Troy Scott Parker's

12 Principles for Assessing & Designing Natural Surface Trails

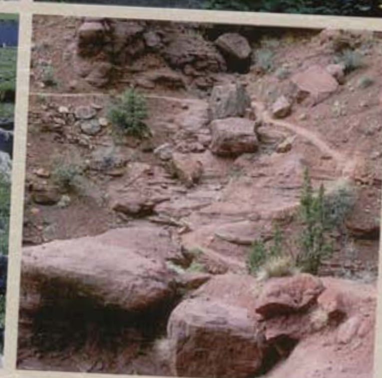
John Monroe

BOOK 1 IN THE TRAILS BY DESIGN SERIES

Natural Surface Trails *by* Design

Physical and Human Design Essentials of Sustainable, Enjoyable Trails



TROY SCOTT PARKER

What I like about Troy's approach

Physical & Human
Design Essentials
of
Sustainable, Enjoyable
Trails

What I like about Troy's approach

Clear Understanding of

Human Nature

\+ Physical Nature

\+ Trail Intent

Appropriate Trails

in the Right Context

What I like about Troy's approach

Tool Box

vs.

Trail Forensics

What I like about Troy's approach

Trail **Shaping**

rather than

Trail **Building**

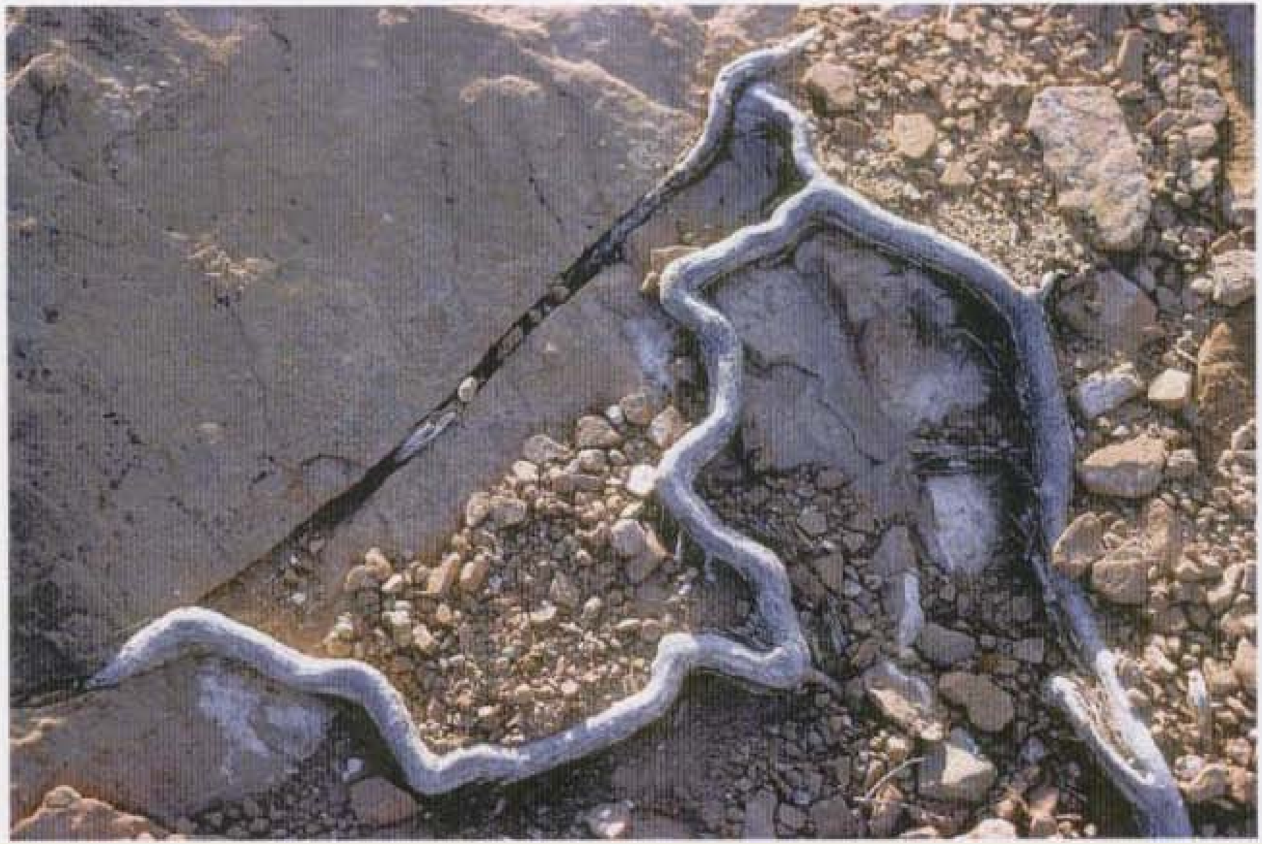
Principle 12: **Philosophical Framework**

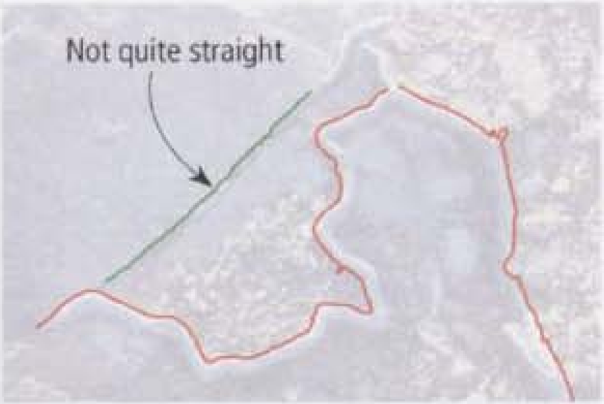
Are we agreed upon….?

Trail Intent

Principles 1 & 2: **Human Perception**

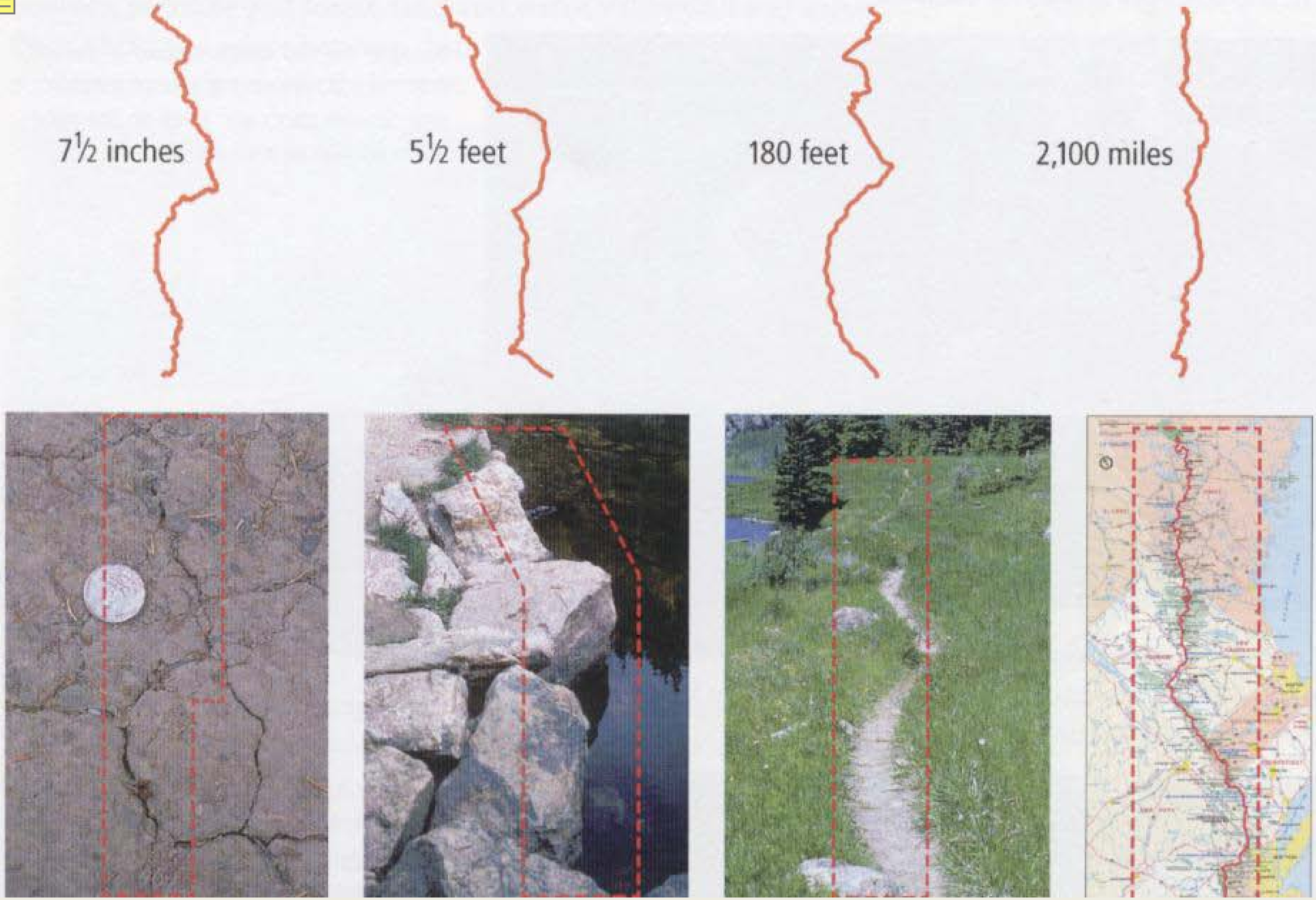
Does this trail design include….?



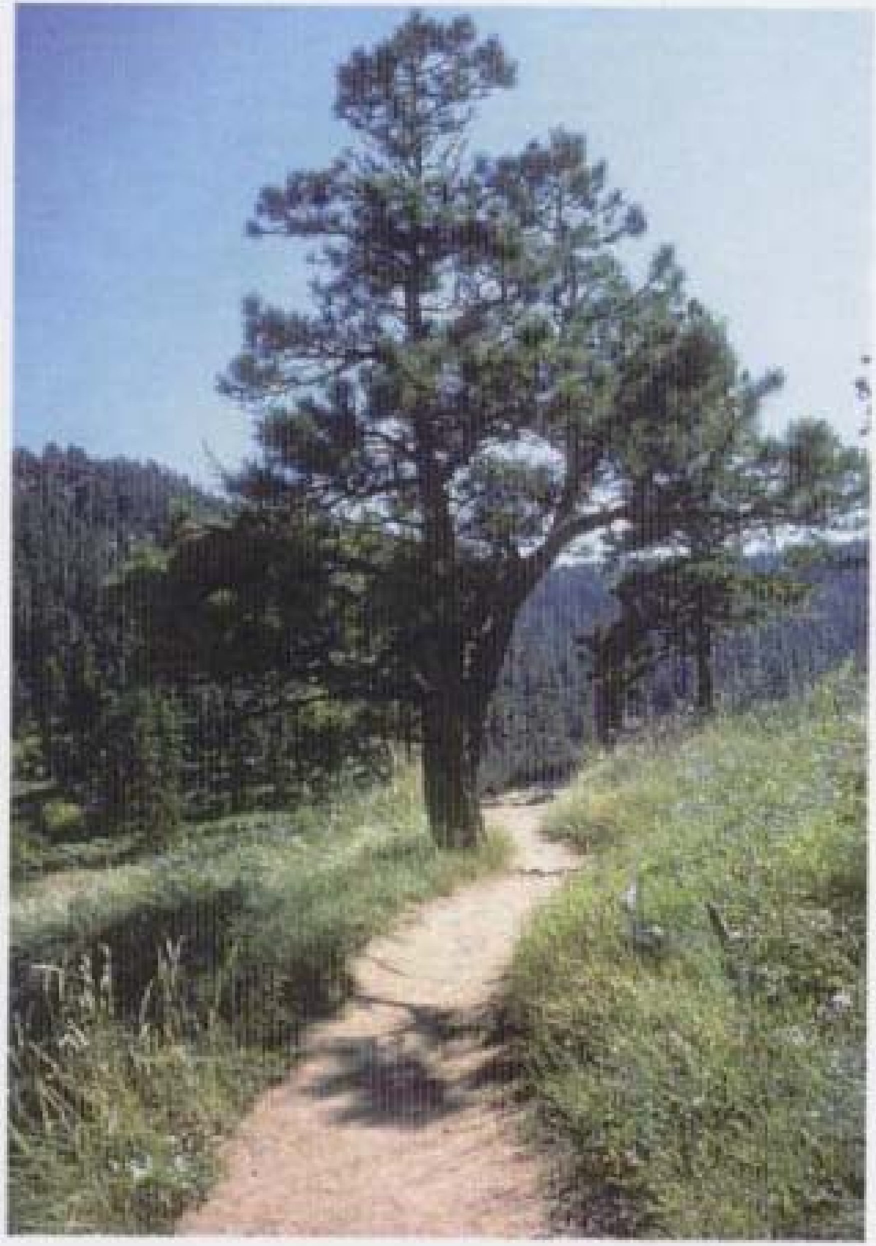


The knarled root (orange above) has an obvious natural shape. Yet the diagonal crack in the rock (green above) also has a natural shape since it is not quite straight. Natural shapes get their character by being unpredictable in the details.

Natural Shape



Natural Shape at Many Scales

Anchors

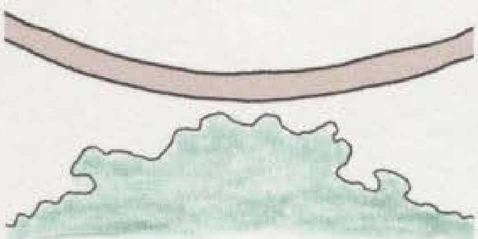
Edges

Following, Approaching, and Crossing Edges

Much of the feeling of a trail comes from how it relates to site edges. Each type of relationship has its own feel. The most engaging trails have sequences of many or all of these edge relationships:

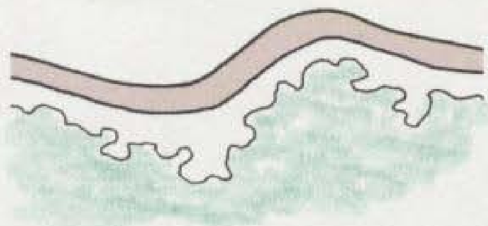
Skirt edge in one place

Approaches and skirts the edge in only one place. This is often used to look into but not enter a sensitive area.



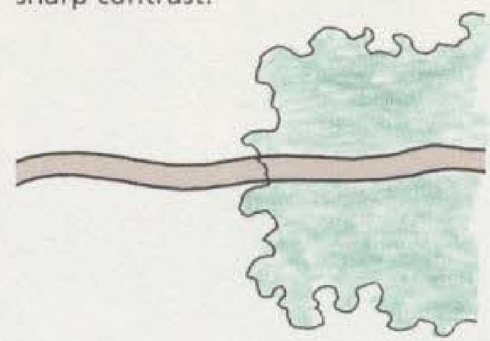
Follow edge without crossing

Respects the edge and is anchored by the edge. Prolongs the richness of being on the edge.



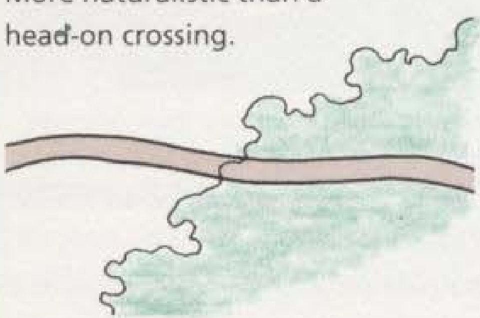
Cross edge head-on

Feels abrupt, maximizes feeling of sharp contrast.



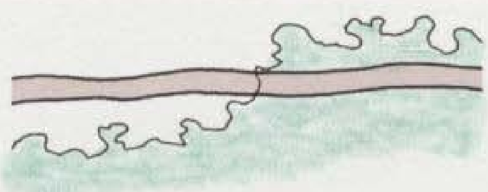
Cross edge obliquely

Much softer than a head-on crossing, feels relaxed and gentle. More naturalistic than a head-on crossing.



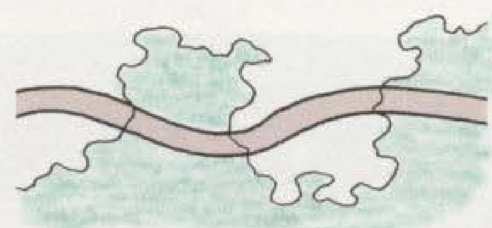
Follow edge on both sides of crossing

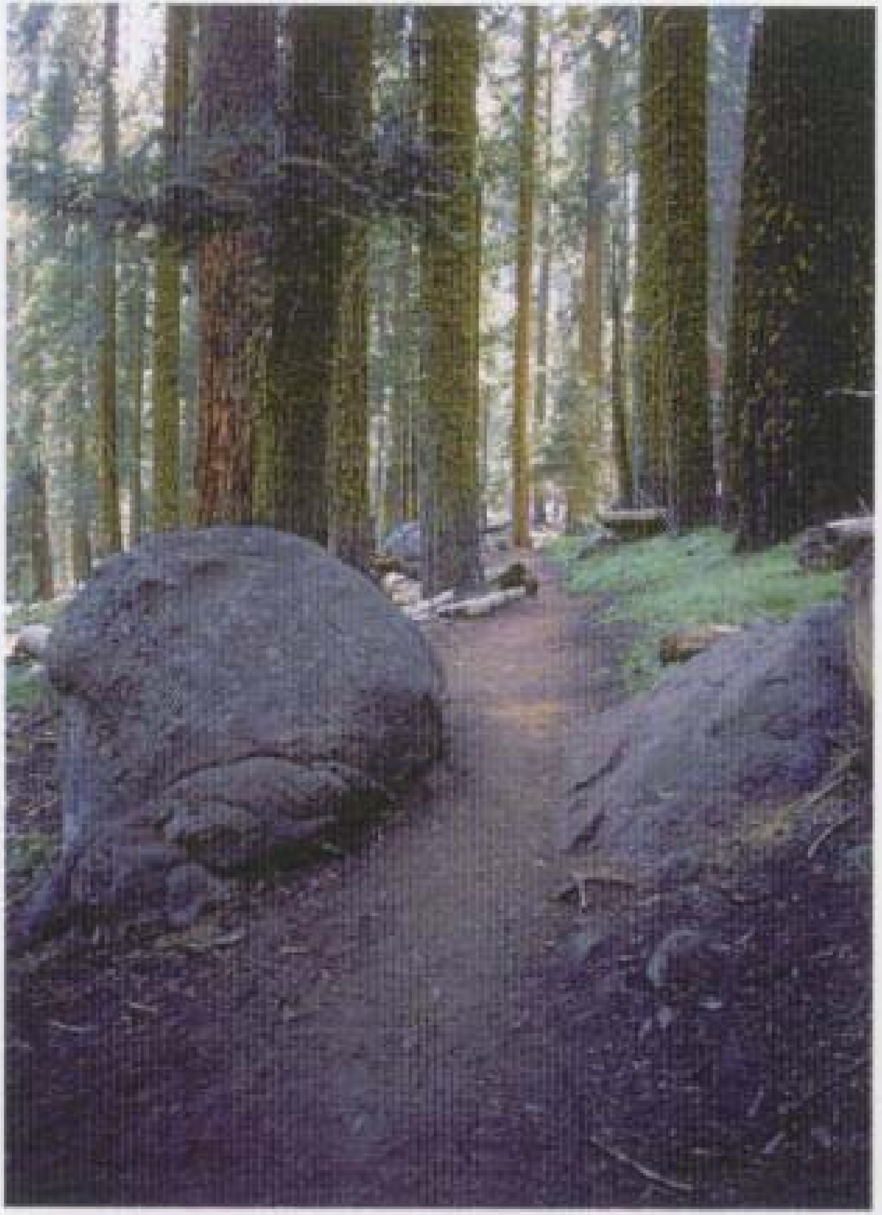
Lets us experience the edge from both sides. Most interesting when the trail can follow the edge for awhile on both sides.



Cross edge repeatedly

Creates dynamic excitement and feeling of rapid change and progress, feels well integrated into the site.





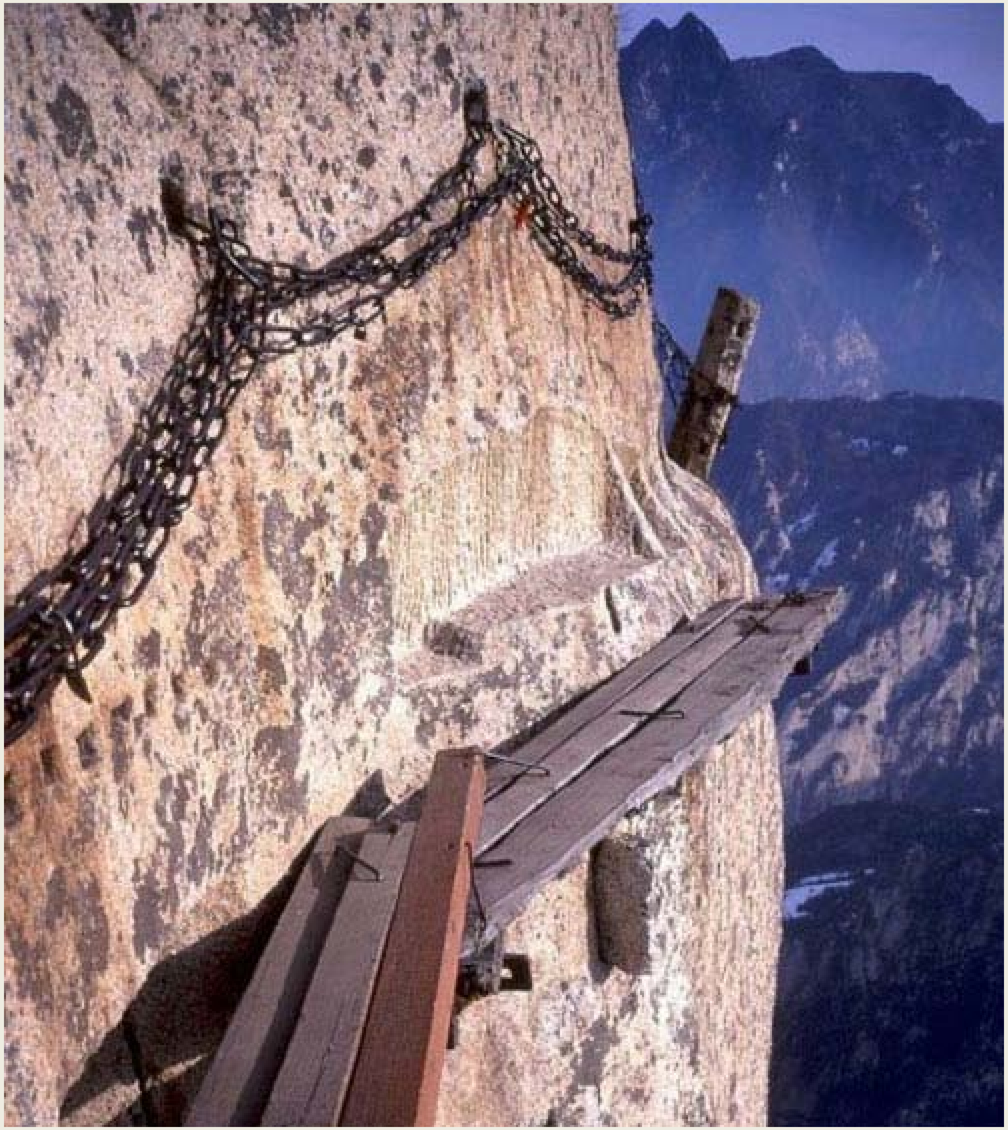
Gateways

Principles 3 to 6:
Human Feelings

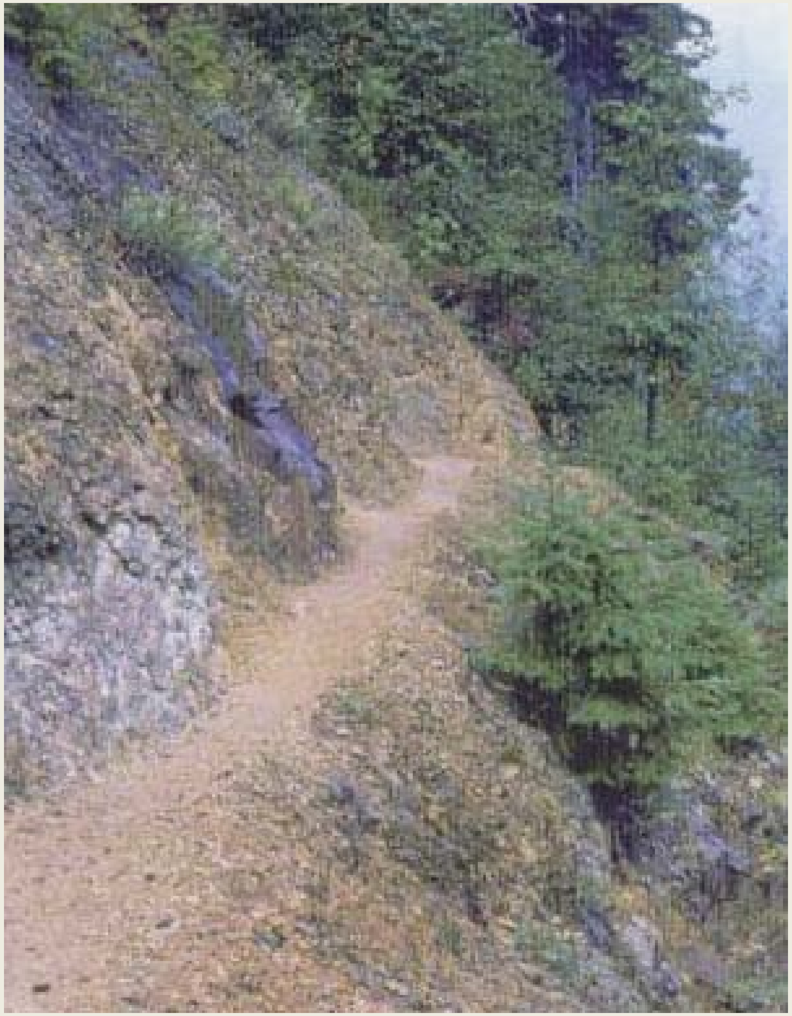
"bureaucratically palatable feelings"

Will visitors have

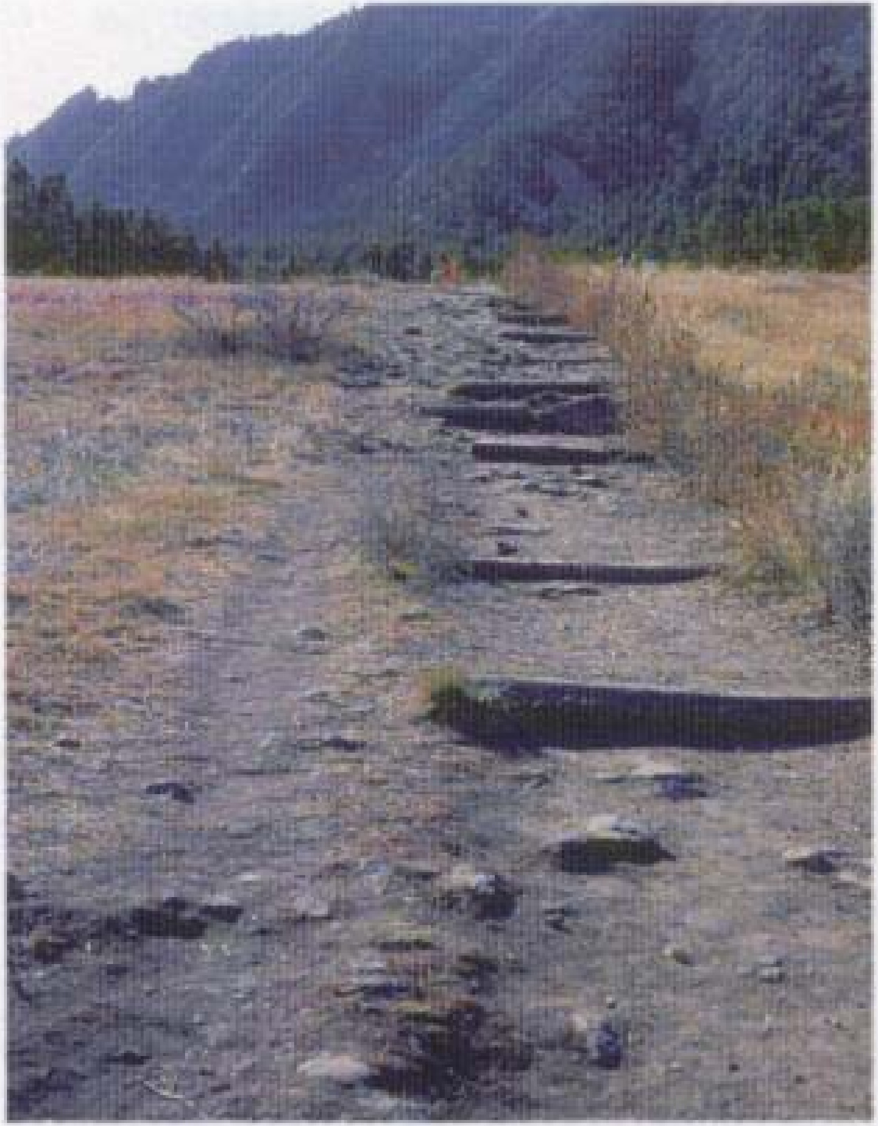
a sense of ....?



Safety



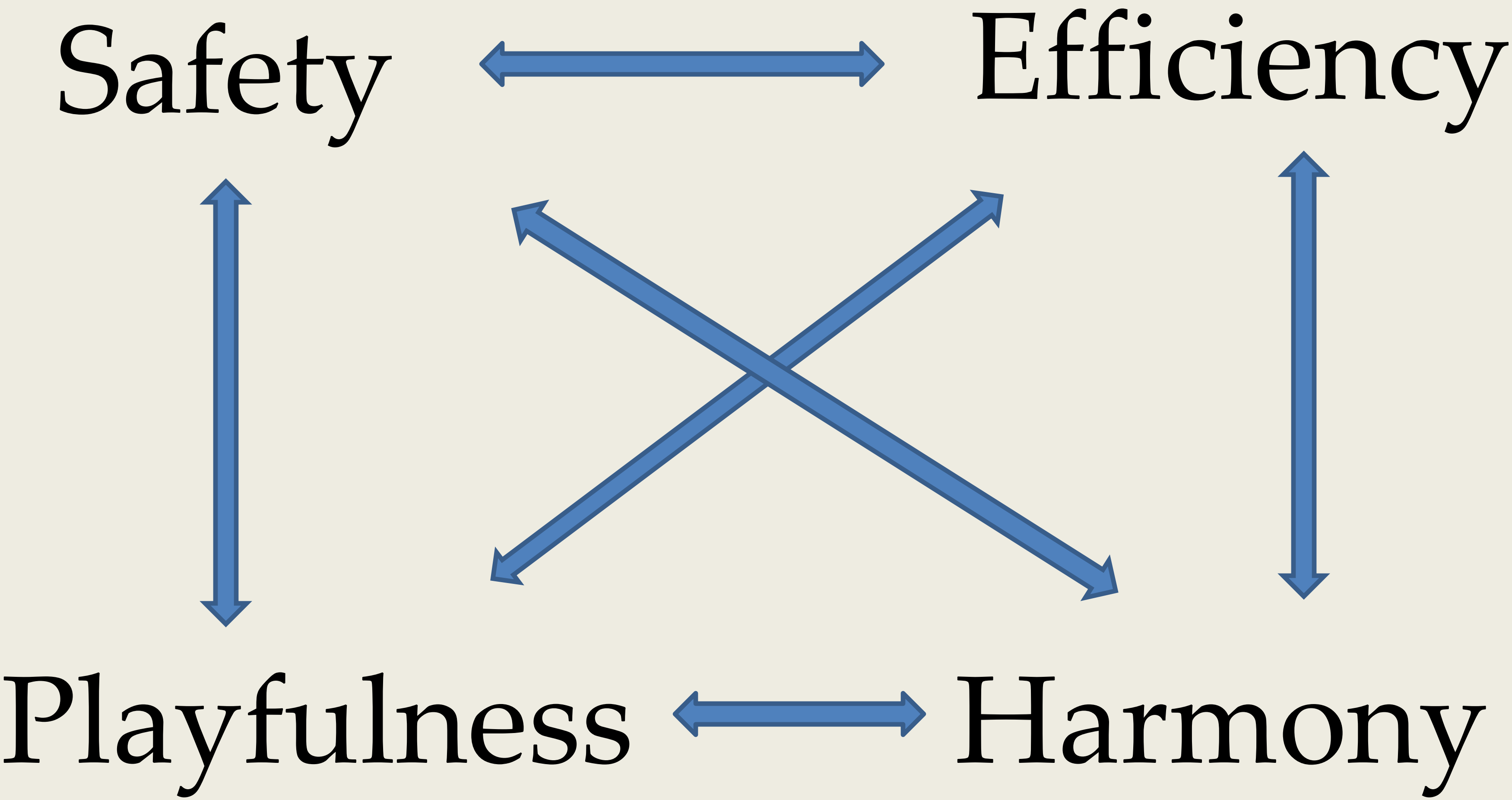
Which one feels safe to you?



Efficiency

Playfulness

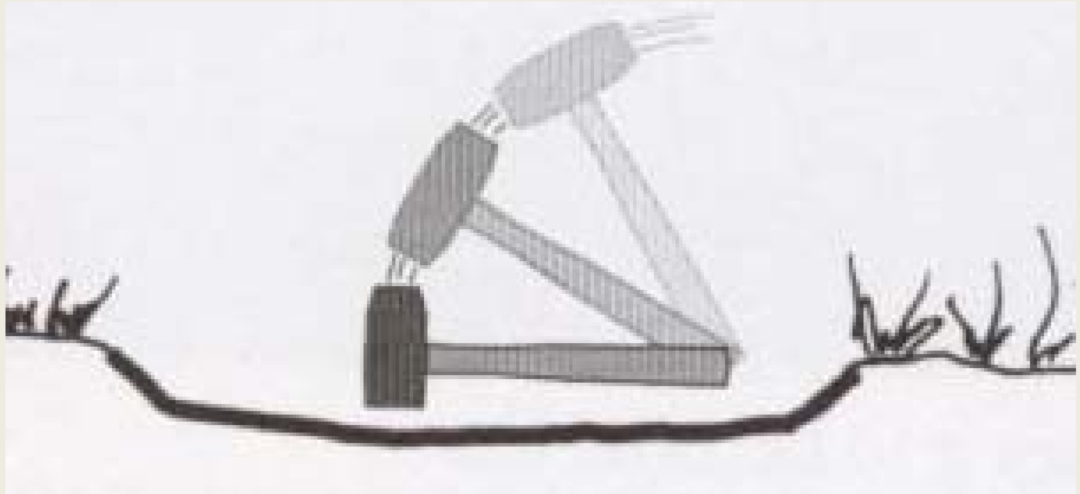
Harmony?

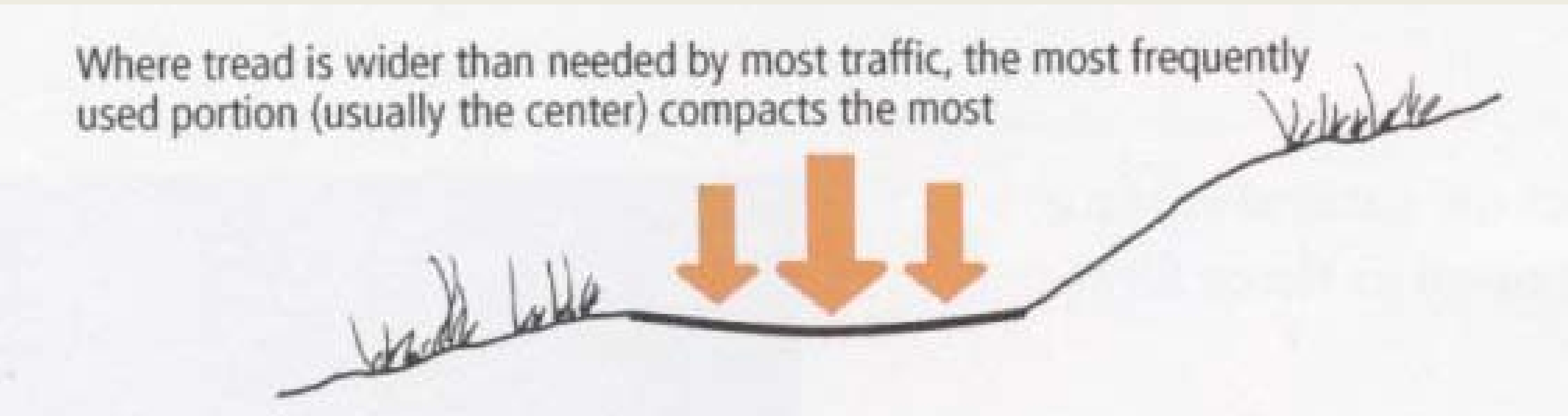

Safety
Efficiency
Playfulness
Harmony

Principles 7 to 9:

Human & Natural Physical Forces

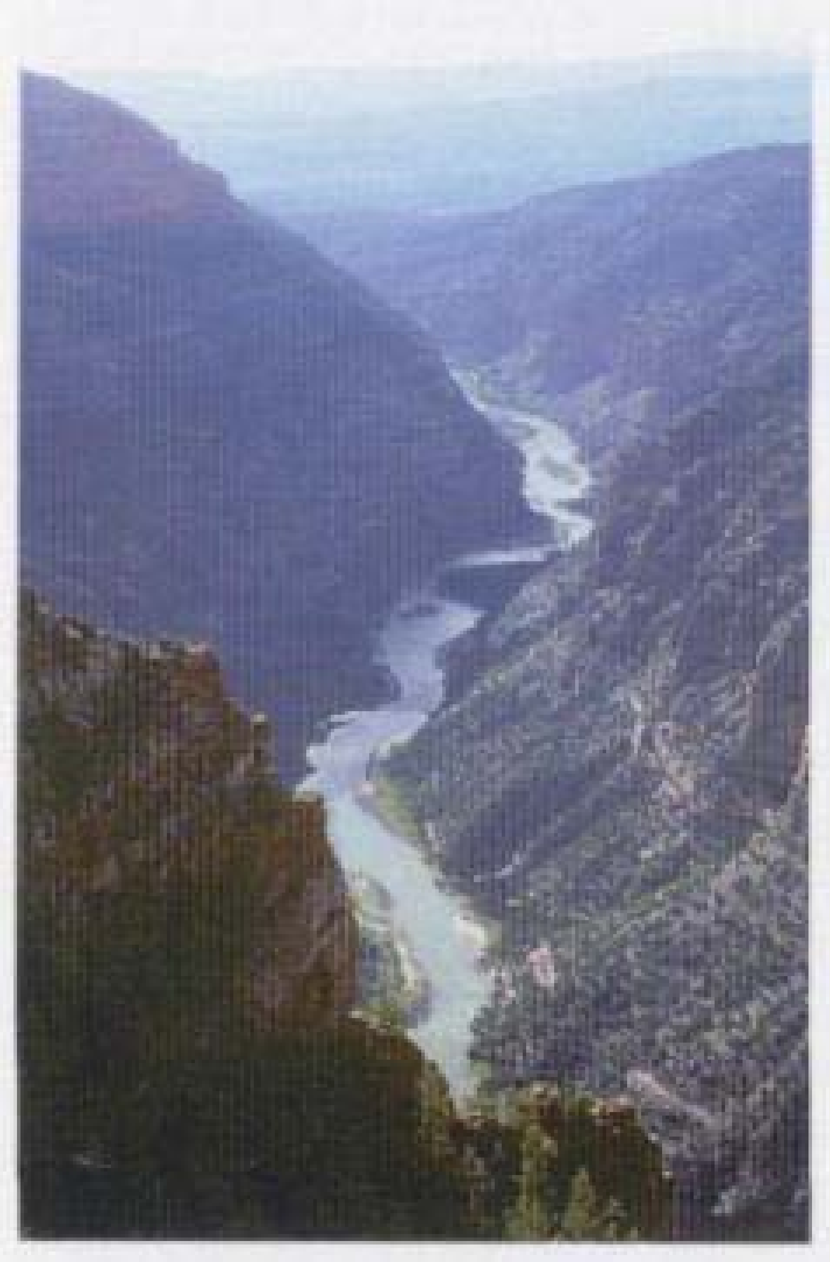
Does the trail design account for….?



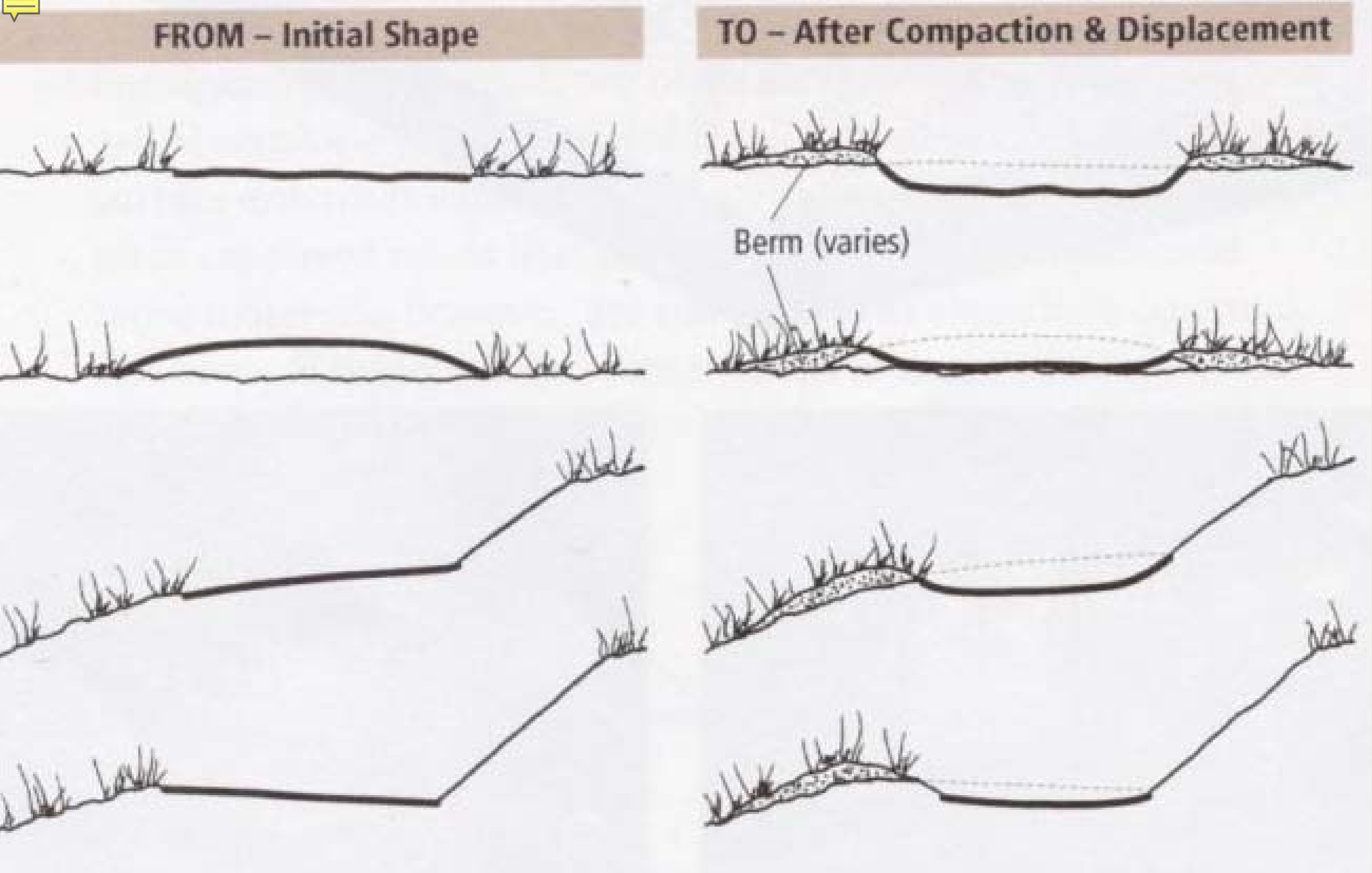


Compaction & Displacement

Degrees of Compaction



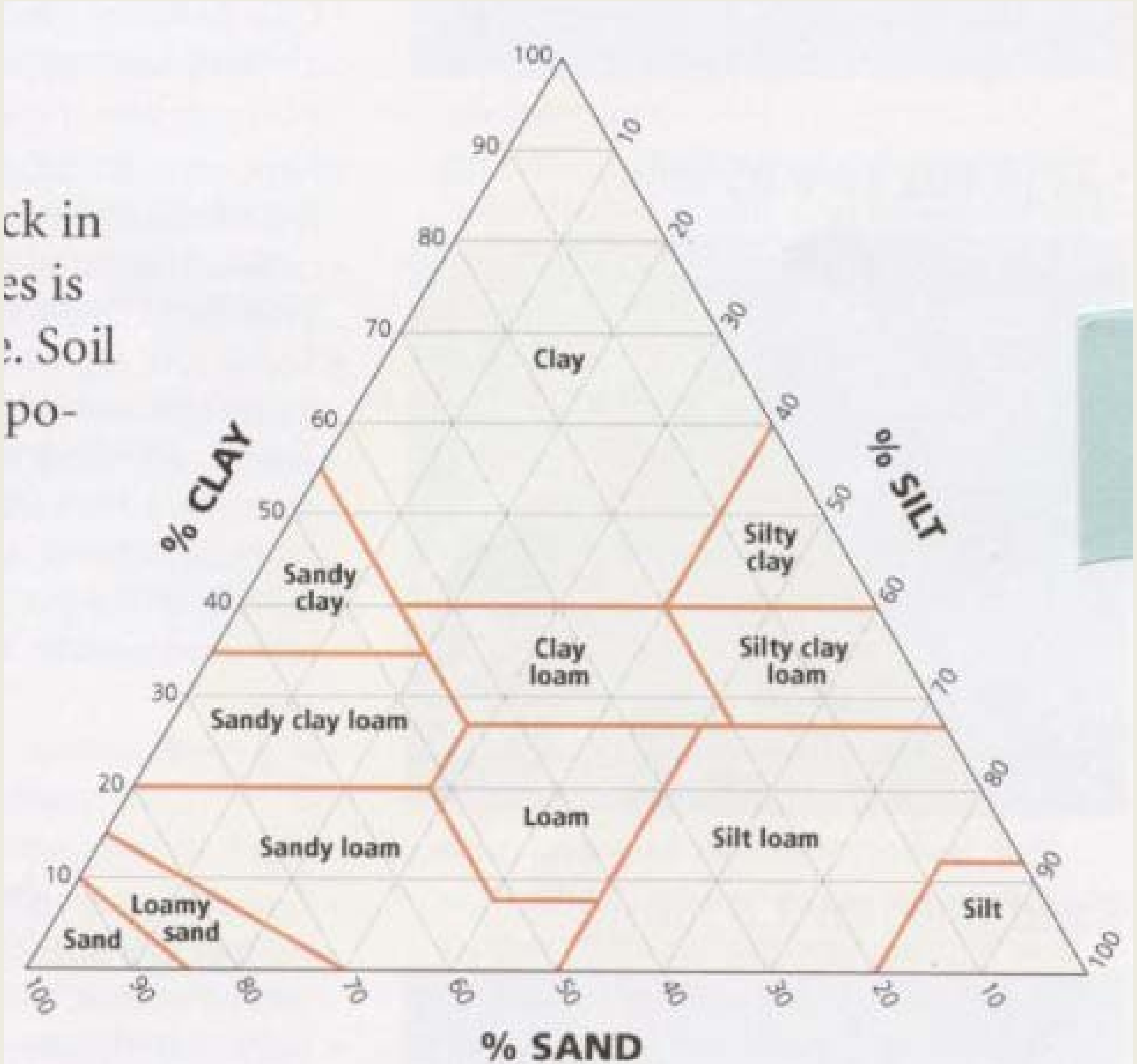
Fight **Erosion**….really?



Effects of Erosion & Compaction

Principles 10 & 11:
Tread

Do we understand….?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Sandy clay loam
Loam
Silt loam
Sandy loam
Loamy sand
Sand
Silt
100
90
80
70
60
50
40
30
20
10

Soil Types

Tread Soil Texture

1. *If the sample isn't already moist, add water [shown above] until particles stick together when compacted. Heap the moist sample in a sturdy, can-like, smooth walled mold. A white 4-inch PVC drain cap is shown here. Line the mold with kitchen plastic wrap to make steps 7-9 easier.*

2. *Compact the sample with a hammer as hard as you can. If sample is too wet, let it dry a bit first. Form a shallow depression in the center. Let it dry for several days—in a warm and/or sunny place if possible—indoors or out. The drier, the better.*

3. *After the sample is thoroughly dry, use a sharp-ended tool to scrape and chip at the surface, then gouge into the surface. Be brutal. The firmness or looseness you see here will also happen on the trail. This tests the resistance to displacement of the compacted tread.*

4. *Fill the center depression with about ⅛" of water and note the absorption rate. This indicates tread permeability and runoff rates. The slower the absorption, the more runoff the tread itself will create. Let water sink in until none is left on the surface.*

5. *Scrape and gouge the wet portion of the sample. Note how similarly or differently the sample acts compared to step 3. This simulates trail use on a moist tread. Again, what happens here will happen on the trail.*

6. *Tilt the container a bit, then use a pressurized hose or pour a stream of water from some height to simulate an erosive water flow. [In the photo, water is coming down from the top center]. Erosion that happens here is what to expect on the trail.*

Steps 7-9 are an optional extension

7. *By holding onto the plastic liner and pulling, try to remove the sample from the mold in one piece (requires a smooth-sided mold). If the sample falls apart, it will displace easily on the trail.*

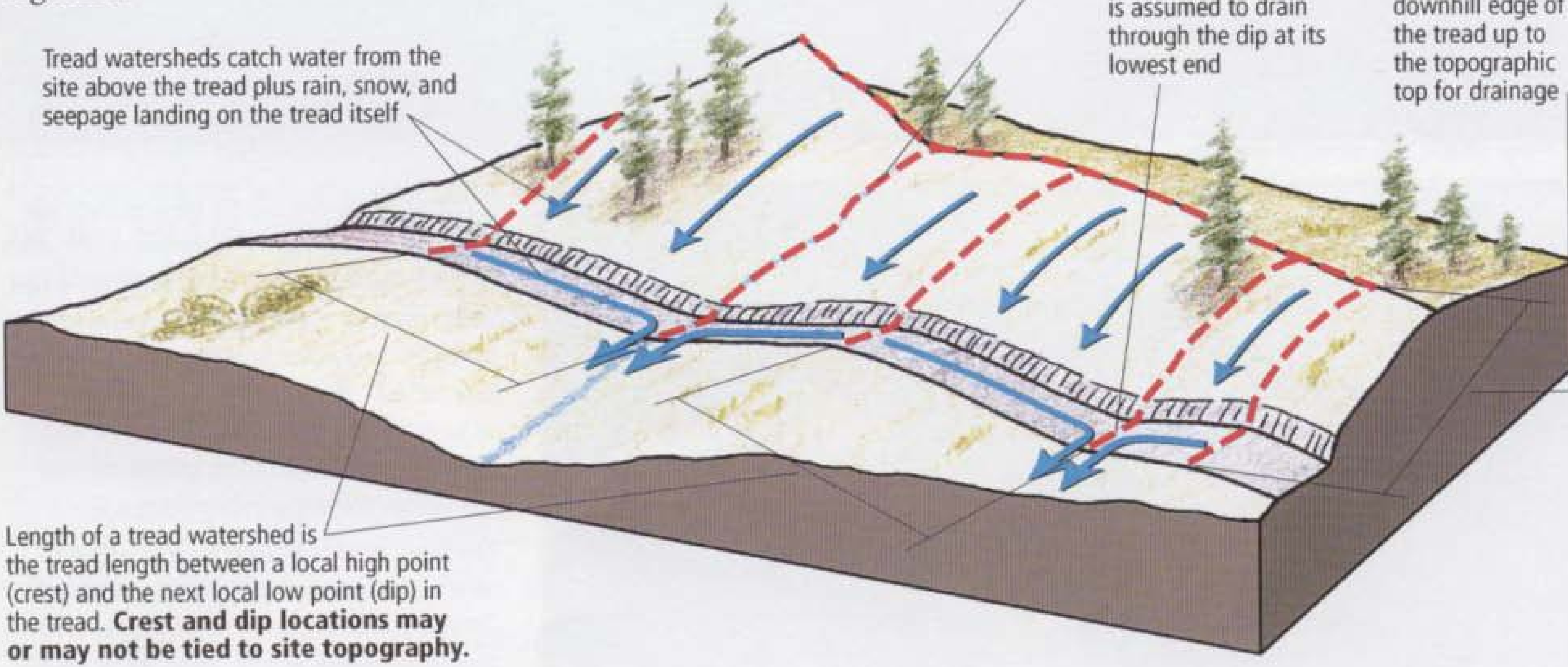
8. *If sample is solid, break off a chunk to see how deep the compaction went and how firm it is. The deeper and firmer it is compacted and hardened, the better. This sample was very hard and had to be hit with tools to break it.*

9. *As in step 6, simulate an erosive water flow on a level or near-level surface. Note how readily chunks break down and particles wash away. Note the difference in erosion between previously wet and previously dry portions.*

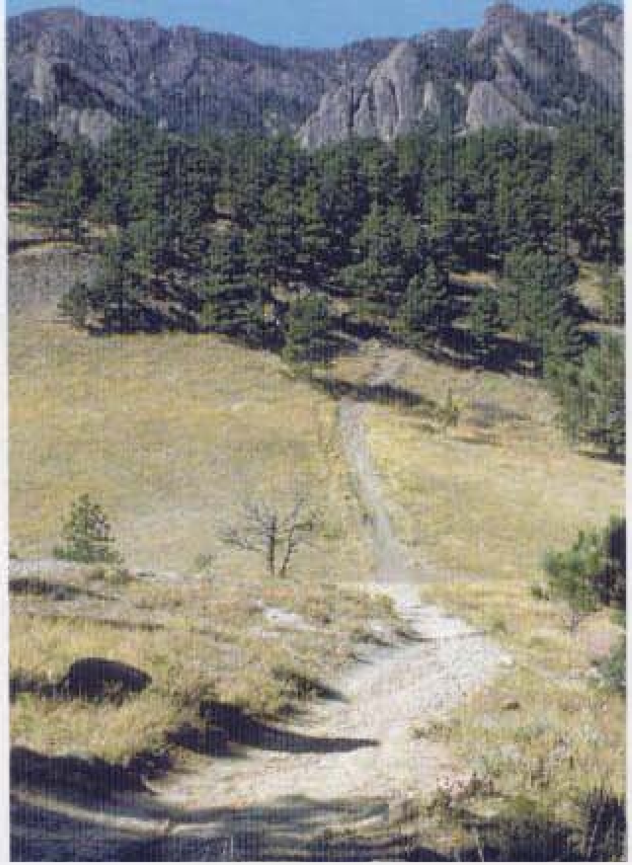
Science Experiment!

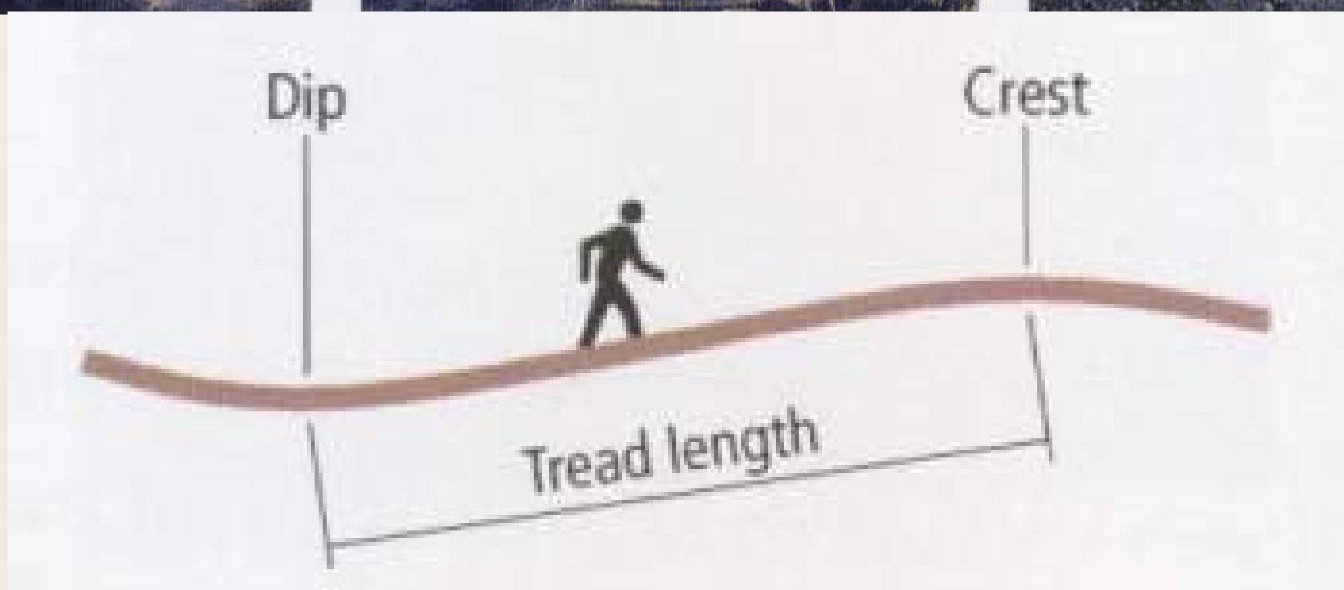
Tread Watershed

A watershed is the land area that drains into a given water body or channel. A *tread watershed*, however, is a bit different. A tread watershed is the trail tread between a local high point (crest) and the next local low point (dip), plus the land area that drains onto this tread segment:



Tread Watersheds




Dip
Crest
Tread length

Let’s Go Outside!!