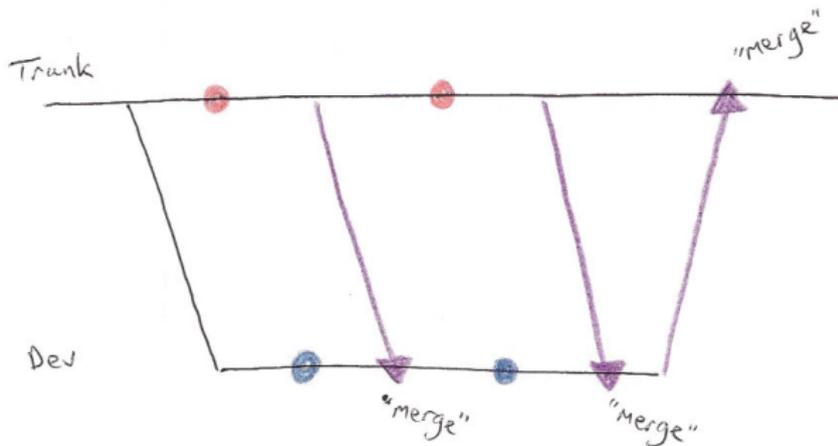


Automatic Merging in Subversion 1.8

To-and-Fro Merging

Julian Foad <julian.foad@wandisco.com>

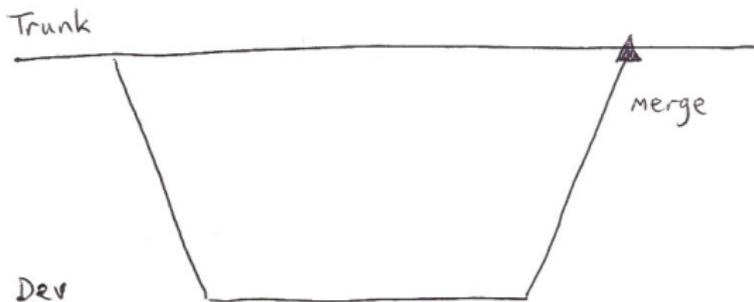
Symmetric merge



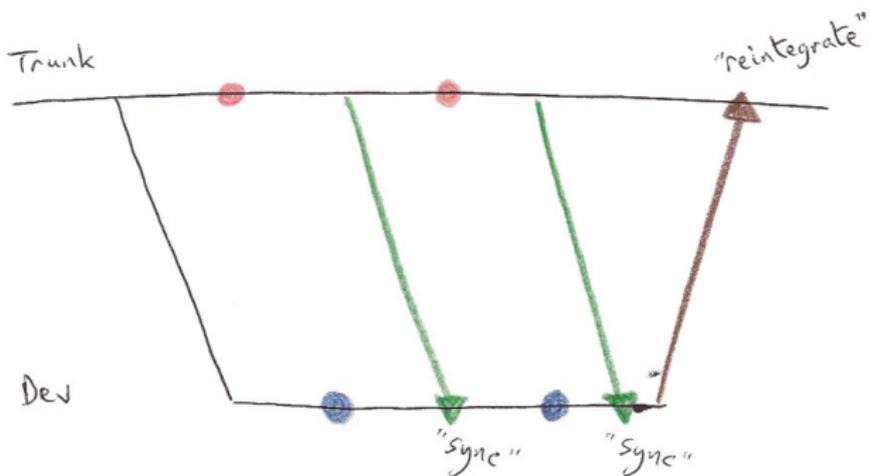
Outline

- 1 Sync & Reintegrate
- 2 Why Symmetric?
- 3 Implementation
- 4 Results
- 5 Summary

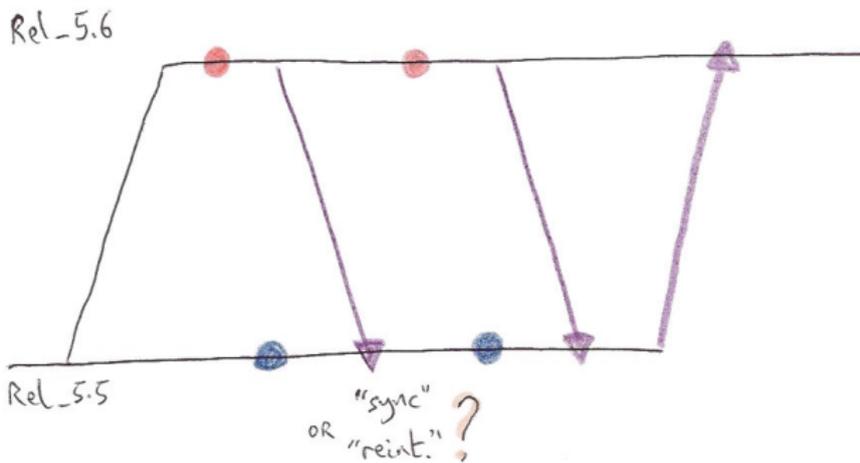
Feature Branch



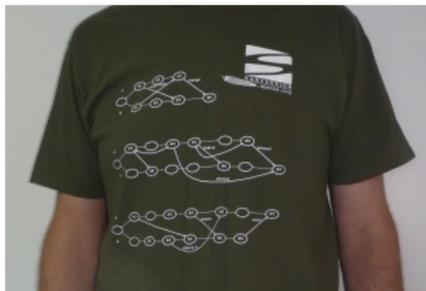
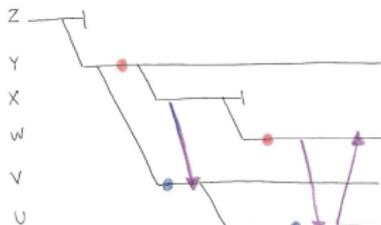
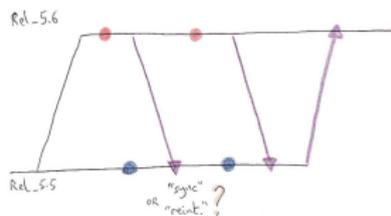
Feature Branch with Sync



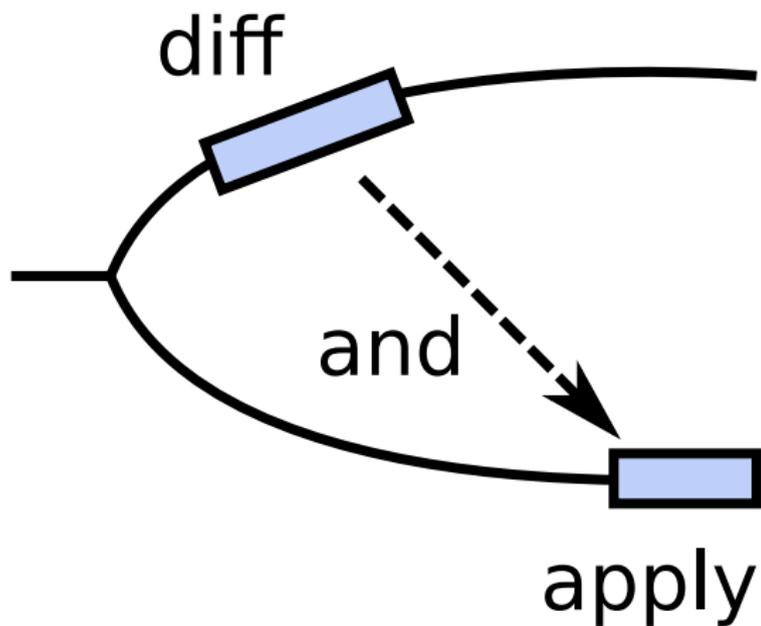
Release Branch



Other Patterns

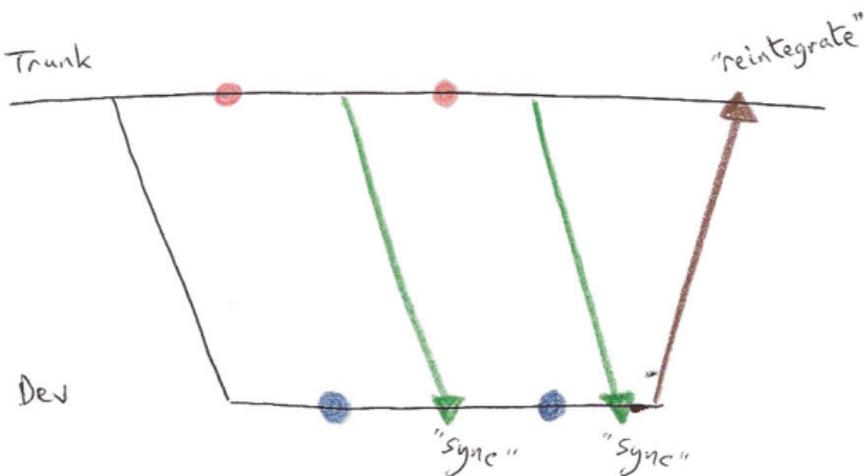


Just Diff & Apply?

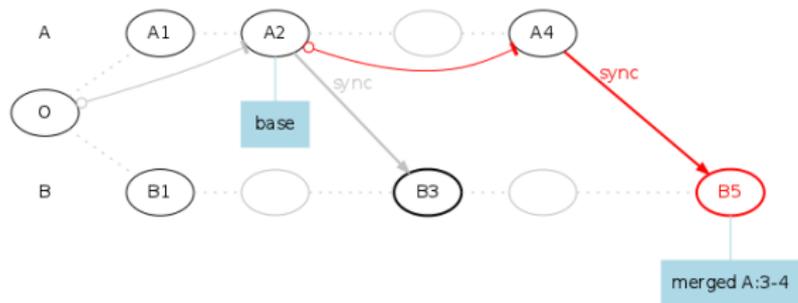


Why Sync & Reintegrate?

Sync & Reintegrate



How Sync Works



Youngest Common Ancestor

all changes on source

target's mergeinfo

eligible changes

3-way base

3-way source-right

record mergeinfo

O

A1, A2, A3, A4

A:1-2

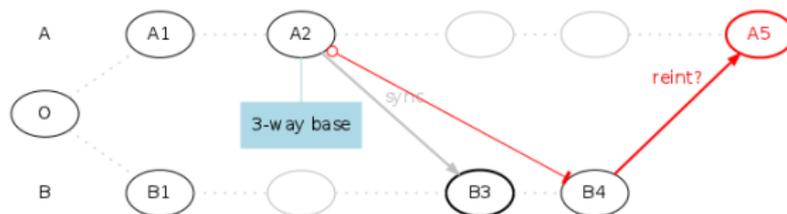
A3, A4

pred(A3)

A4

"A:3-4"

How Reintegrate Works



Youngest Common Ancestor	.	O
all changes on <i>target</i>	.	A1, A2, A3, A4
<i>source's</i> mergeinfo	.	A:1-2
eligible changes	.	diff(A2, B4)
3-way base	.	A2
3-way source-right	.	B4
record mergeinfo	.	"B:1-4"

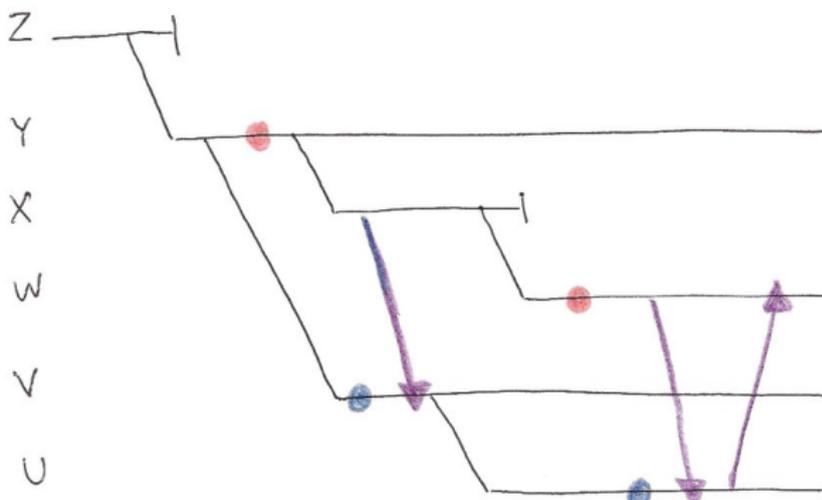
Differences

Table: Differences

	sync	reintegrate
base node	on <i>source</i> branch	on <i>target</i> branch
skip cherry-picked revs?	yes	no
fill in partly-merged subtrees?	yes	no
handle local mods in the WC?	yes	no

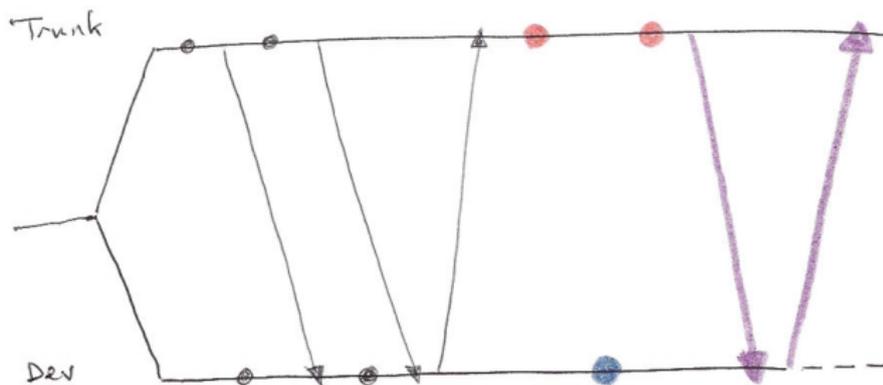
Reintegrate can be confusing

Confusing



Continue after reintegrate

Continue



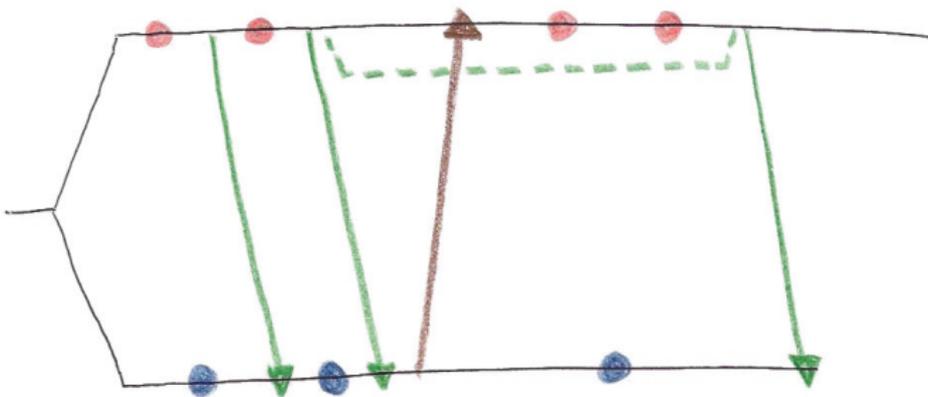
Continue after reintegrate

Continue

- Delete
- Keep Alive

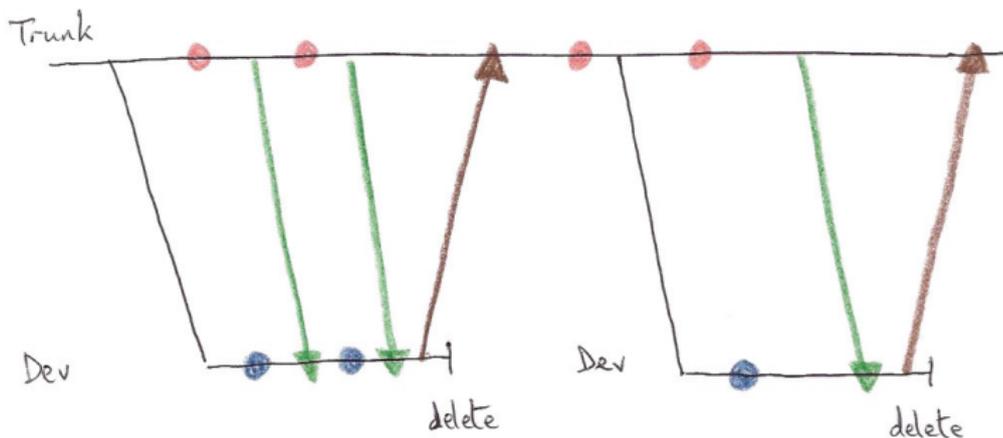
Continue after reintegrate

Continue



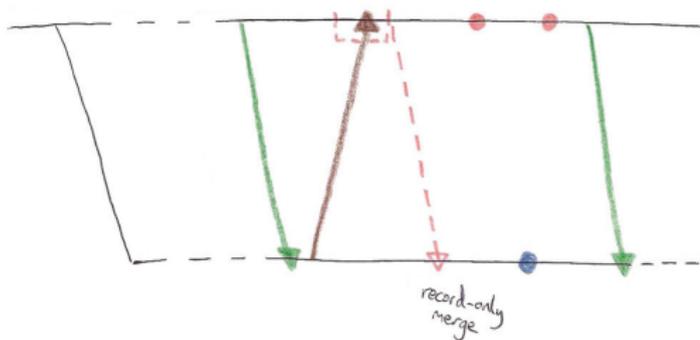
Continue after reintegrate

Delete & re-branch



Continue after reintegrate

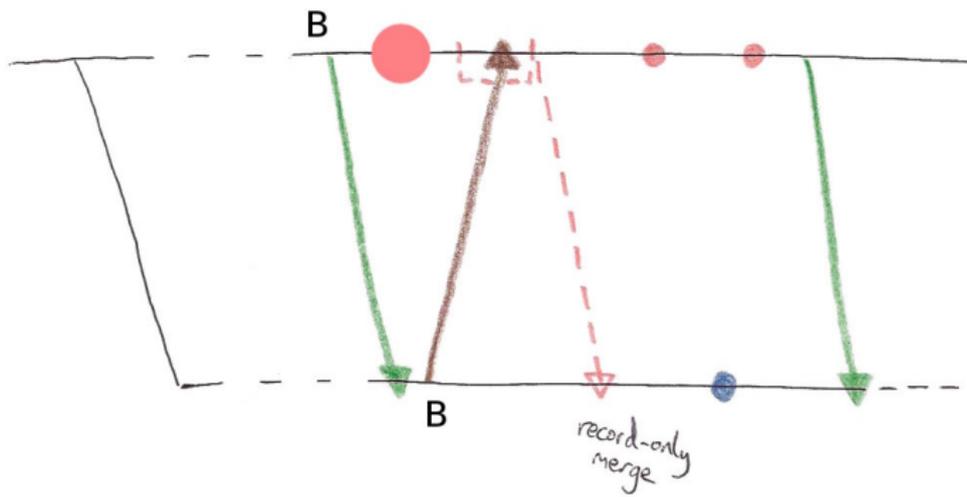
Keep Alive



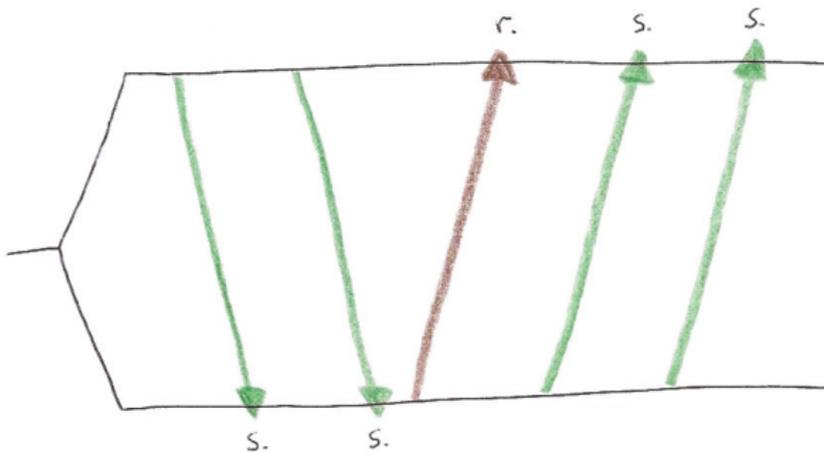
- Awkward extra step
- Doesn't work properly, in general

Continue after reintegrate

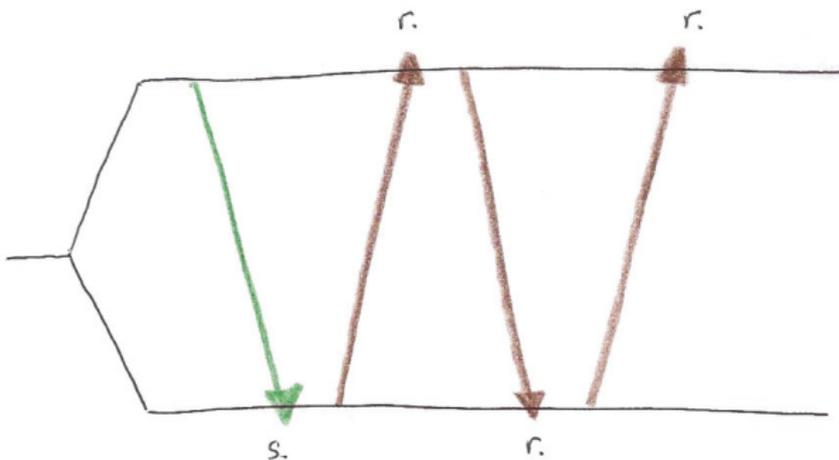
Keep-alive problem



To-and-Fro Merging

Merge the same way with *sync*

Merge the opposite way with *reintegrate*



Surprise!

To-and-Fro Already Works

- Same direction again
 - sync
- Change direction
 - reintegrate

Algorithm

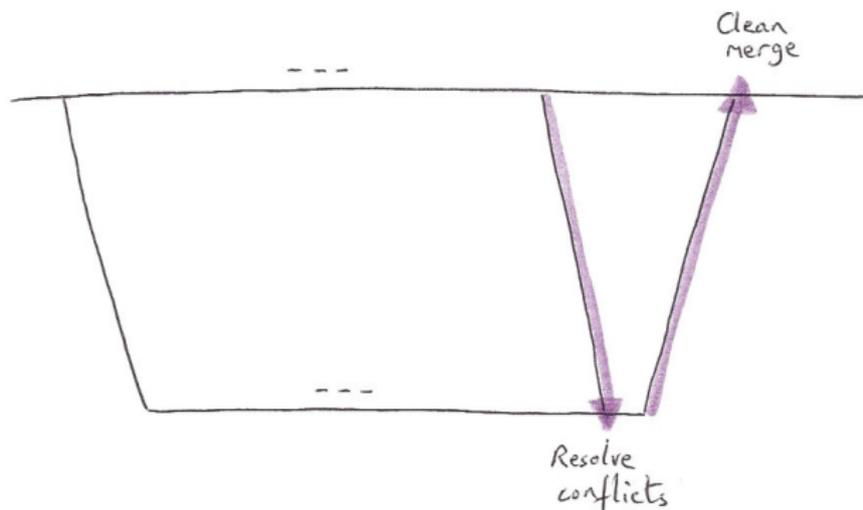
- Find the best base
 - Find the latest rev of A synced to B and of B synced to A.
 - Choose the more recent base.
- Then, ideally...
 - Identify cherry-picks.
 - Break into 3-way merges, skipping the cherry-picks.
 - Perform the 3-way merges and mergeinfo addition.
- but currently...
 - Run “*sync*” if base on source
 - Run “*reintegrate*” if base on target

Limitations

- not yet symmetric inside
 - limitations NOT symmetric
 - results are symmetric
- *change-direction* merges
 - no cherry-picked revisions
 - no subtree-specific mergeinfo
 - no local mods in WC
 - no sparse WC
- in line with usage & best practice

Symmetric Algorithm

Sync before reintegrating

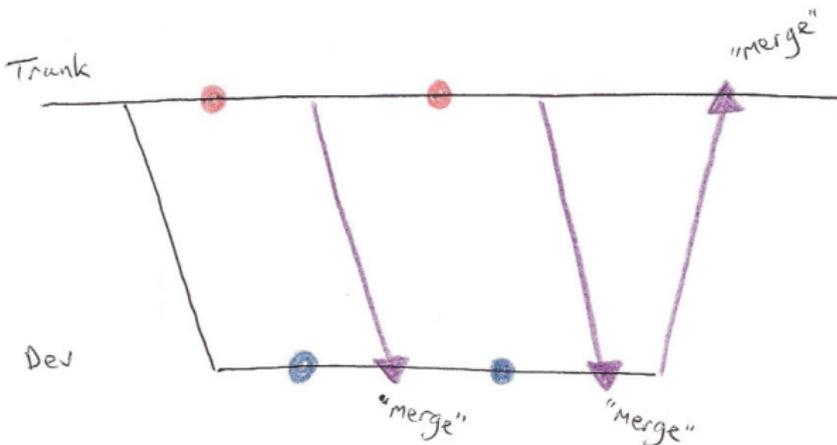


Leave out `--reintegrate`

```
+ svn merge --reintegrate ^/B A      # v1.7
--- Merging differences between repository URLs into 'A':
A    A/pickle
--- Recording mergeinfo for merge between repository URLs into
'A':
U    A
```

```
+ svn merge ^/B A                    # v1.8
--- Merging differences between repository URLs into 'A':
A    A/pickle
--- Recording mergeinfo for merge between repository URLs into
'A':
U    A
```

Use the same *merge* command



On-line Help for *svn merge*

```
$ svn help merge      # v1.7
merge: Merge changes into a working copy.
usage:
  1. merge SOURCE[@REV] [TARGET_WCPATH]
     (the “sync” merge)
  2. merge [-c M[,N...] | -r N:M ...] SOURCE...
     (the “cherry-pick” merge)
  3. merge --reintegrate SOURCE[@REV] [TARGET_WCPATH]
     (the “reintegrate” merge)
  4. merge SOURCE1[@N] SOURCE2[@M] ...
     (the “2-URL” merge)
...

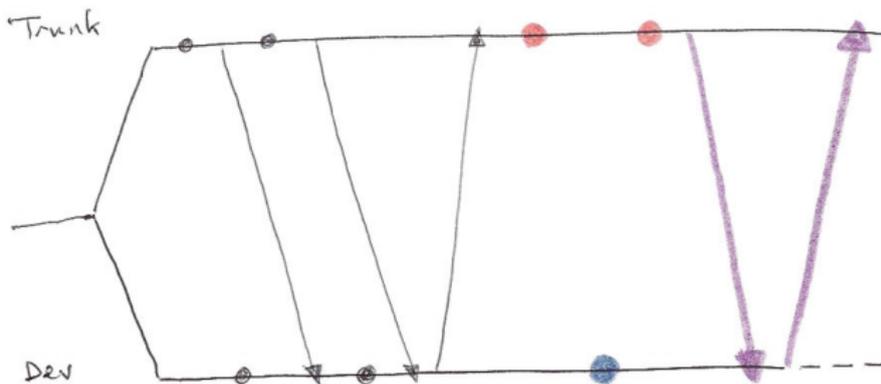
```

On-line Help for *svn merge*

```
$ svn help merge      # v1.8
merge: Merge changes into a working copy.
usage:
  1. merge SOURCE[@REV] [TARGET_WCPATH]
     (the “automatic” merge)
  2. merge [-c M[,N...] | -r N:M ...] SOURCE...
     (the “cherry-pick” merge)
  3. merge SOURCE1[@N] SOURCE2[@M] ...
     (the “2-URL” merge)
...

```

Continue after reintegrating



History

- 1.0 Diff & Apply
- 1.5 Merge Tracking
- 1.5 Reintegrate
- 1.8 Symmetric
- Next step

Summary

- No more “-reintegrate”: it’s automatic
- To-and-Fro Merging
- Mergeinfo summary
- Sanity checks