Making the Switch

The Essential Skill of Advanced Snow Riding

Skiing’s Progression

• Walking, sliding
• Late 1800s
  – Schusses and traverses, linked by turns
• 1930s
  – Turns, linked by traverses
• 1960s
  – Linked turns, with no traverses
Today

- Shaping phases linked with transitions

Shape and Switch
How People Learn to Ride

- Walking, sliding
- Straight runs
- Traverses
- Straight runs and traverses with turns
- Turns connected by traverses
- Linked turns
- Shaping and switching

“Riding” Sports

- Skiing, alpine and tele
- Snowboarding
- Surfing
- Skateboarding
- Etc.
What They Have in Common

• Standing and balancing on a moving platform, whose motion is always changing

Mechanically Speaking…

• They’re all inverted pendulums
The Fundamental Skill of Riding

- Balancing on something that’s moving, while that movement changes

What is “Balance”?
Center of Mass

- The same as center of gravity
What is Balance?

- “You don’t fall over”
- The force of the snow pushing on you passes through your center of mass
- If it doesn’t, you *topple*
Fundamental Skill of Riding

- Feeling the force from the snow acting on you: its size and its direction
- Arranging your body so that force goes through your center of mass
- Anticipating how that force will change, especially its direction

The Key Skill of Advanced Riding

- Entering a turn in a narrow stance
- Linking turns
- Knowing when and how to topple
What Makes You Turn?
Balancing in a Turn

- Center of mass has to be closer to the center of the turn than your base of support
Starting a Turn in a Narrow Stance

• Like walking
• Like turning on a bicycle
Linking Turns

• The rider’s CM and point of support must switch sides with each other
Progression of Lateral Balance Skills

Linked wedge turns
Linked stem christies
Linked parallel turns

Path of center of gravity
Path of feet

© Ron LeMaster 2011
The Key Skill in Advanced Riding

- Linking turns through deliberate toppling
- “Falling into the turn”
The Estimation Problem
The Estimation Problem

- Before you begin the transition, you must estimate
  - Where exactly it will end
  - How much lateral (centrifugal) force you will experience
  - How fast to topple

How to Do It
How To Do It

• Make your feet slow down
• Remove the support of the downhill foot (alpine and tele skiing, only)
• Make your feet turn more sharply
• Make your upper body go straighter

Make the Feet Slow Down
Make the Feet Slow Down

- Pre-turn
- Edgeset
- Downhill stem
- Small bumps and moguls
- “Cross over”?

Remove Support of the Downhill Foot
Make the Feet Turn More Sharply
Make the Feet Turn More Sharply

- Angulation
- Tip pressure
- Terrain
- Turning out of the fall line
- “Cross-under”? 
Make the Upper Body Go Straighter
Make the Upper Body Go Straighter

• Disengage the upper body from the feet
• Relax knee and hip extensors
• Contract hip flexors
• “Cross-under”? 
Pole Plant
Pole Plant

- Provides lateral support during transition
- Enables skier to commit sufficiently

“Project Your Body Down the Hill”

- Is this possible?
Summary

- Snow riding involves balancing on a moving platform
- Advance snow riding involves knowing when and how to go out of balance in a controlled way
- Many techniques, and most are common to all snow riding sports

Visit www.ronlemaster.com

- Pictures
- Articles
- Presentations
- Order books, discounted and signed
Questions?