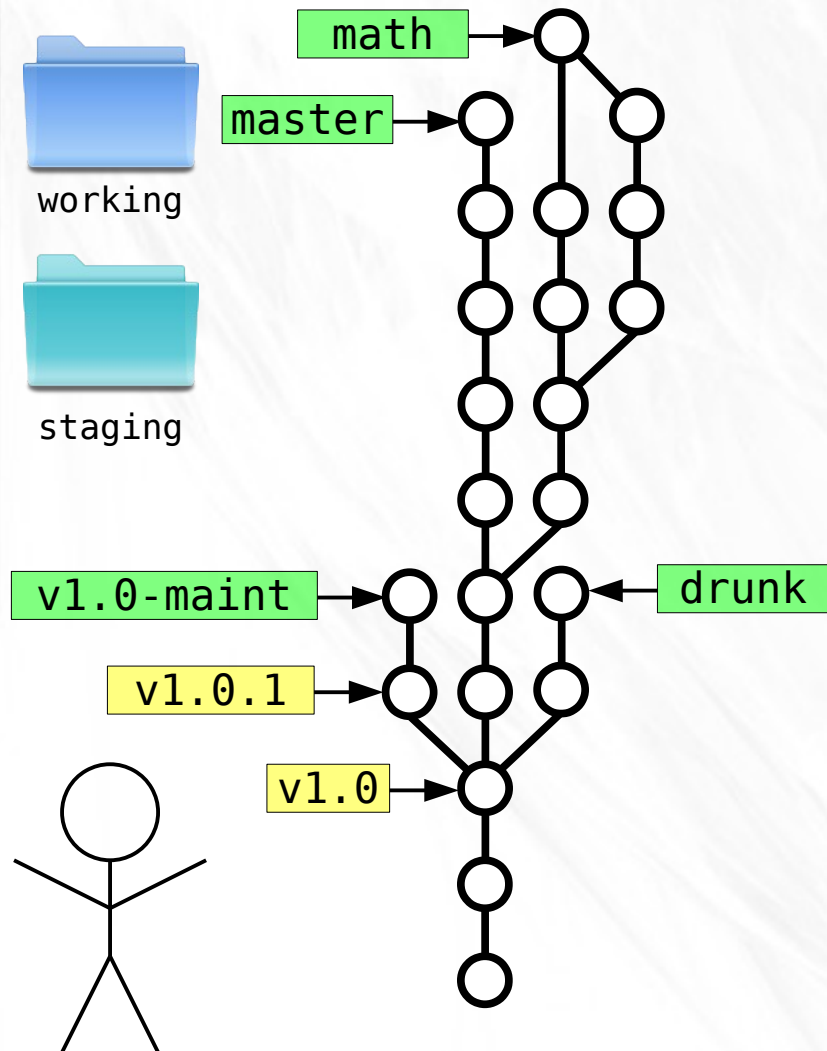
Eliminating Duplication



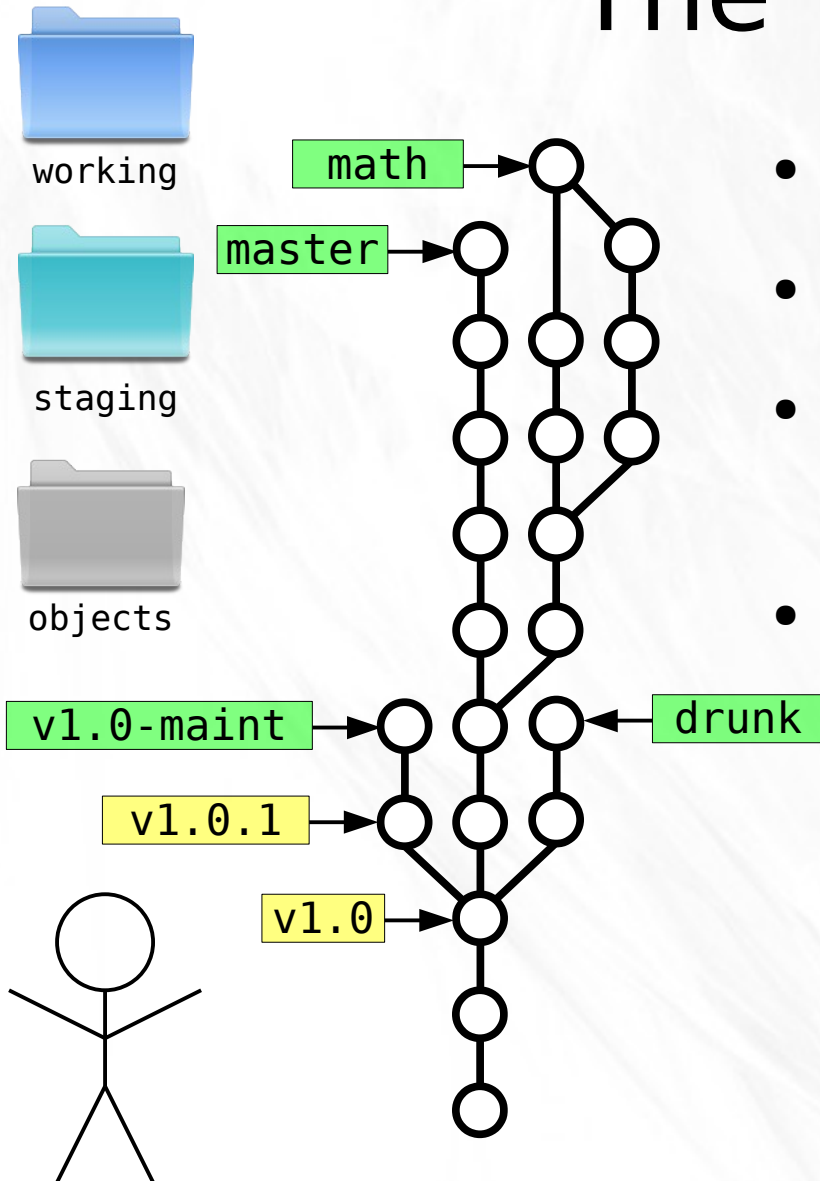
Eliminating Duplication



Compressing Blobs



The True Git

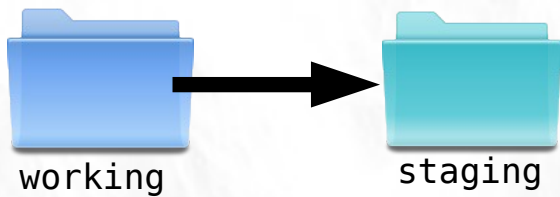


- TADAA!
- This is pretty much Git
- Nicer command line tools for all these operations
- Many, many other tools

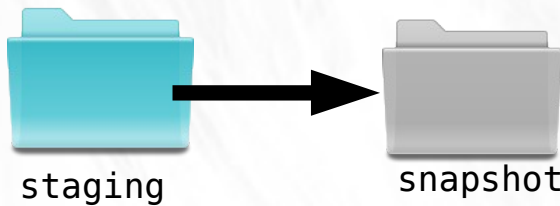
Commands: Getting Started

- First, tell Git who you are:
 - `git config --global user.name "My Name"`
 - `git config --global user.email "my@email.address"`
- Get help:
 - `git <command> -h`
 - `git help <command>`
- Start a new Git repository:
 - `git init`

Commands: Making snapshots



• `git add`

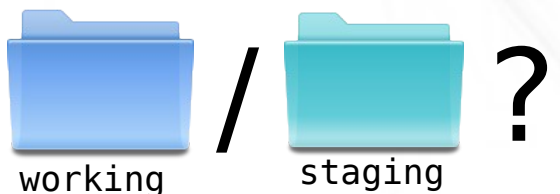


• `git commit`

} `git commit -a`



• `git log`



• `git status`

gitk

- Add the simple scripts I used to do a merge
- Merge the new object model thing from I
- [PATCH] Switch implementations of merge
- [PATCH] Port fsck-cache to use parsing fu
- [PATCH] Port rev-tree to parsing function
- [PATCH] Implementations of parsing fund
- [PATCH] Header files for object parsing
- [PATCH] fix bug in read-cache.c which lo
- [PATCH] Fix confusing behaviour of upda
- Make "commit-tree" check the input obje
- Make "parse_commit" return the "struct
- Do a very simple "merge-base" that finds
- Make "rev-tree.c" use the new-and-impro

Commands: Diffing



working

vs.



staging

- `git diff`



staging

vs.



snapshot

- `git diff --staged`



working

vs.



snapshot

- `git diff HEAD`



snapshot

vs.



snapshot

- `git diff <from> <to>`

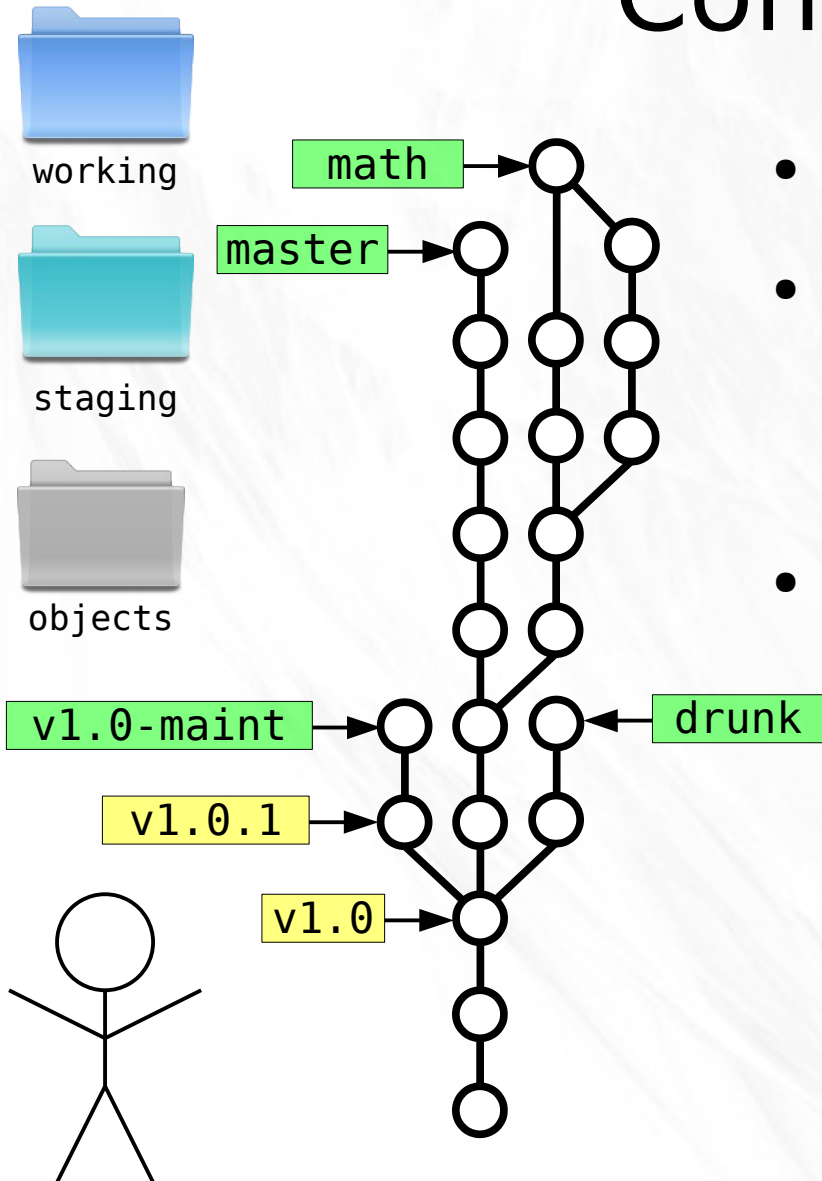
Commands: Branches & Tags

- `git branch`
 - `git branch <branch>`
 - `git checkout <branch>`
 - `git tag -l`
 - `git tag <tag>`
- } `git checkout -b ...`

Commands: Fetching & Merging

- `git remote add <name> <URL>`
 - `git fetch <name>`
 - `git merge <name>/<branch>`
- } `git pull`

Conclusion



- Keep this parable in mind
- Git is simple and powerful
- One more thing:

`git reflog`

Where to go next?

- Git homepage: <http://git-scm.com>
- Pro Git: <http://git-scm.com/book>
- Git Reference: <http://gitref.org>
- GitHub: <http://github.com>
- Gitorious: <http://gitorious.org>

Questions?

- Thanks for your attention!
- These slides are available at:
https://github.com/jherland/git_parable
- Reach me at <johan@herland.net>

