Trends in Modern Alpine Ski Racing

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Theme

- Alpine racing technique and tactics are evolving quickly
- The evolution is driven by the evolution in equipment
Overview

• Discuss some changes in equipment
• Discuss the implications in technique

Equipment Evolution

• Snow
• Skis
• Plates
• Boots
The Snow

- The snow is holding up much better
- Most slalom and some GS hills are injected
- Later racers have better chance
Skis

• The Good
  – It doesn’t take as much pressure to bend the ski
  – A shorter ski is stable enough
  – You can make the ski hold earlier in the turn

• The Bad
  – Edge release is a harder skill to learn
  – Can’t turn ski and wait for the right spot to engage it

• The Ugly
  – Encourages “park and ride” skiing
Typical Ski Parameters (Men)

• GS
  – 185 cm to 193 cm
  – 3 deg. side bevel, 0 – 0.5 deg. Bottom
• Slalom
  – 155 cm to 165 cm
  – 5 deg. side bevel, 0 – 0.5 deg. Bottom
Plates

- Tune the vibrations characteristics of the ski
- Selectively stiffen the ski
- Different plates for different events
- Lots of tweaking and experimenting
Boots

- A bit softer in the front
- Many skiers moving away from hard posted footbeds
- Wide variations in lateral canting
Equipment and Technique

- Skis, boots and snow have evolved to help the athletes hold tighter turns
- Holding tighter turns has influenced changes in technique
Influences on Technique

• Better skis, boots, and snow enable athletes to hold tighter turns
• Tighter turns require more inclination
• More inclination makes the transition more demanding

• More radical transitions encourage more retraction
• More inclination requires wider stance
• Better holding allows more use of the inside ski
**Technique Evolution**

- More inclination
- Focus on transition
- More retraction
- Wider stance
- More pressure on inside ski

**Inclination**

- Better holding + “bendier” skis
  - Tighter arcs
  - Greater centrifugal force
  - Greater inclination
Inclination

- Demands more strength
- Results in more boot-out
• Greater inclination
  ➔ Skier’s body and feet take more divergent lines between turns
  ➔ More attention to transition
Transition

- Bode: “I like to feel I’m changing edges with my knees”
- Facilitated by wide stance
- Facilitated by retraction
Retraction

- Greater inclination
  - Bigger “virtual bump” between turns
  - Bigger upward forces between turns
  - More retraction
Learning Retraction

• Hop back and forth across a pole as fast as you can
• Do it on a trampoline
Width of Stance

• Greater inclination
  ➔ Skier standing on steeper effective slope
  ➔ More difference between flexion of inside and outside legs
  ➔ Wider stance
Stance

- Tips and toes *do not* line up with hips and shoulders anymore
Using the Inside Ski

- Is definitely increasing
- Varies from skier to skier
- Varies with snow and pitch
Why Put Weight on Inside Ski?

- Provides support in first half of turn until outside ski hooks up fully
- It’s the safety valve for overestimating grip
- Facilitates manipulation of outside ski
- Assists fore-aft pressure control
- Avoids brutalizing softer snow
Countering

- Less than before, but it’s not going away
- The skier’s torso turns toward the outside of the turn
- Aligns the body’s largest muscles with the force on the skier
Summary

• Equipment is driving the changes in World Cup Skiing
• Better skis, boots, and snow enable athletes to hold tighter turns
• Tighter turns require more inclination
• More inclination makes the transition more demanding
Summary (cont)

- More radical transitions encourage more retraction
- More inclination requires wider stance
- Better holding allows more use of the inside ski

Thanks for Coming!

- Visit www.ronlemaster.com for slides from my talks, and lots of pictures