



# Slopes, Jumps & Fun

## Designing the Dream Mountain Bike Trail

### Lee Bolling

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## **Focus**

1. Mountain Bike Specific Trail
2. One Way Direction
3. Assume you know how to make a sustainable trail.

Lee in 2014  
Midlife Bike Crisis



What is the meaning of mountain biking?

Jump

*Wheelie*

**Manual**

Nose Bonk

*Jib*

**Shred**

*Safely*

Be a Kid!



**FUN!!!**

50 State Shred



136,022 views • Nov 4, 2020

OCT 29, 2020 AT 5:01 AM

89% SPEED, 111% STYLE us 50 STATE SHRED: ALASKA



BKXC 455K subscribers

Lee's Motto

You control the  
Trail-Force with  
**Avg Slope**



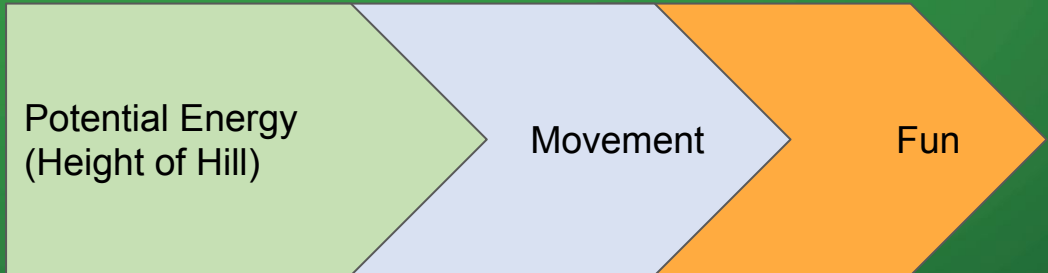
100 units →

↓ 5 units

$$\frac{5}{100} = 5\% \text{ Average Slope}$$



**Goal:** Turn Potential Energy into Fun

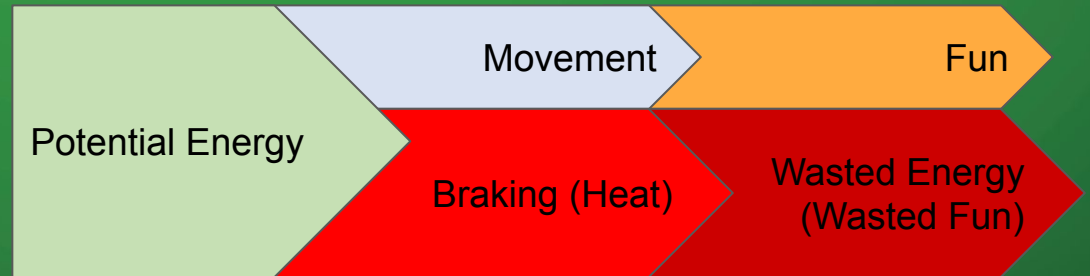






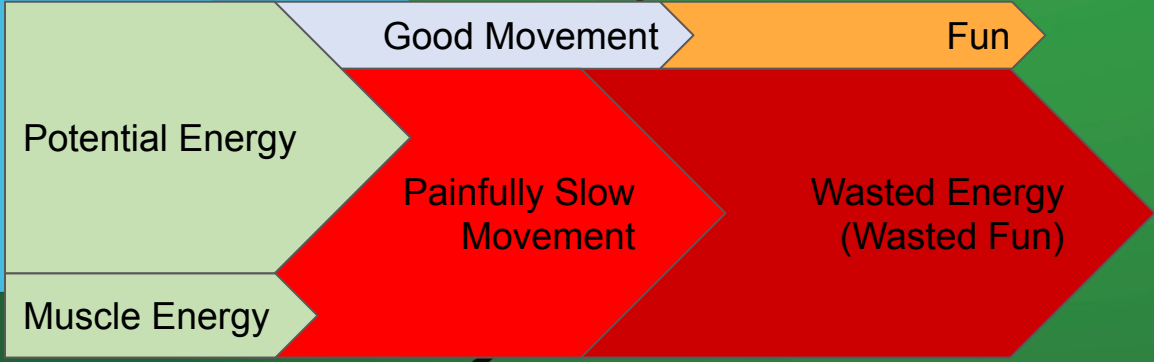
It's so steep you HAVE  
to use TONS of brakes.

LESS fun for you!!!



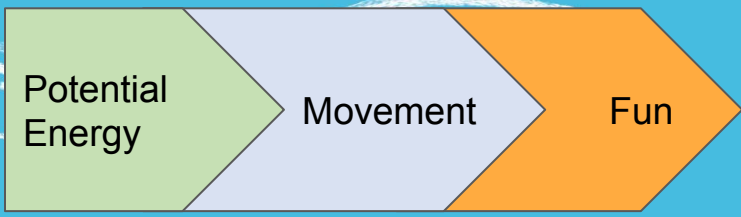
Painfully slow...  
I'll make you work hard just to  
go down hill...  
Even uphill where there  
shouldn't be...  
I'll make you go where you  
don't want to go...

Just like being slowly digested  
in my sarlacc pit!!!



Poor use of  
Trail-Force!





Use the Trail-Force for good...  
Use the terrain to your advantage...  
Limit braking...  
Use slopes to accelerate and decelerate.  
Do all the recommendations in this presentation...  
Maximize Fun!



Here the Trail-Force is strong



**Avg Slope**

**Trail Type**

**Surface Type**

0% Jabba Zone - TOO SLOW  
1% Jabba Zone - TOO SLOW  
2% Jabba Zone - TOO SLOW  
3% Jabba Zone - TOO SLOW  
4% Jabba Zone - TOO SLOW



5% Beginner Flow Trail  
6% Beginner/Intermediate Flow Trail  
7% Intermediate Flow Trail  
8% Intermediate/Expert Flow Trail  
9% Intermediate/Expert Flow Trail

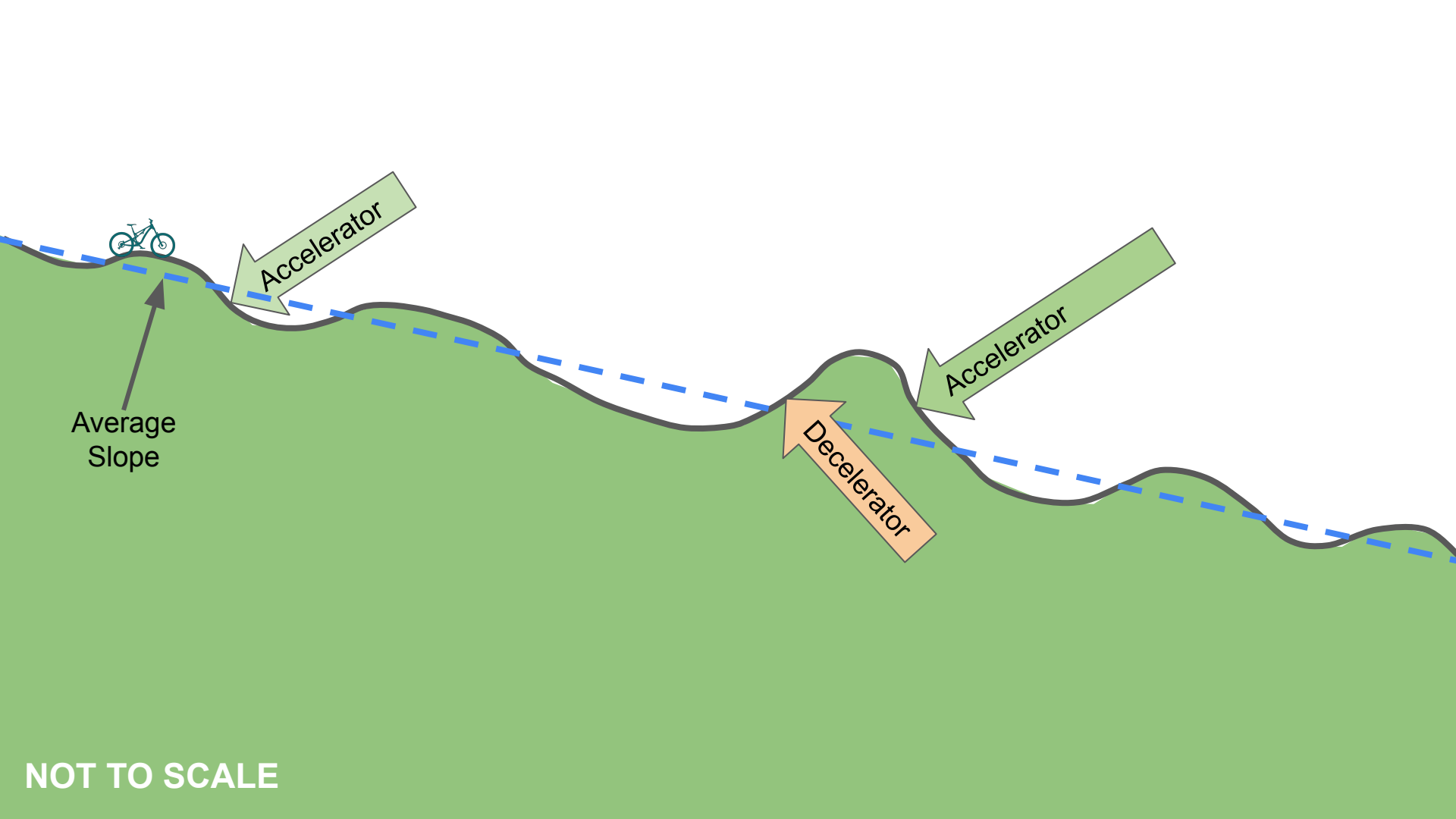
Smooth  
Smooth  
Smooth  
Smooth  
Smooth

10% Expert  
11% Expert  
12% Expert  
13% Expert

Tech/Roots/Rocks  
Tech/Roots/Rocks  
Tech/Roots/Rocks  
Tech/Roots/Rocks

14% Darth Vader Zone - WASTED FUN  
15% Darth Vader Zone - WASTED FUN  
16% Darth Vader Zone - WASTED FUN  
17% Darth Vader Zone - WASTED FUN  
18% Darth Vader Zone - WASTED FUN  
19% Darth Vader Zone - WASTED FUN  
20% Darth Vader Zone - WASTED FUN





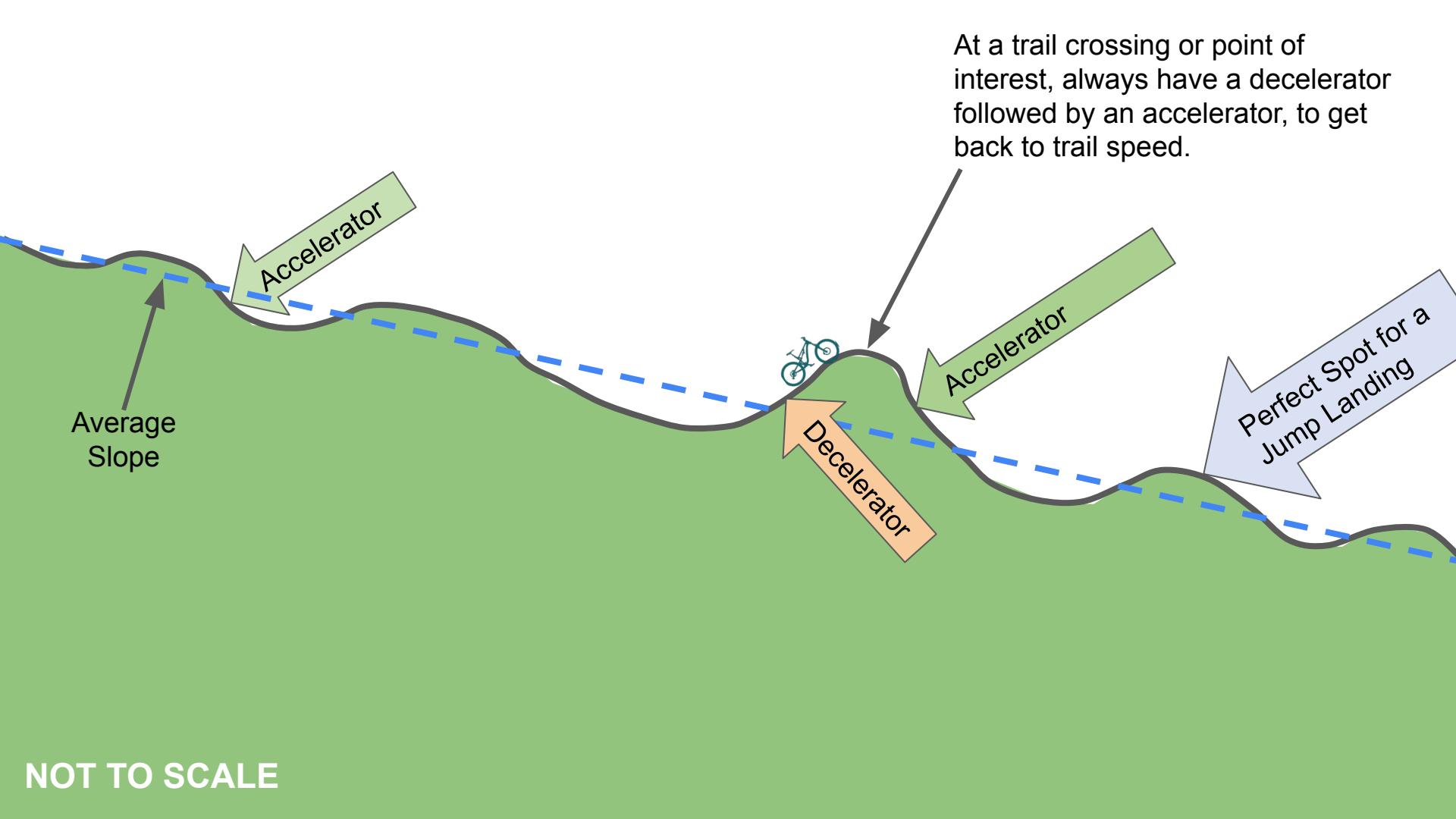
Average  
Slope

Accelerator

Accelerator

Decelerator

NOT TO SCALE



At a trail crossing or point of interest, always have a decelerator followed by an accelerator, to get back to trail speed.

Accelerator

Average Slope

Decelerator

Accelerator

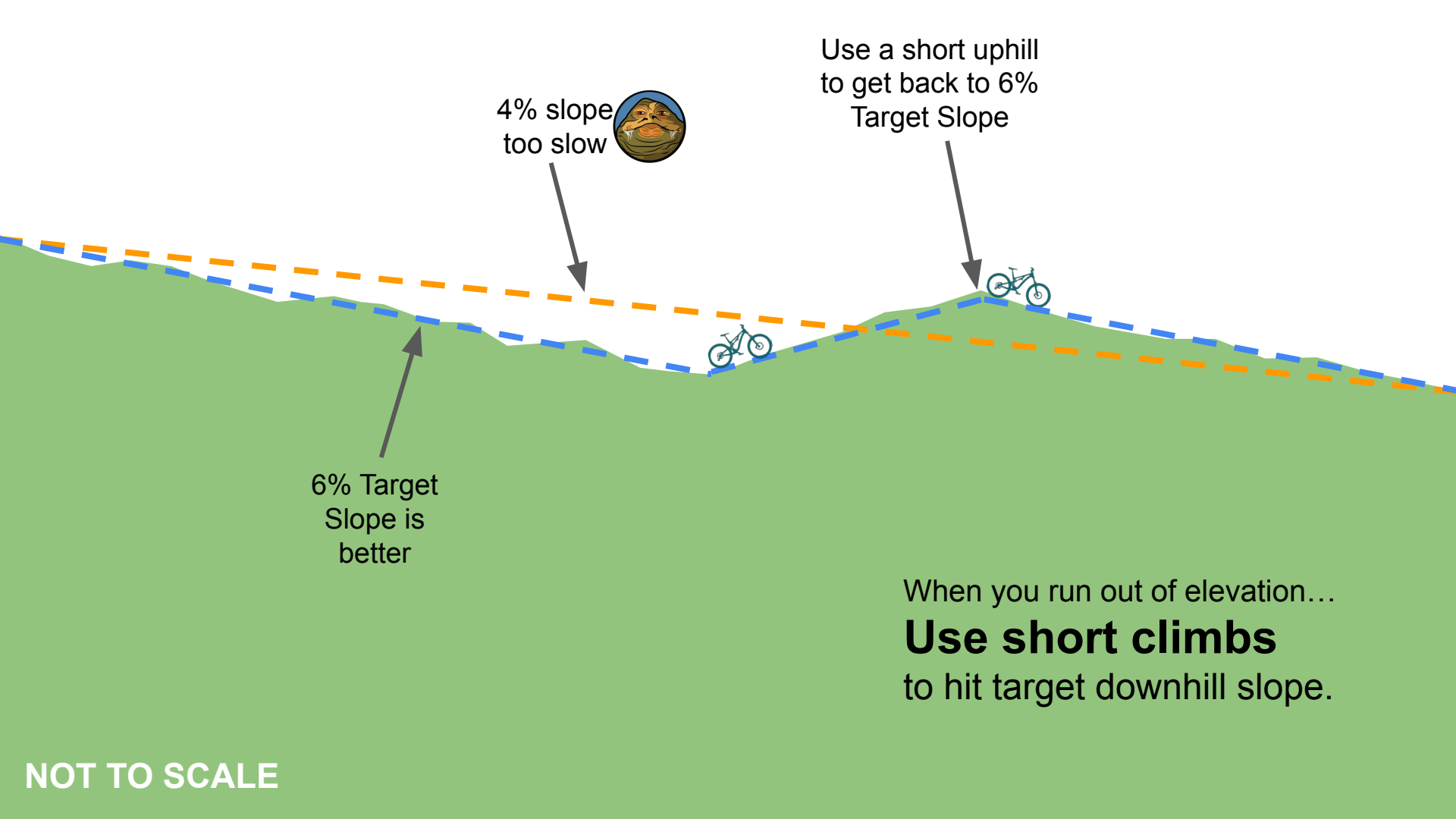
Perfect Spot for a Jump Landing

NOT TO SCALE

4% slope  
too slow



NOT TO SCALE



4% slope  
too slow



Use a short uphill  
to get back to 6%  
Target Slope

6% Target  
Slope is  
better

When you run out of elevation...  
**Use short climbs**  
to hit target downhill slope.

NOT TO SCALE



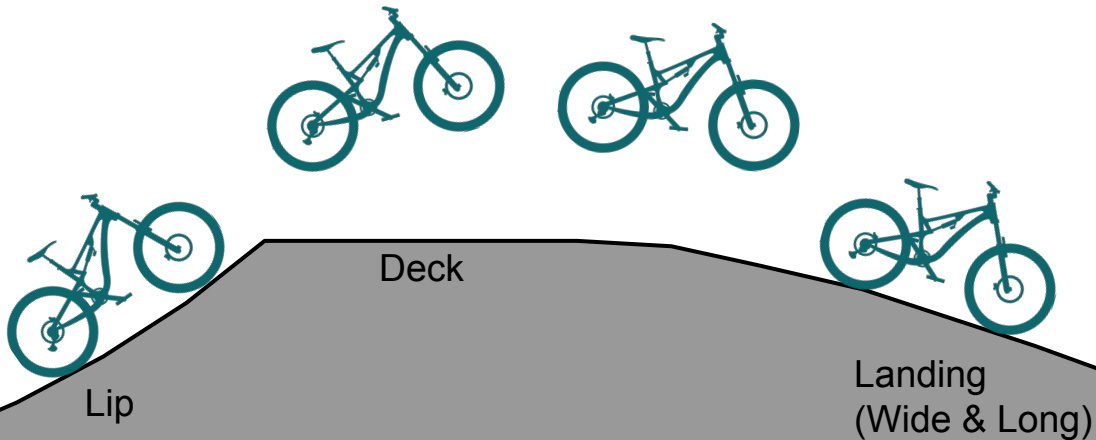
Start trail with a

**Qualifier**

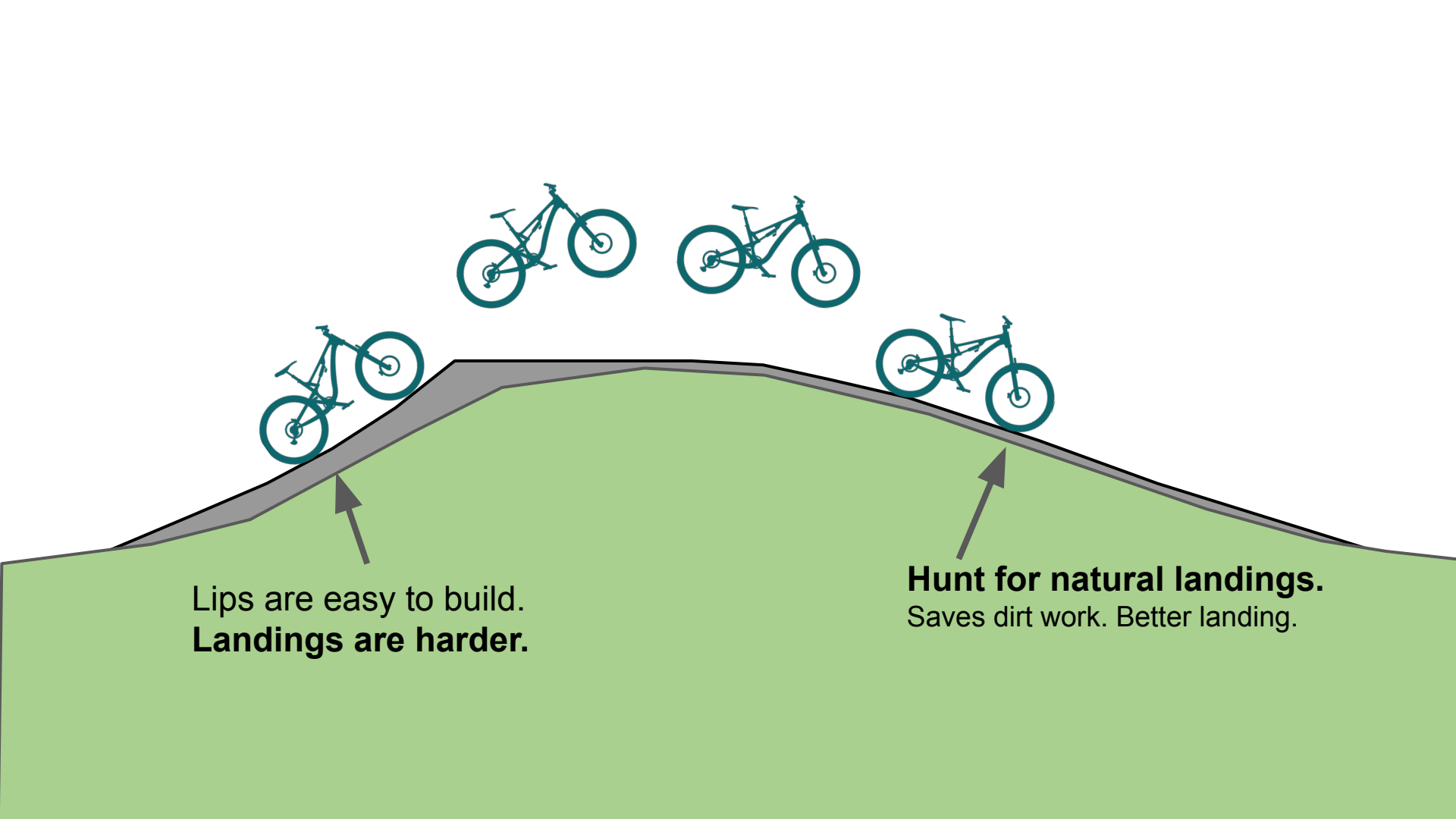
and an

**Accelerator**





the  
**Tabletop**  
Jump

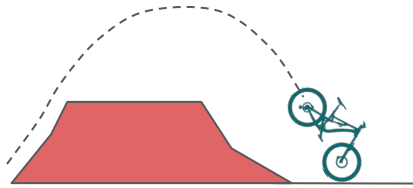


Lips are easy to build.  
**Landings are harder.**

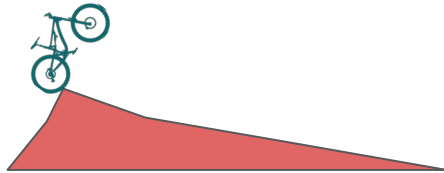
**Hunt for natural landings.**  
Saves dirt work. Better landing.

# Bad Jumps...

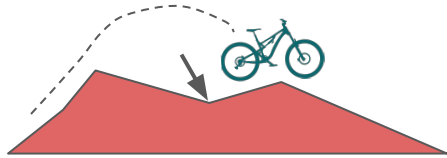
Don't Build these.  
They cause pain and  
suffering.



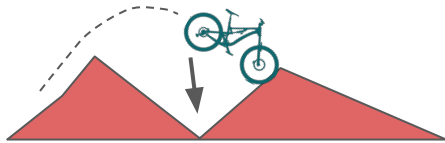
Lip too steep. Landing too short.



Lip too steep. Landing too flat. Don't match.




Middle deck is not built up.  
Builder ran out of time.



Aggressive double.  
Builder really ran out of time.

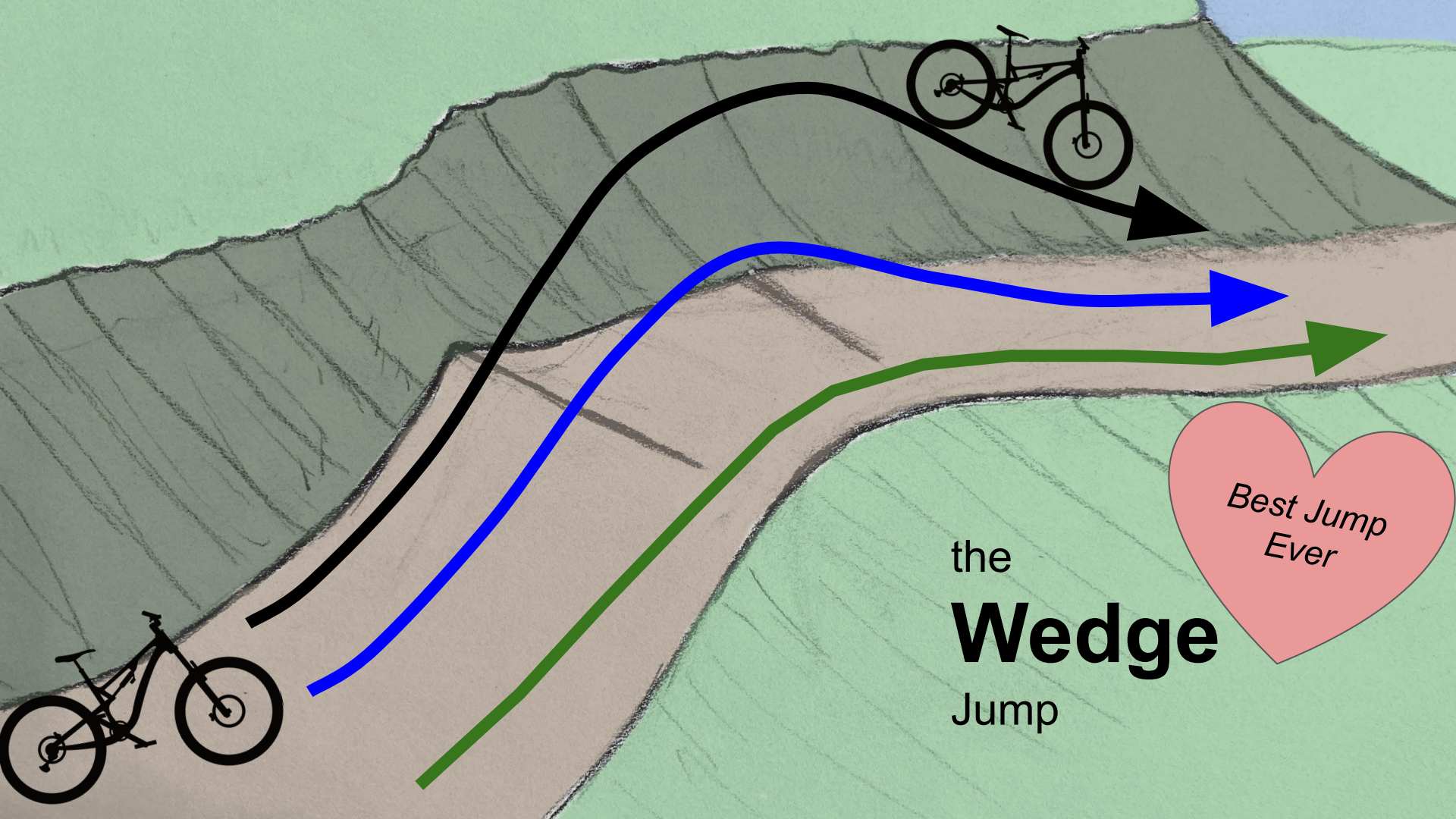


the  
**Wedge**  
Jump



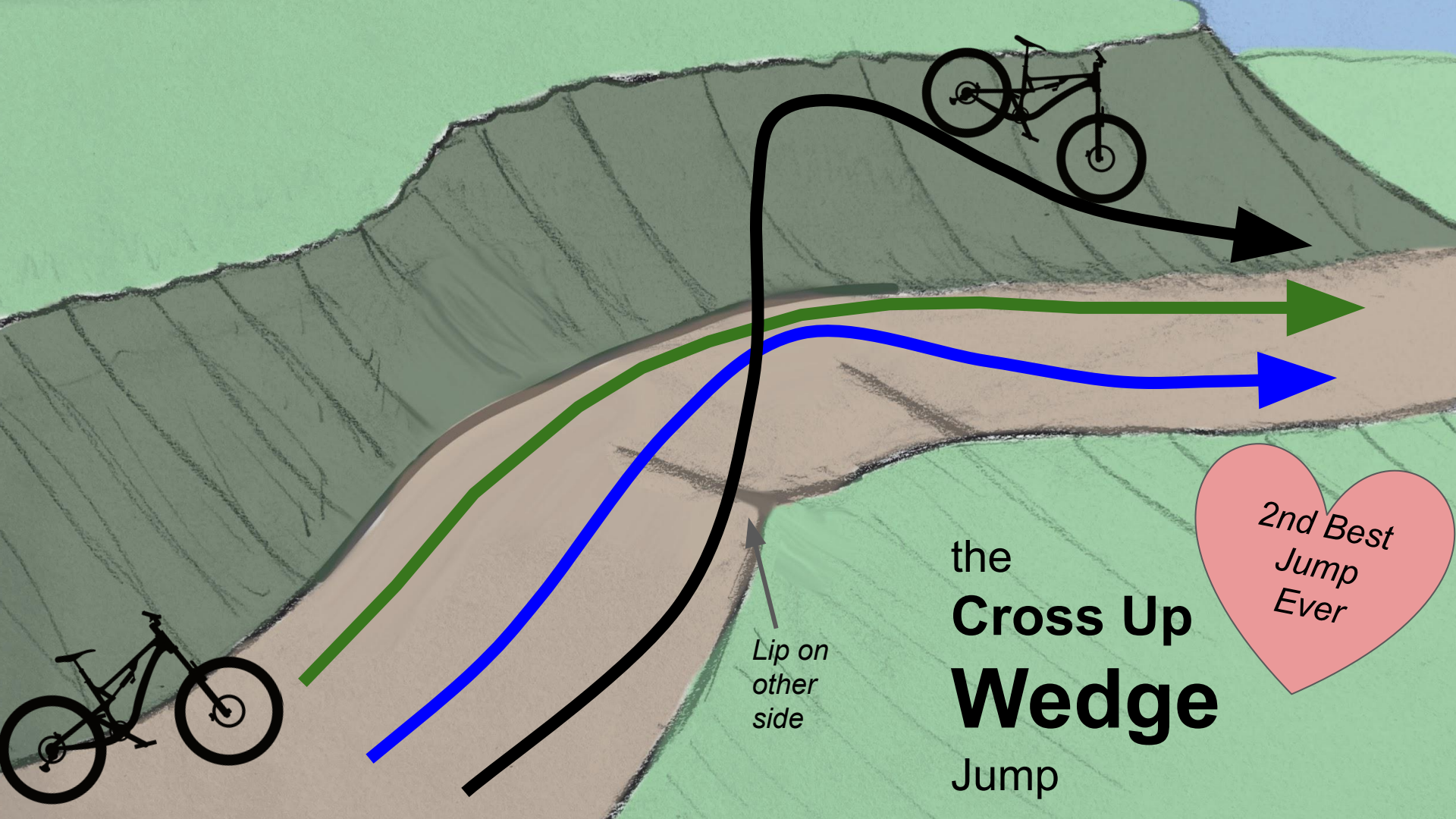
Choose  
your own  
adventure...

the  
**Wedge**  
Jump



the  
**Wedge**  
Jump

*Best Jump  
Ever*

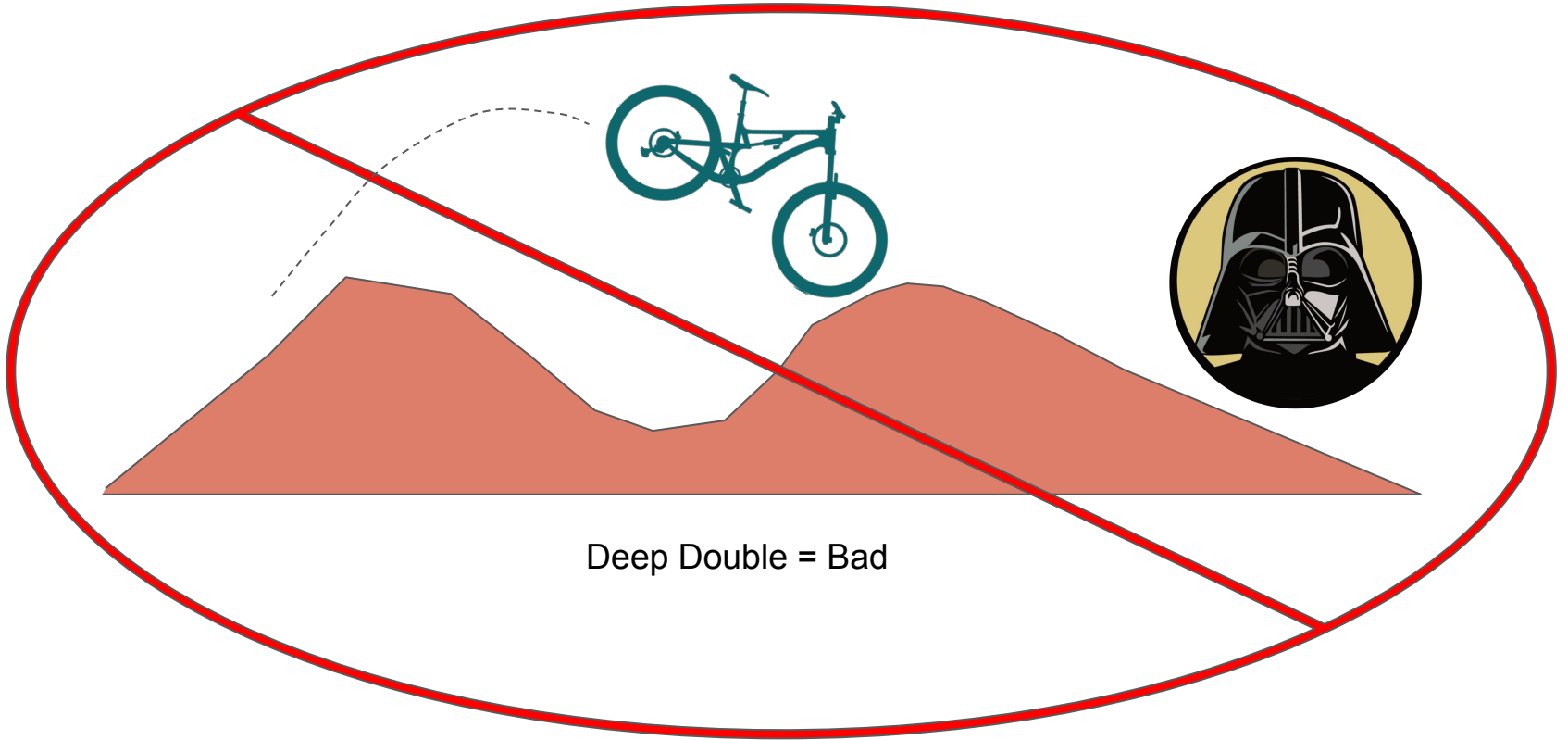


the  
**Cross Up  
Wedge**  
Jump

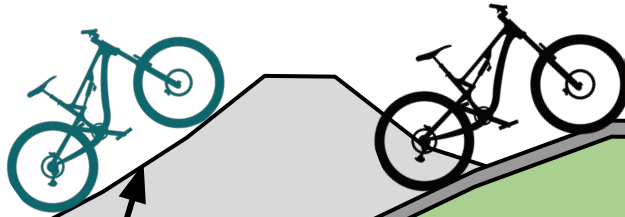
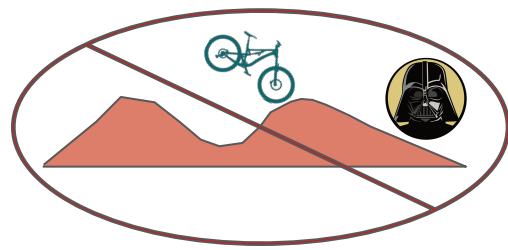
2nd Best  
Jump  
Ever

Lip on  
other  
side





Deep Double = Bad



## Optional Lip

for expert,  
outside of main trail line,  
becomes a gap jump

## Roller

for beginner,  
the main trail line

Landing

the

# Roller

+Lip Option

Better  
jump



Great jumps are fun for **Everyone**



Maintain  
Your Speed

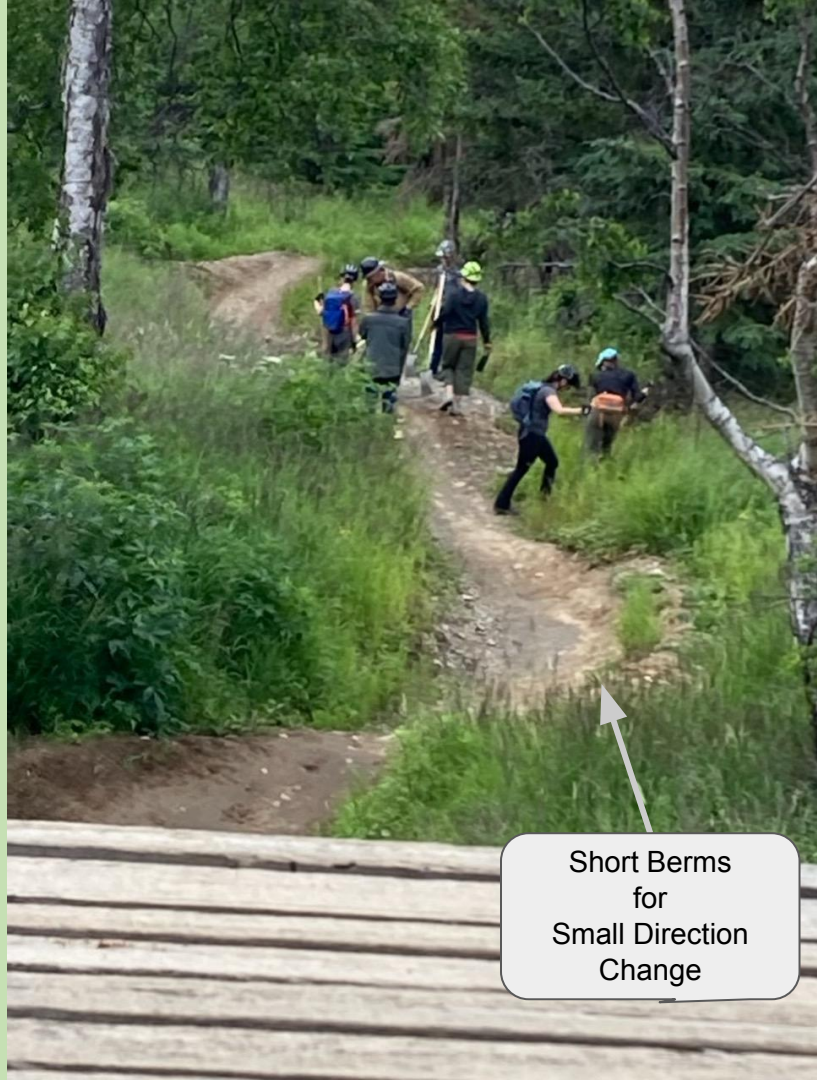
Good berm  
there!

Not bermed  
enough here...

the  
**Berm**

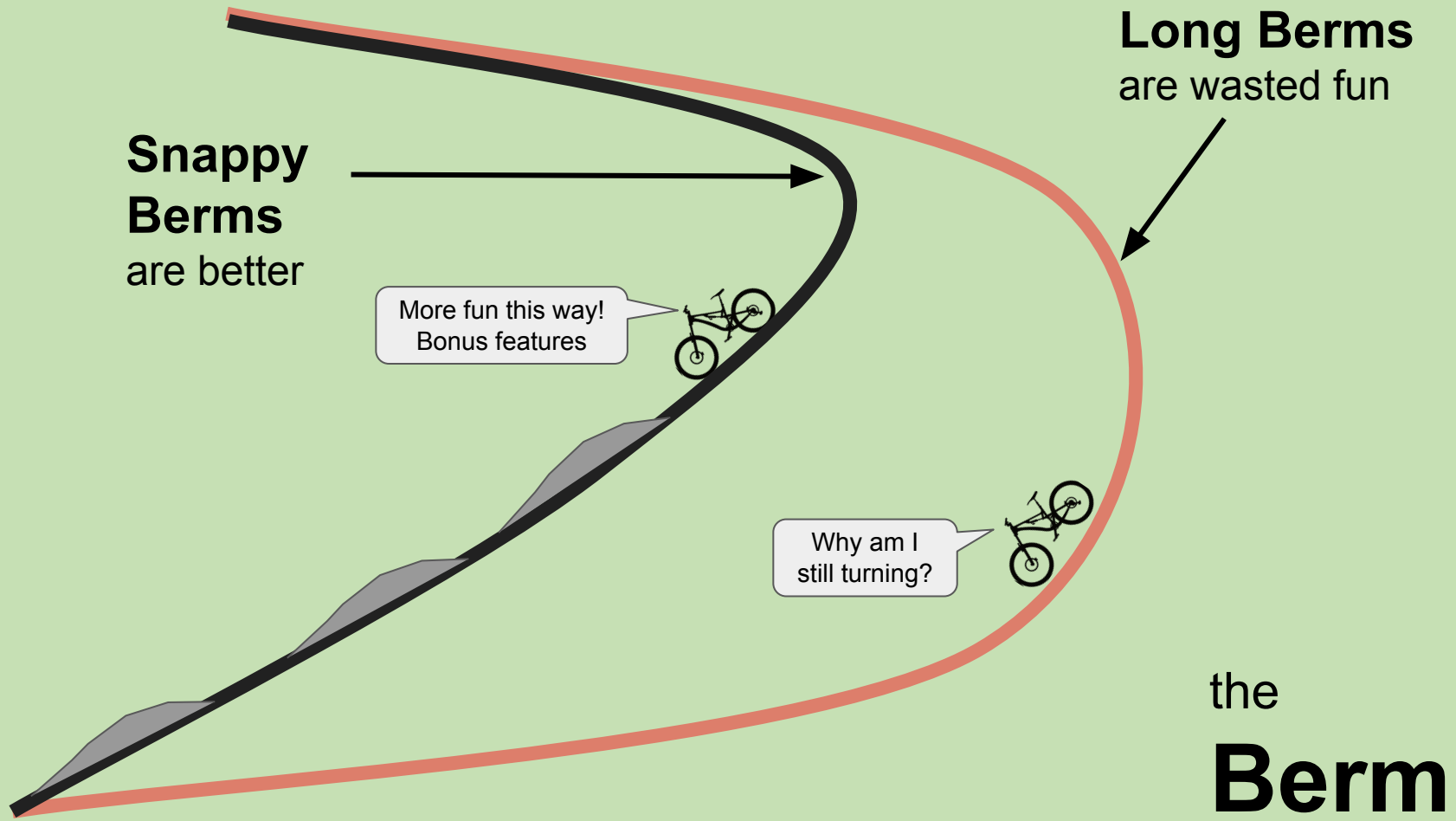


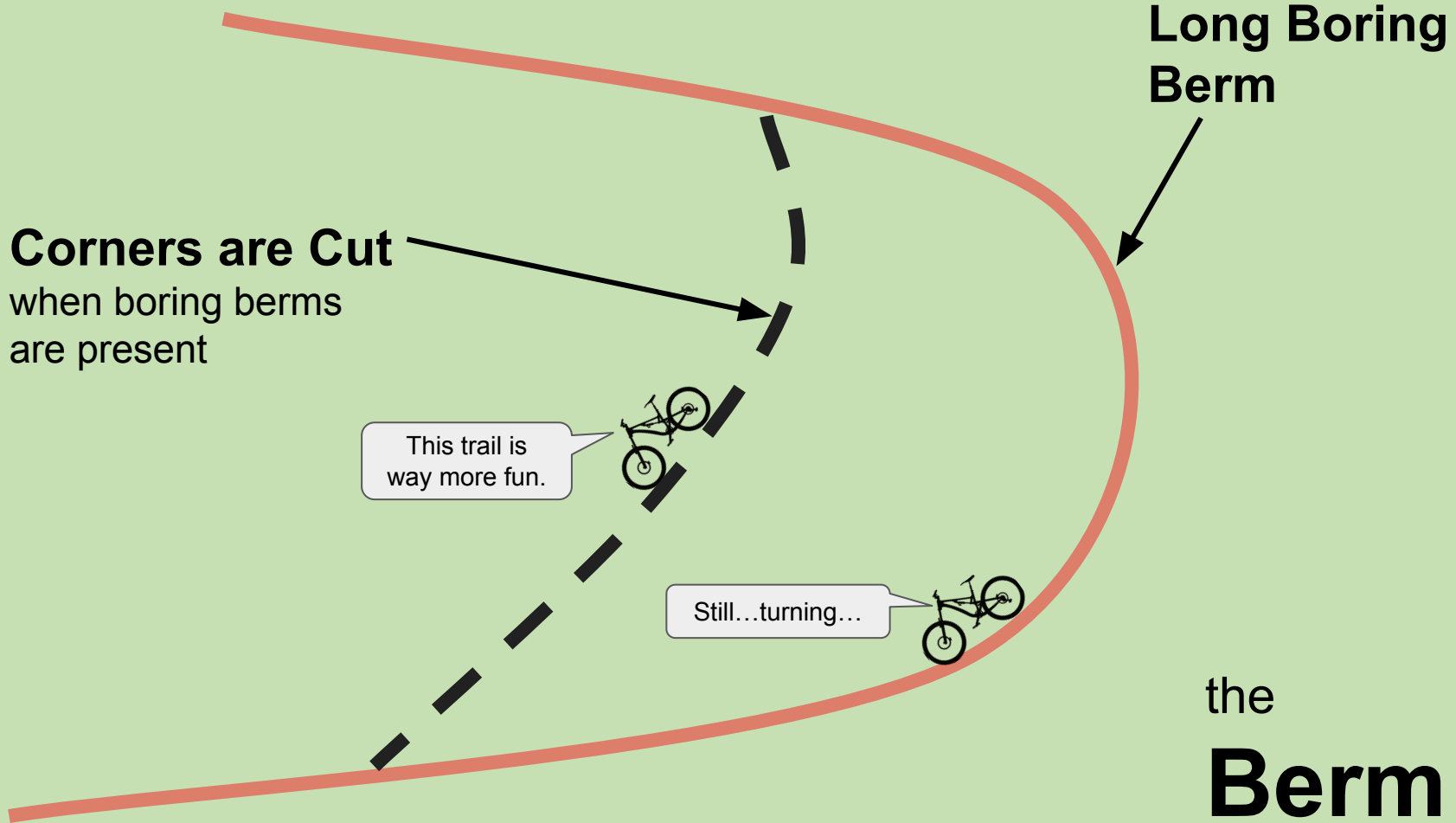
Tall Berms  
for  
Tight Direction  
Change



Short Berms  
for  
Small Direction  
Change

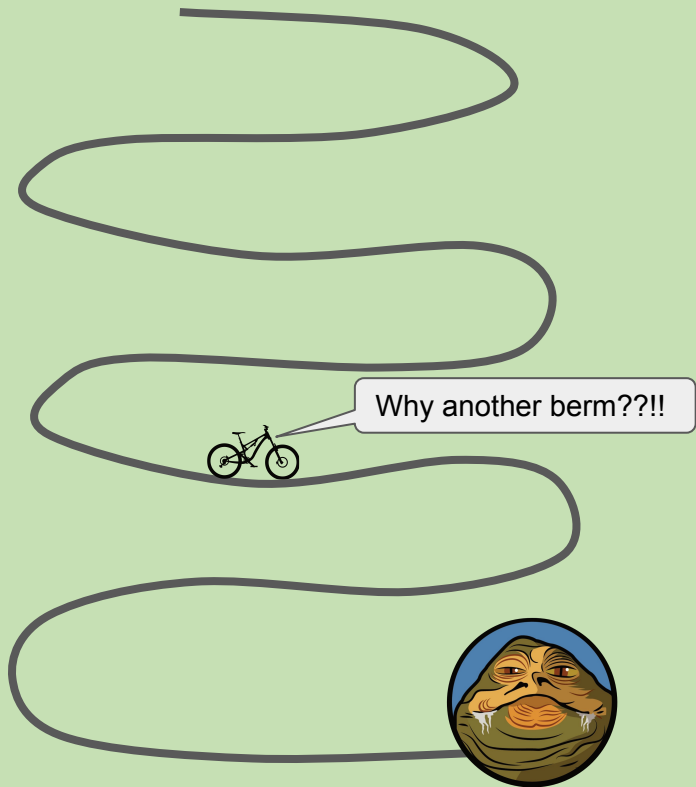






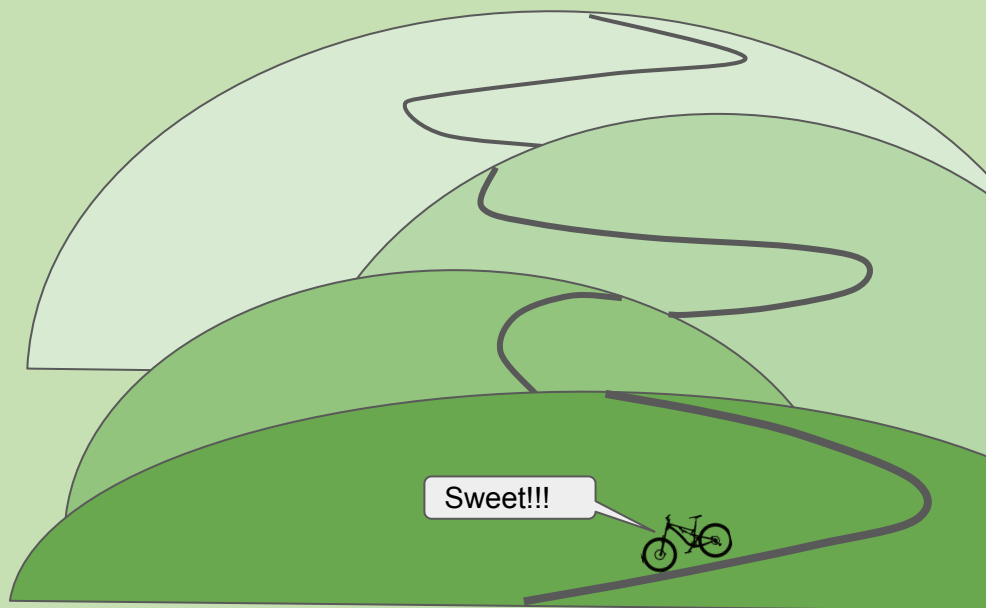
## Don't get stuck in **2 Dimensions.**

Too many unneeded berms  
get really boring.



## Design in **3 Dimensions.**

Use your berms, accelerators and  
decelerators with your terrain.  
Up, Down, Sideways.







**Vanilla**

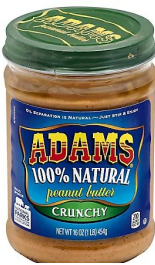


**Vanilla**

**VS**



**Tillamook Mudslide  
(with extra peanut butter)**





## Vanilla

1. Smooth
2. Typically Machine Built
3. Predictable
4. Easy to master

VS



## Tillamook Mudslide (with extra peanut butter)

1. Smooth parts & Crunchy parts
2. Machine built areas & Hand built areas
3. Uses Rocks & Roots & Terrain
4. Tons of features and opportunities
5. Keeps you guessing
6. Super Interesting





Leave room for...

# Interpretation



Never seen this before

Instagram is going to blow up!

Epic  
Radness



Backslope  
Everything



Leave room for...

**Interpretation**



Interpretation







# Flow Test Everything Multiple Ways

**Flow-Speed**  
(Designed Skill Level)

Beginner

Intermediate

Expert



# Trail Speed Changes over time



75% speed with  
hand tamping



90% speed with  
plate compactor

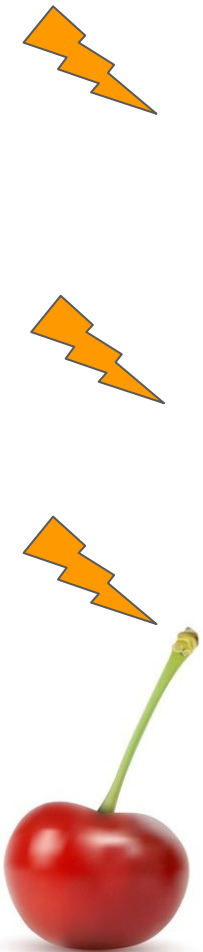


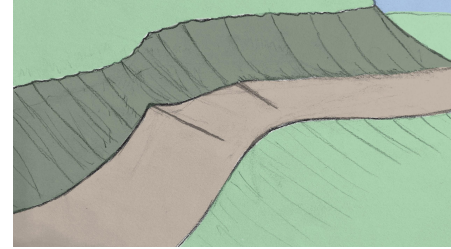
100% speed after  
two seasons



# Grand Finale Feature

Don't forget the cherry on top...







# Questions?

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