

The Craft of Tree Felling



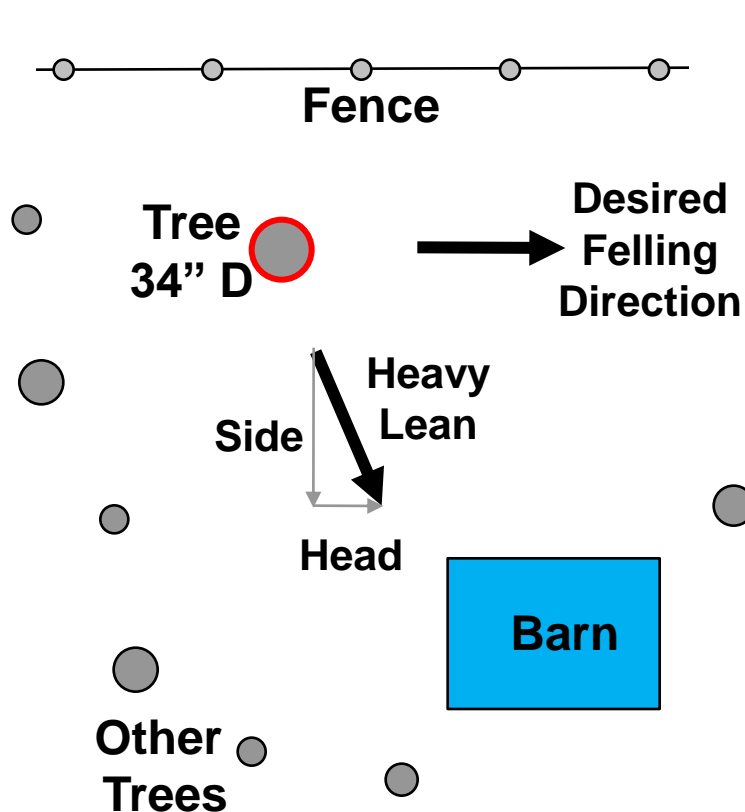
Alan Hale



19 August 2008



Introduction



Felling Direction (Head Lean)



Presentation Objective

Outline Techniques For Felling Trees In A Direction Different From The Tree's Natural Lean

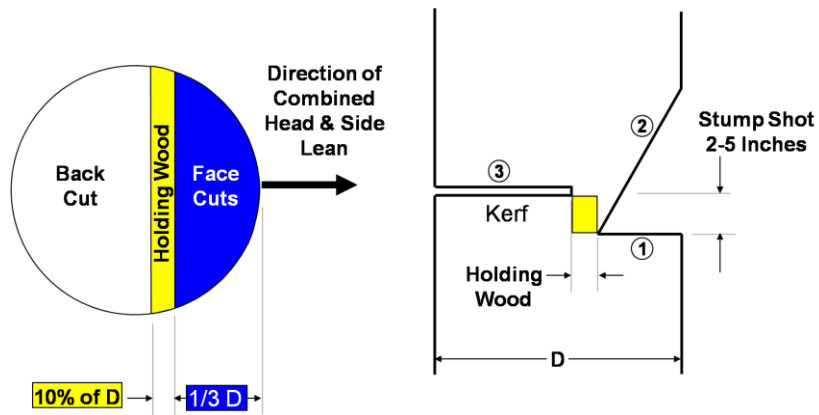
- Insure Felling Safety
- Protect The Tree's Board Feet

Felling Approach

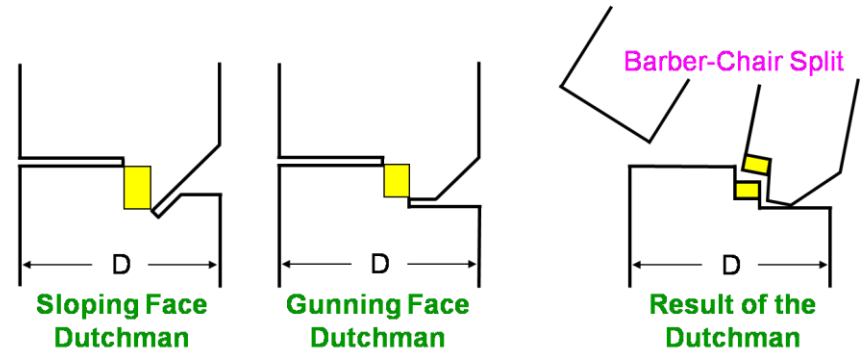
- Redistribute The Tree's Weight Using The Tree's Structural Wood
- Use Only Readily Available Logging Tools (Chainsaw, Wedges, Ax)

Outline

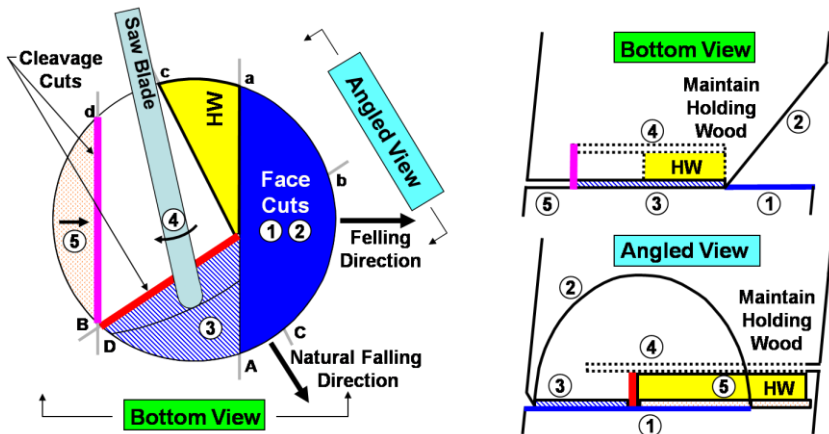
Felling in the Direction of Slight Lean



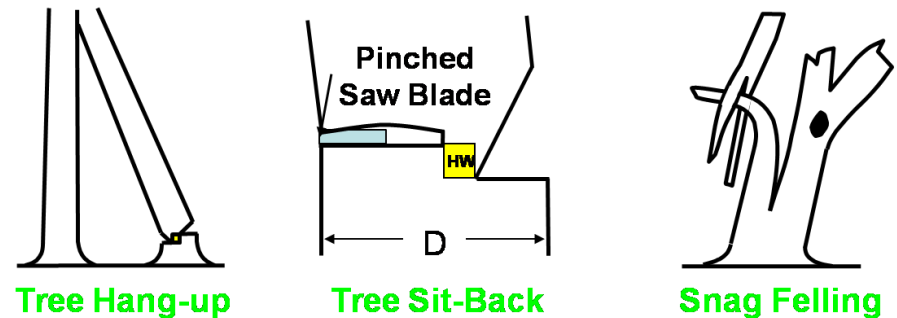
Facing Issues



Felling Difficult Trees

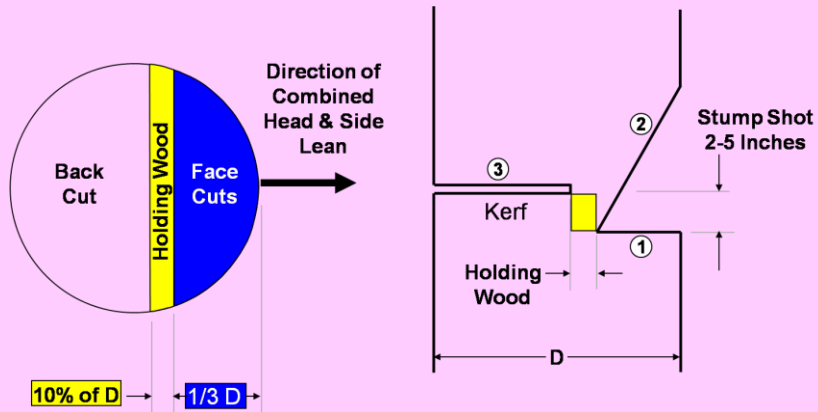


Felling Trouble Shooting

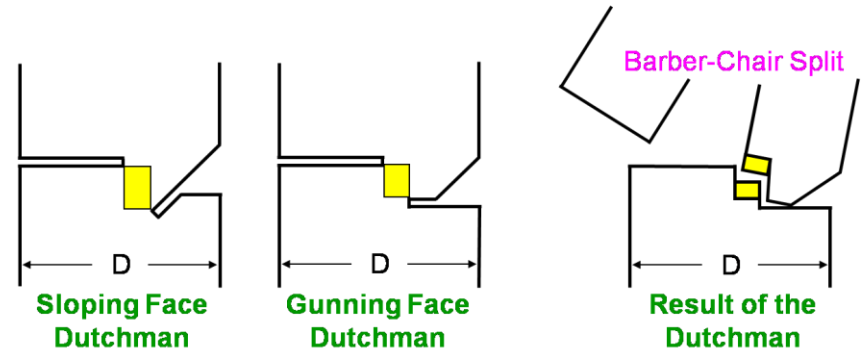


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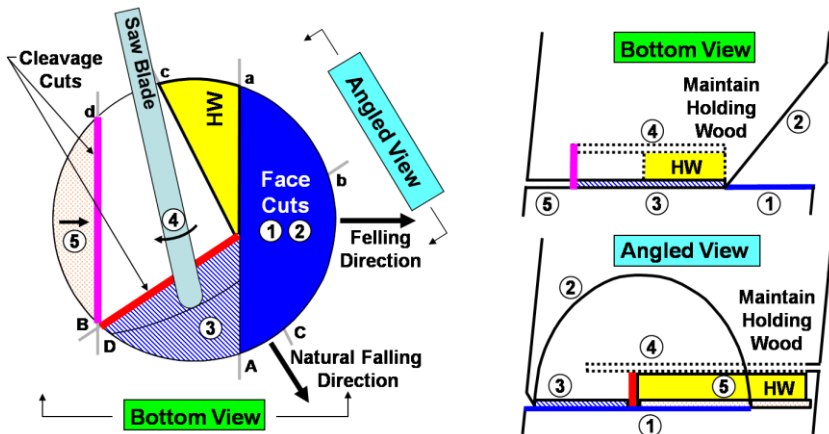
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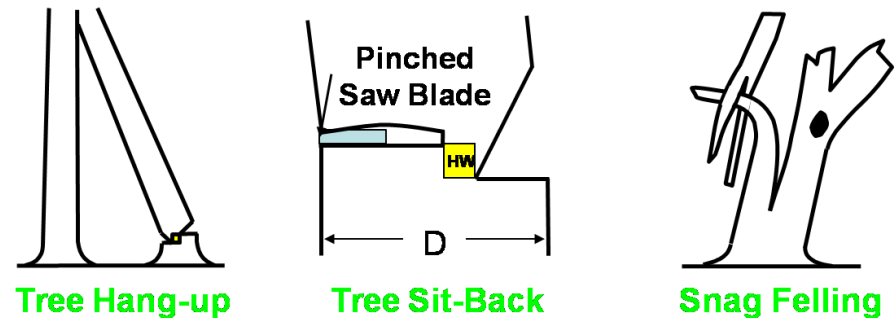
Facing Issues



Felling Difficult Trees



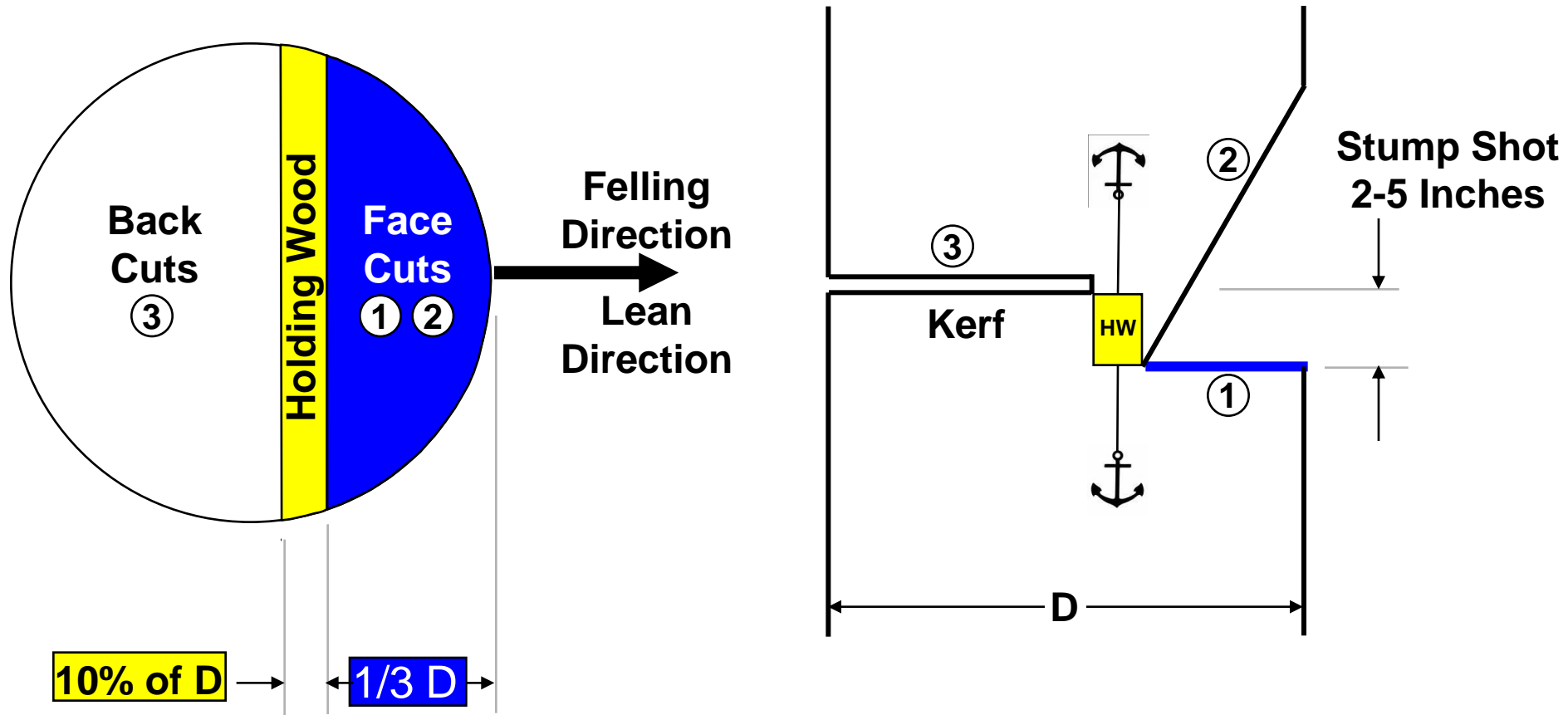
Felling Trouble Shooting



Sizeup

- **Search For Overhead Hazards**
 - Debris **Falling From Above Causes Over One-half Of All Felling Accidents**
 - Practice Watching Overhead While Cutting
 - Occasionally Glance At The Saw, **Kerf**, And Top Of The Tree
- **Check For Snags** (Standing Dead Or Dying Tree)
 - Snags May Fall At Any Time Due To Wind Or Vibration From A Felled Tree
 - Cut Any Snags In The Felling Area First
- **Swamp Out The Base**
 - Remove All Material That Could Cause Sawyers To Lose Their Balance
 - Many Fatalities Have Occurred Because The **Sawyer Could Not Move Far Enough Away From The Stump** To Avoid Being Struck Or Pinned
- **Assess The Tree's Lean**
 - The Tree Has Two Natural Leans: Head Lean And Side Lean
 - Project A Vertical Line From The Center Of The Tree's Stump
 - Use Two Different Locations At Right Angles To Each Other
- **Check For Soundness Of The Holding Wood**
 - Bore A Hole With A Cordless Electric Drill Or The Chain Saw
 - Evaluate The Wood Quality From:
 - Color Of The Sawdust And
 - Ease Of Penetration

Felling In The Direction Of Slight Lean (Conventional Face Cut)



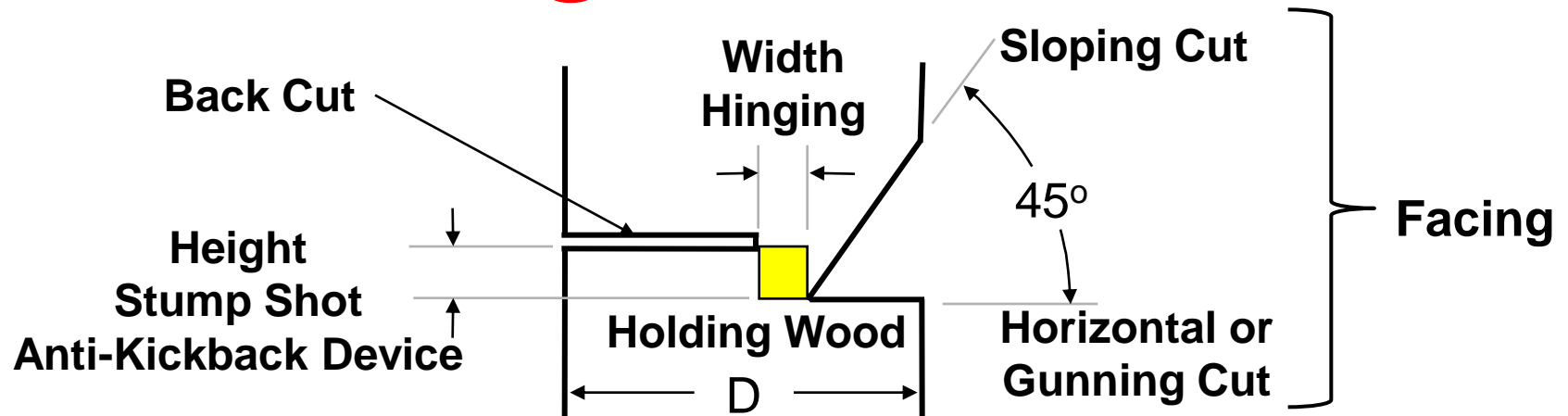
Execute The Cuts Standing or on One Knee With The Saw at Waist Level

Holding Wood or
Hinge Wood (HW)



Vertically Oriented Wood
Connecting The Stump To The Tree

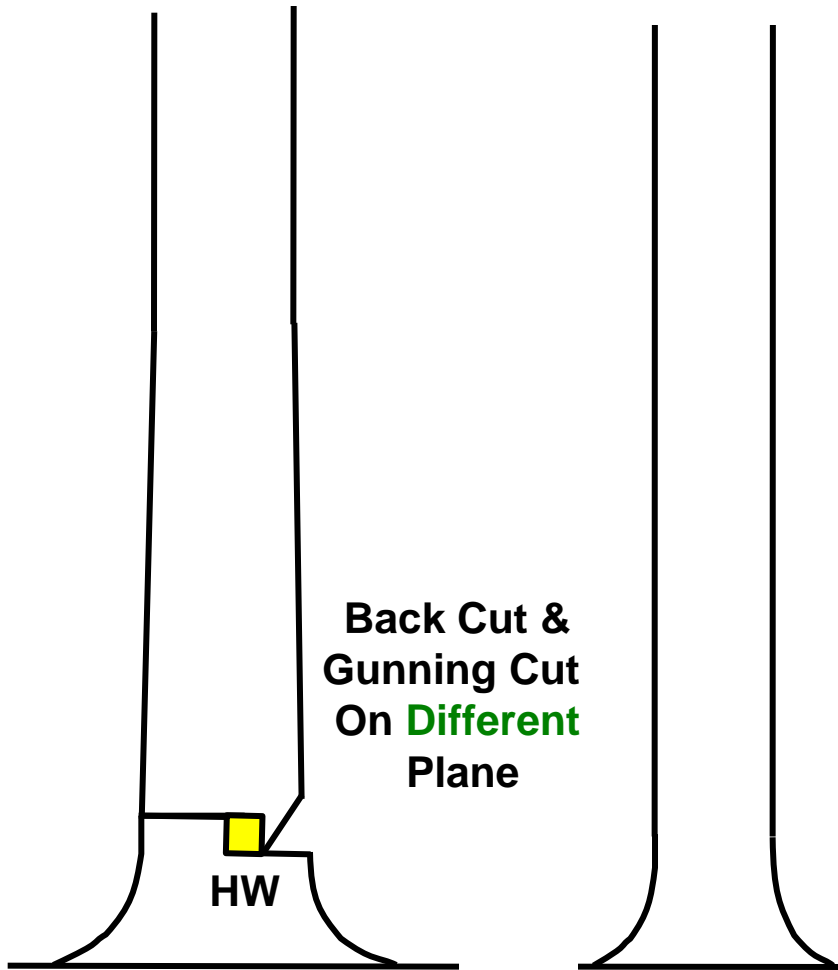
Felling Mechanics



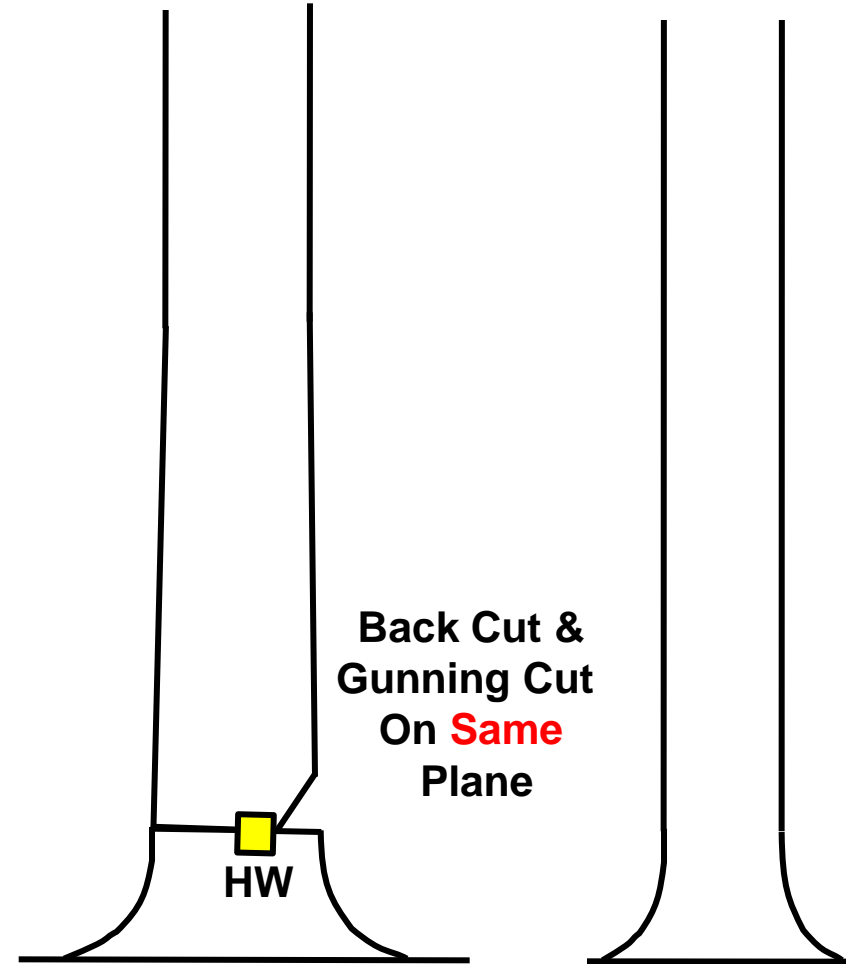
- **Height Of Holding Wood -- Stump Shot Or Anti-kickback Device (Perform Experiment)**
 - Prevents Kickback From Tree Rotating About Its Center Of Mass
 - Prevents Kickback When Striking Another Tree In Standing Timber
- **Width Of Holding Wood – Tree Hinged To The Stump While Falling**
 - Controls The Direction And Fall Of The Tree
 - Without Holding Wood The Tree Is Unguided During The Fall
- **Holding Wood Severed When The Two Face Cuts Meet**
 - Face Should Not Close Until The Tree
 - Fully Committed To The Fall
 - Falling In The Desired Direction
 - Improper Facing (Face Cut Too Shallow, Etc.)
 - Holding Wood Breaks Early (Unguided Fall)
 - Loss Of Tree Placement Control

Significance of Stump Shot

View One of Five



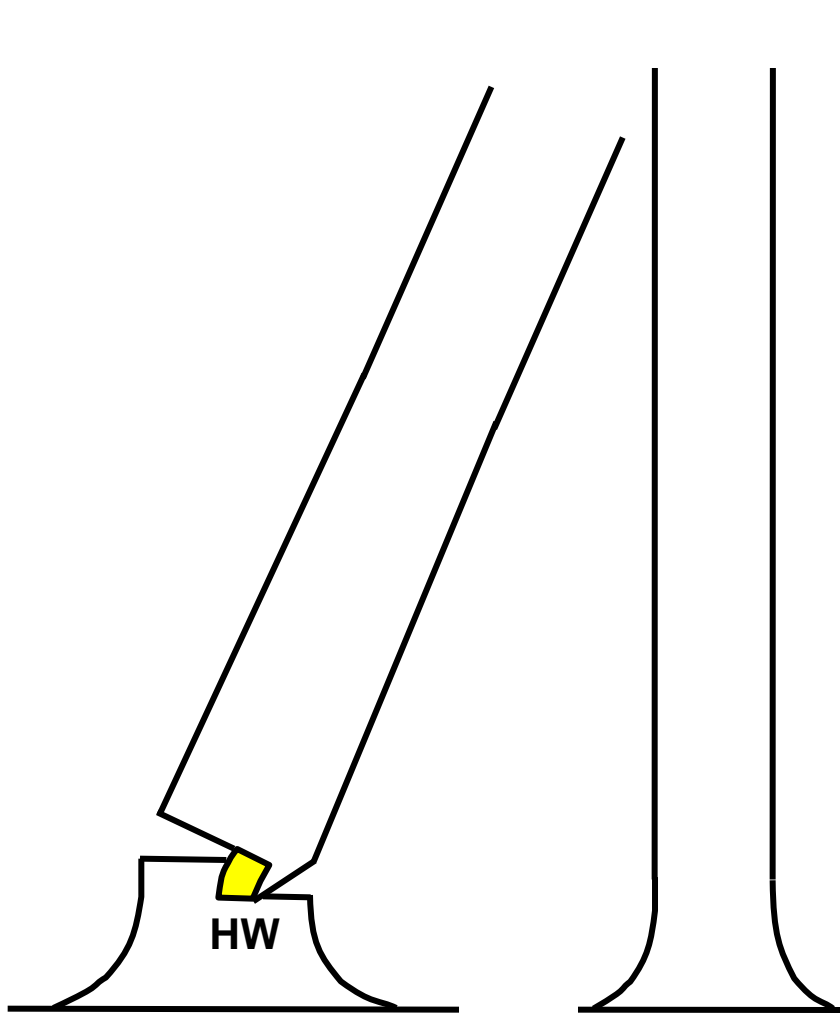
Stump Shot



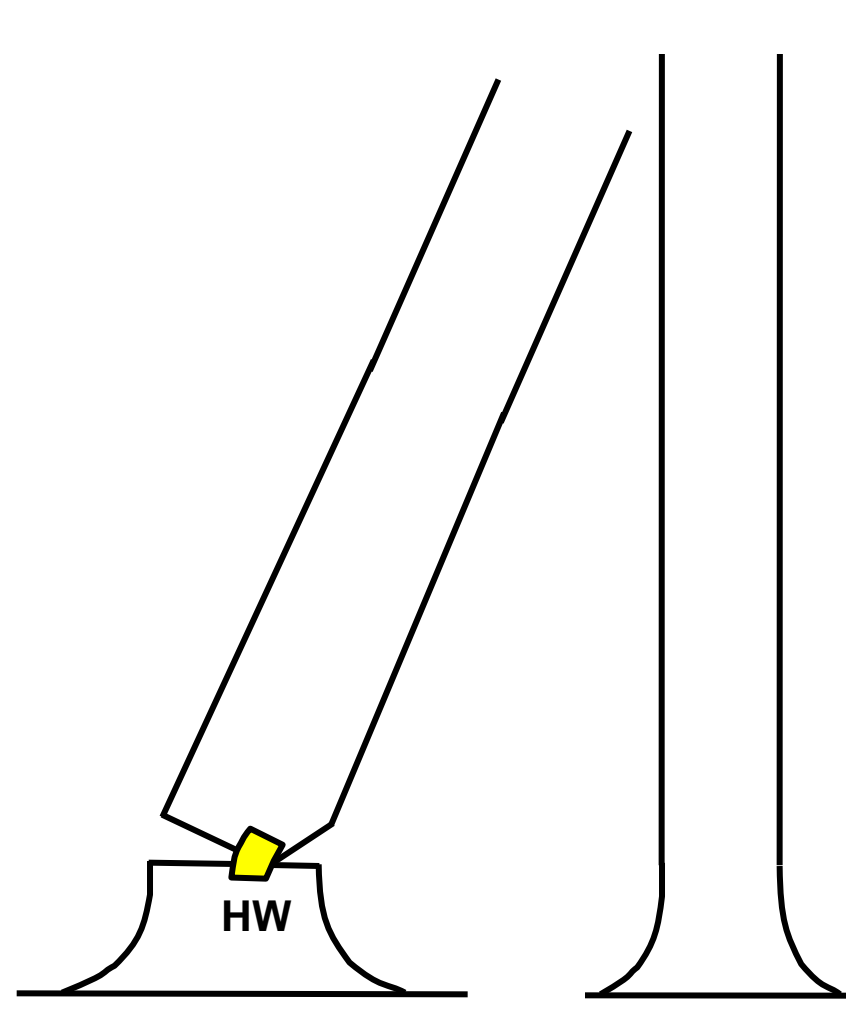
Back & Gunning Cut in Same Plane

Significance of Stump Shot

View Two of Five



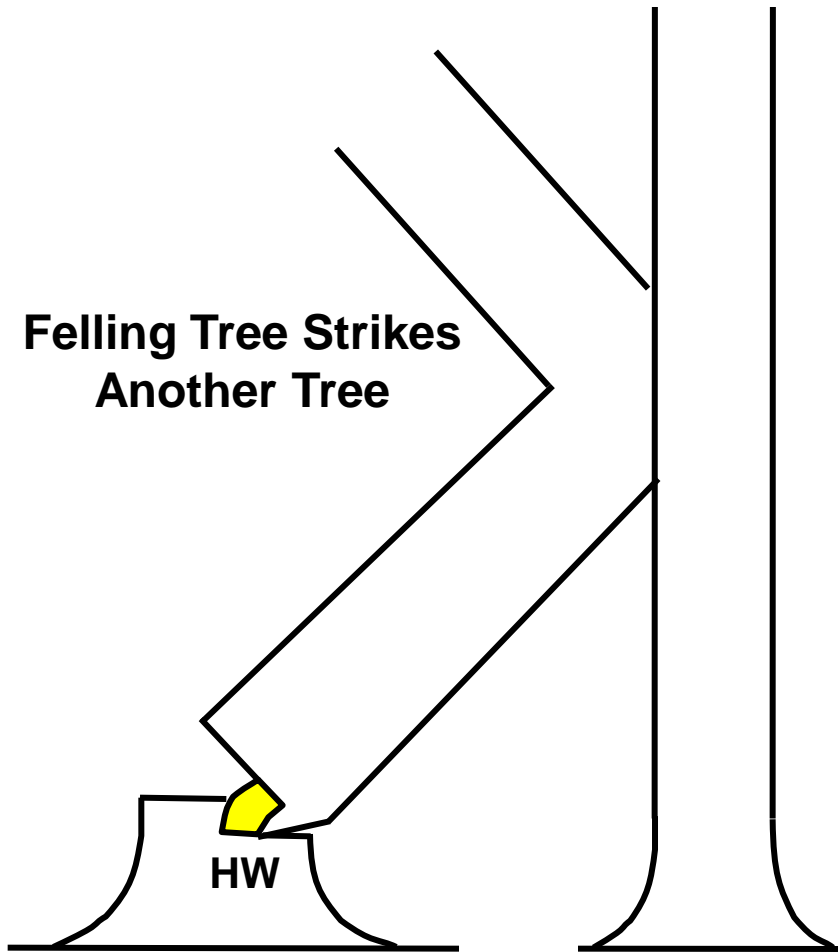
Stump Shot



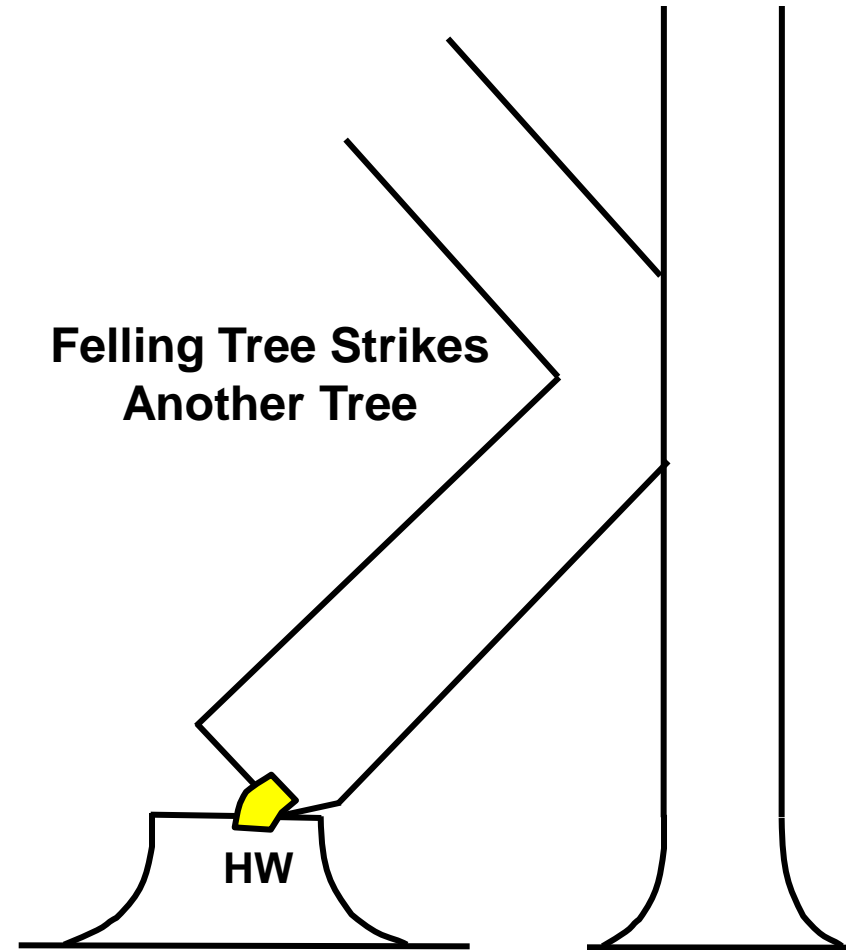
Back & Gunning Cut in Same Plane

Significance of Stump Shot

View Three of Five



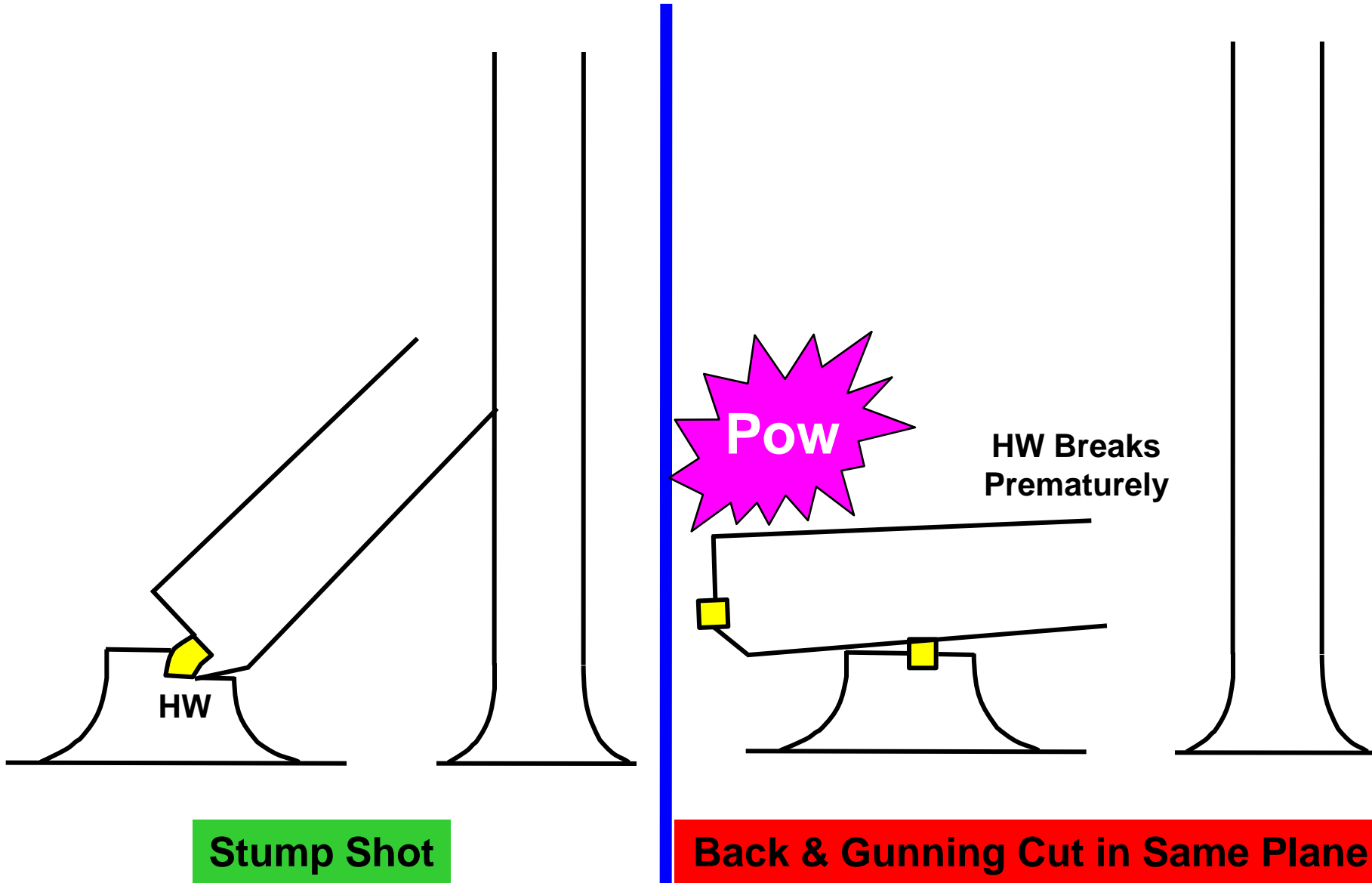
Stump Shot



Back & Gunning Cut in Same Plane

Significance of Stump Shot

View Four of Five

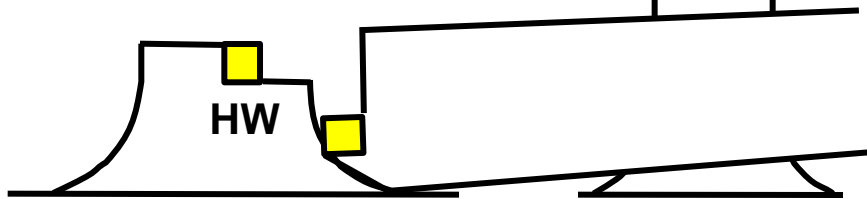


Significance of Stump Shot

View Five of Five

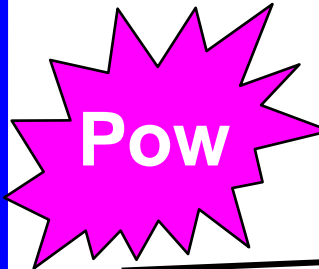
Stump Shot
Prevents Kickback
Of The Felled Tree

HW Breaks Appropriately When
Sloping & Gunning Face Meet



Stump Shot

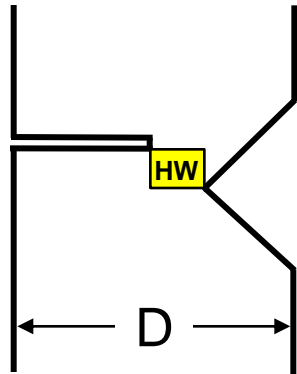
Felled Tree May Hit
Sawyer Due To
Kickback



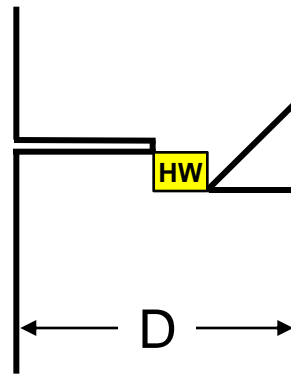
HW Breaks
Prematurely

Back & Gunning Cut in Same Plane

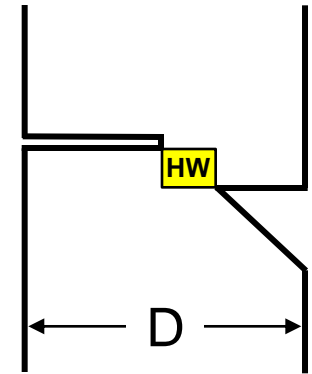
Three Kinds of Faces



Open Face



Conventional Face



Humboldt Face

Total Angle

70° to 90°

45°

45°

Depth

1/3 of D

1/3 of D

1/3 of D

Face Closure

Tree Hits Ground

Middle of Fall

Middle of Fall

Back Cut

2-5 inches Above
Face Intersection

2-5 inches Above
Gunning Cut

2-5 inches Above
Gunning Cut

Comments

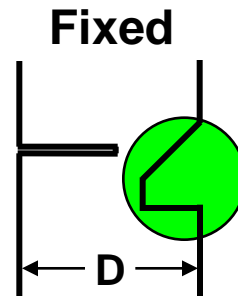
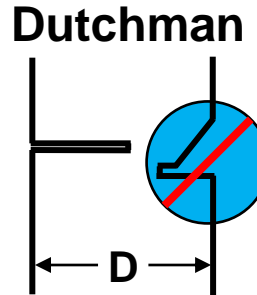
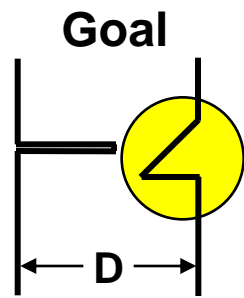
Greatest Control
Provided by
Hinge Wood

Greatest Accuracy
in Constructing
the Face Cuts

Greatest Saving
of Lumber

Facing The Tree

(Conventional Face Cut)



- **Gunning Or Horizontal Cut**

- Assess The Tree's Lean
- Mark The Location Of The Rectangular Holding Wood
- Set Your Dogs On The Bottom-face Corner Of The Rectangle
- Make The Gunning Cut (Dictates The Direction Of Tree Fall)

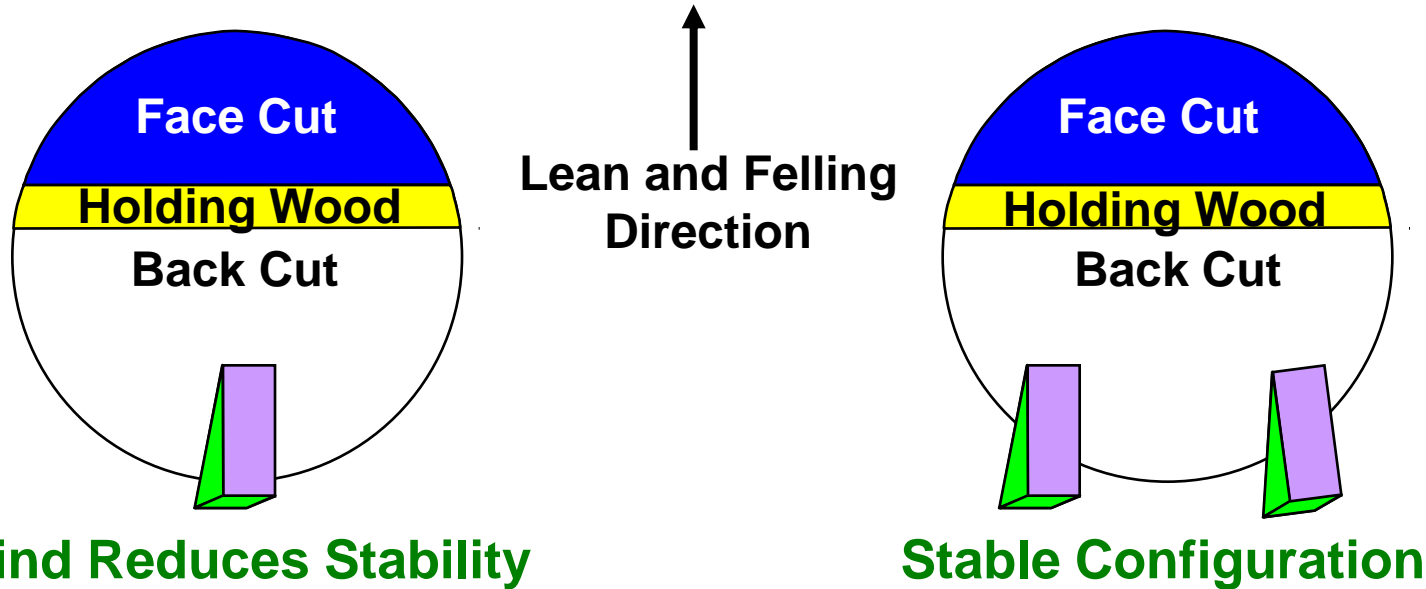
- **Sloping Cut**

- **Sloping Cut Is At A 45° Angle To The Gunning Cut (Goal)**
- Difficult To Make The Gunning And Sloping Cut Meet
 - Insert A Straight Stick At The End Of The Off-side Gunning Cut
 - Align The Chainsaw Bar With
 - Stick Jutting Out Of The Off-side Gunning Cut And
 - Near-side Beginning Of The Gunning Cut

- **Check**

- **The Sloping And Gunning Cuts Must Not Overlap (Dutchman)**
- Re-cut The Sloping Cut To Correct Misalignment
- The Face Cuts Must Be Cleaned Out To Prevent Premature Face Closure
- Verify That The Re-cuts Do Not Alter The Felling Direction
- **If The Re-cuts Will Cause The Face To Extend Too Far Into The Tree, End The Sloping Cut Directly Over The Gunning Cut (Fixed)**

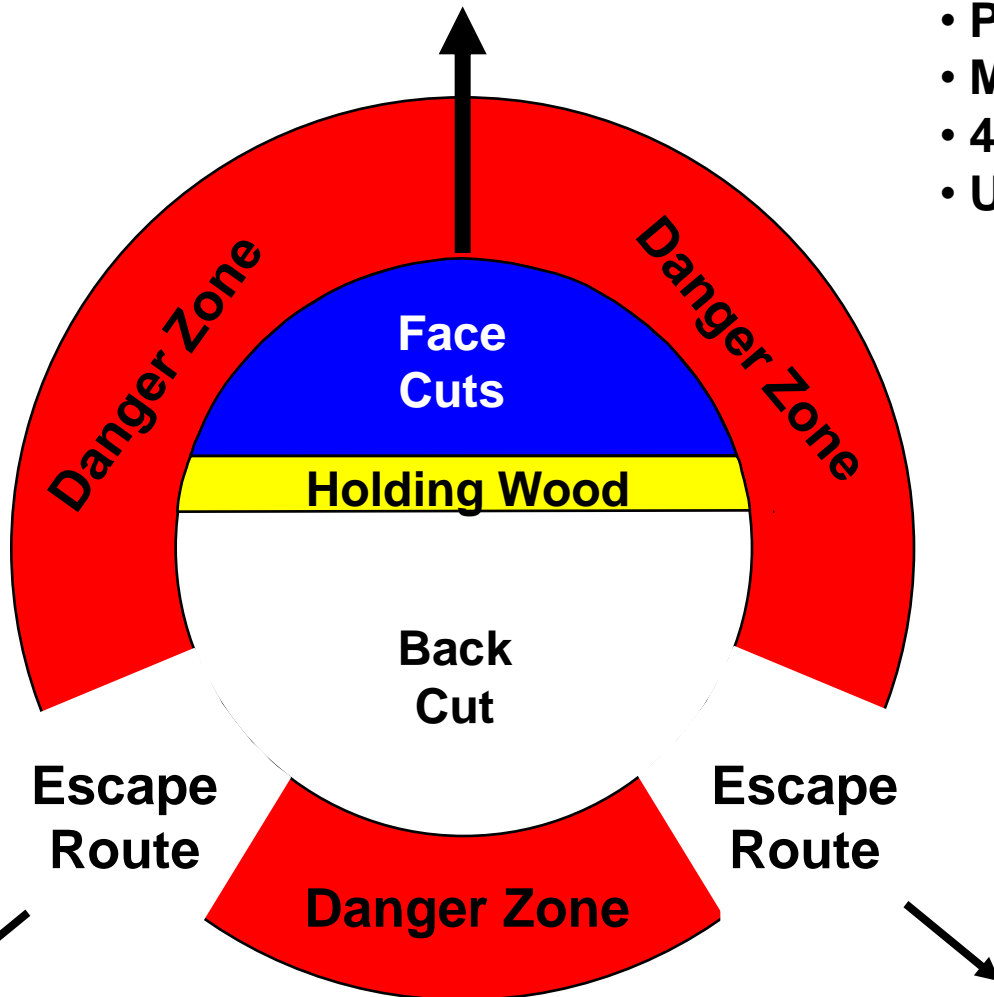
Back Cut With A Slight Lean in the Felling Direction



- **Back Cuts 2-5 Inches Above And Parallel To The Gunning Face Cuts**
- **Remove Bark Around Wedges To Improve Lifting Effectiveness**
- **A Single Wedge With Wind Can Sever Holding Wood (Rocking Action)**
- **Do Not Drive The Wedges Hard (Create Heavy Leaner)**
- **Every 3-6 Inches Of Back Cut Retighten The Wedges (Use An Ax)**
- **Wedges Are Used (In General) To Prevent The Tree From **Sit-Back** Due To**
 - **Incorrect Estimate Of Lean**
 - **Strong Winds**
 - **Felling The Tree In A Different Direction From The Tree's Natural Lean**

Escape Routes

Felling Direction

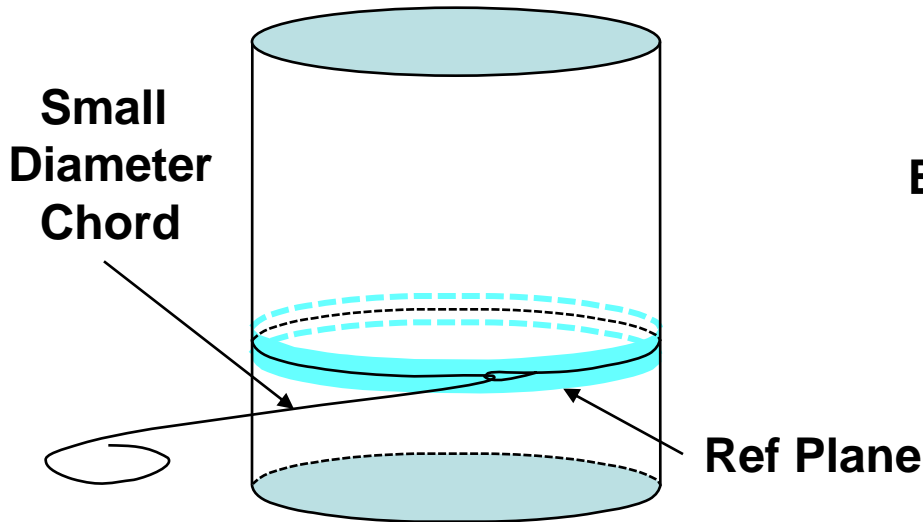


Escape Route

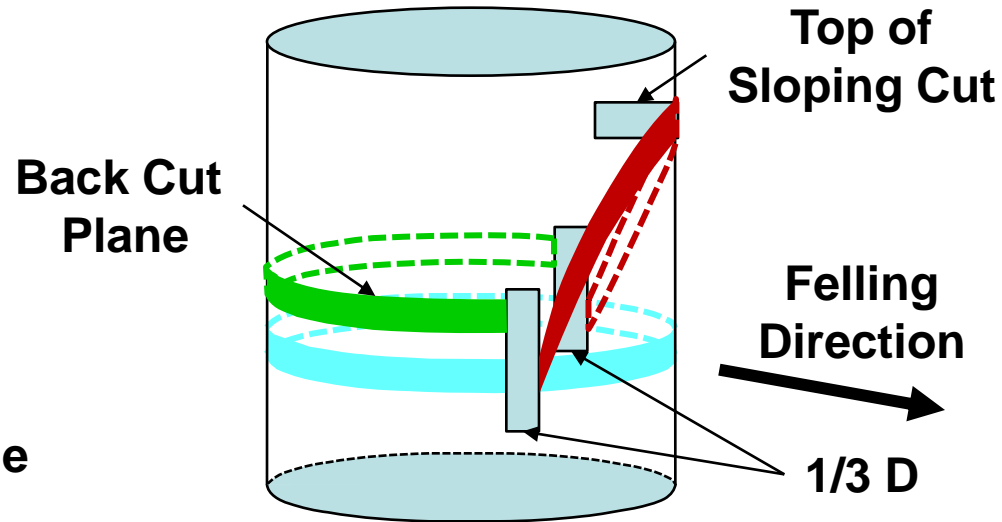
- Prepare Two Escape Routes
- Minimum of 20 Feet from Stump
- 45° to the Sides and Back
- Use Large Tree or Rock for Protection

**Never Attempt to Escape
Directly Behind the Tree**

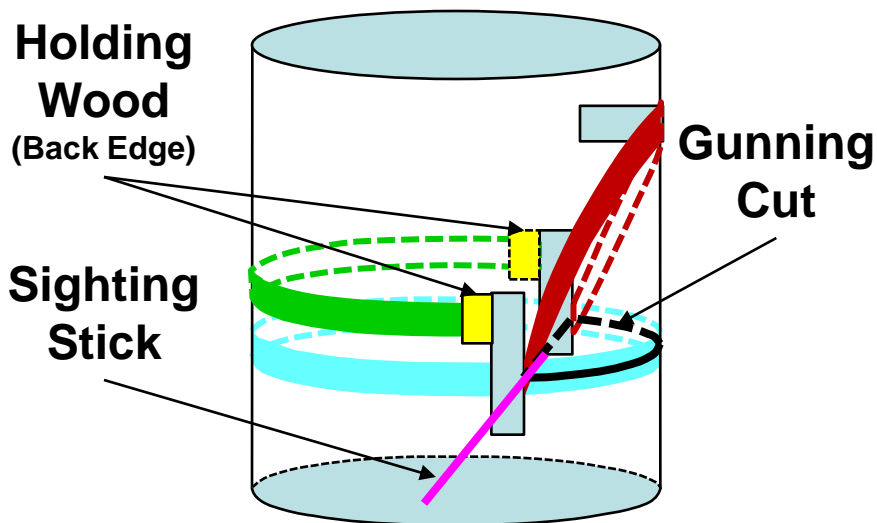
Markup Before Cutting



Mark Horizontal Plane



Mark 1/3 D, Sloping, & Back Cut Plane



Insert Sighting Stick Into Kerf

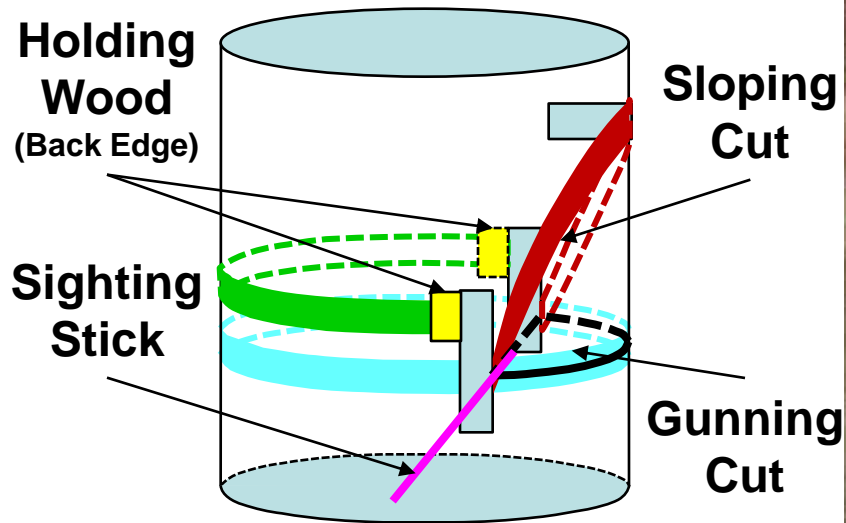
- Mark & Paint Horizontal Ref Plane
- Identify Felling Direction
- Mark 1/3 Diameter Edges
- Mark Top Of Sloping Cut
- Paint Sloping Cut (Optional)
- Mark & Paint Horizontal Back Cut Plane
- Make Gunning Cut
- Insert Sighting Stick Into Kerf
- Make Sloping Cut
- Mark Holding Wood (Back Edge)
- Make Back Cuts

Felling The Tree

(Summarize)

- **Mark Cut Locations With Surveyors' Paint (Visually Plan Felling Approach)**
- **Face The Tree (Two Planar Cuts)**
 - **Select A Face Cut Type: Open, Conventional, Humboldt**
 - **Always Located On The Desired Felling Direction Side Of The Tree**
 - **Check Face Location With A Horizontal Line Centered And Perpendicular To The Intersecting Face Cuts**
 - **Re-cut If Necessary**
- **Execute The Back Cut (Minimum Of One Cut)**
 - **Most Are On The Same Plane**
 - **2-5 Inches Above The Face Intersection Cuts (Establish Stump Shot)**
 - **Maintain Holding Wood (Hinge Wood)**
 - **Use Wedges, Jacks, And Special Back Cuts To Correct For Lean**
 - **Watch Overhead As A Priority With Quick Glances Elsewhere**
- **Escape The Stump When The Tree Commits To The Fall**
 - **Quickly Follow A Predetermined Escape Route**
 - **Do Not Hesitate At The Stump Attempting To Cutting More Wood**
 - **If The Saw Becomes Stuck Leave It**
 - **If The Saw Prevents A Rapid Escape Drop It**

Video Showing Markup

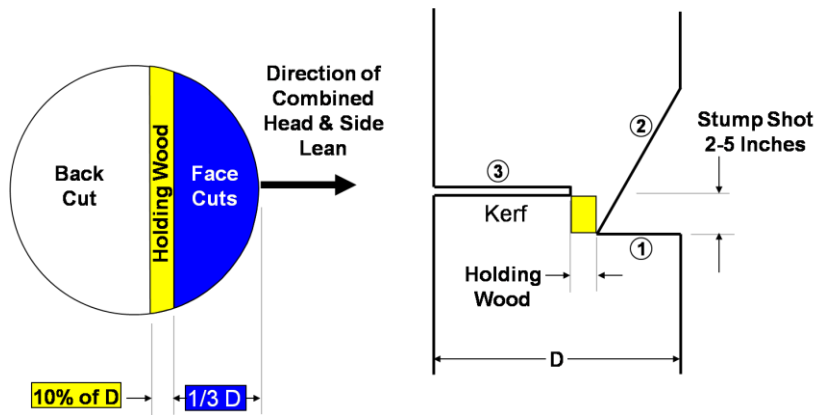


Insert Sighting Stick Into Kerf

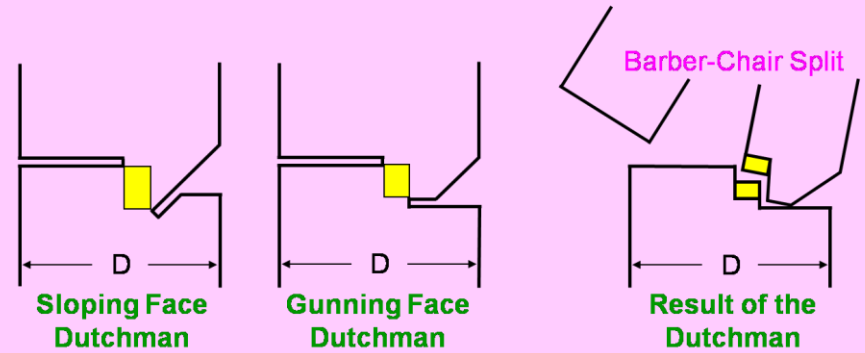


Outline

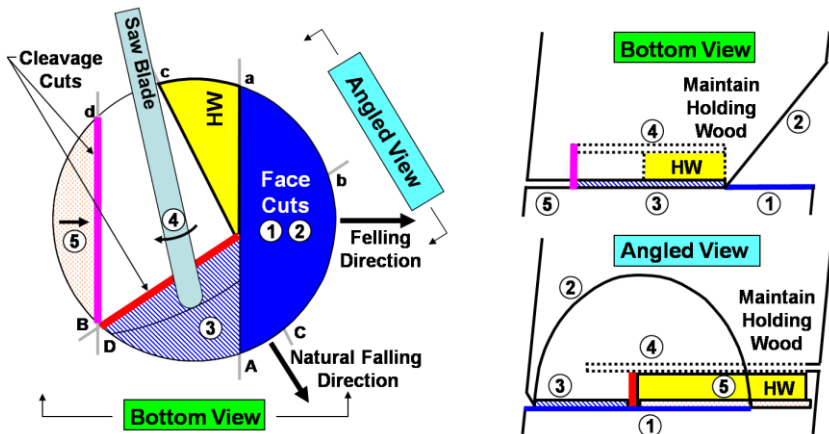
Felling in the Direction of Slight Lean



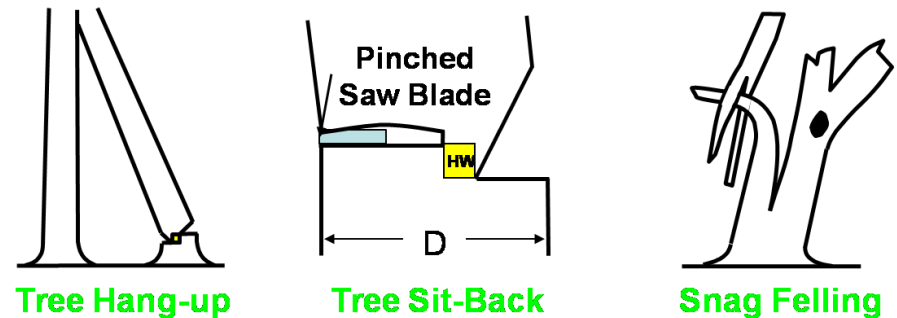
Facing Issues



Felling Difficult Trees



Felling Trouble Shooting

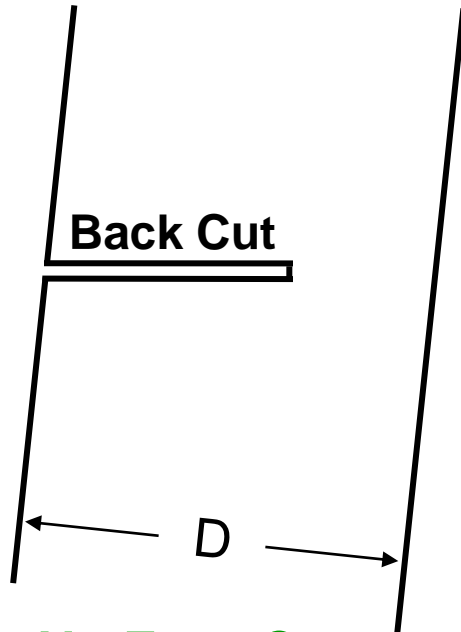


Improper Facing Issues

- **Barber-chair Split**
 - No Face Cuts (Only Back Cut)
 - Kerf Face (Saw Blade Thickness)
 - Face Cut < 1/3 The Tree Diameter
- **Felling Control Lost**
 - Dutchman Cut Across The Entire Face
 - Sloping And Gunning Angle Too Shallow
- **Felling Direction Altered**
 - Vertically Angled Face Cut
 - Dutchman Cut Only On One Side
 - Face Not Cleared Out On One Side

No Face Cuts (Only Back Cut)

(Improper Facing – Barber-chair Split)



No Face Cuts



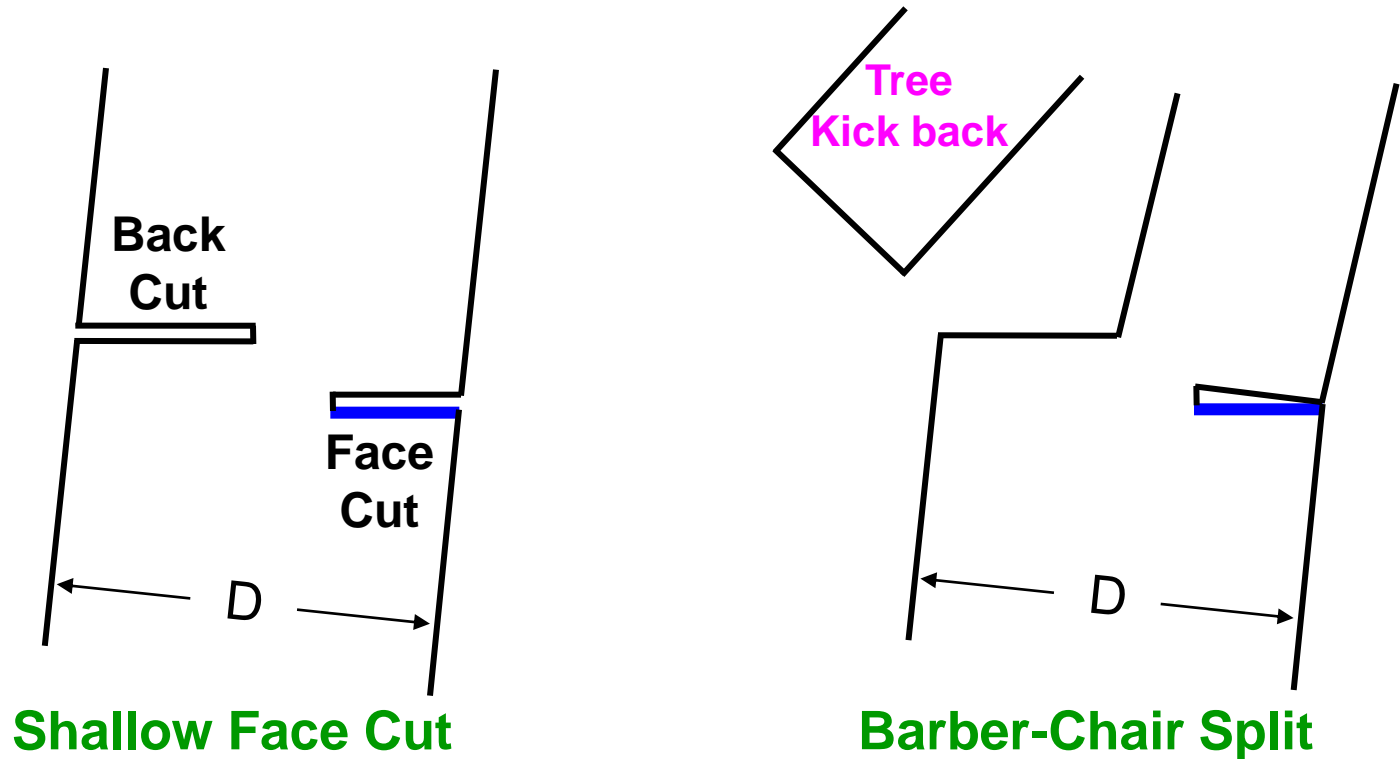
Barber-Chair Split

- The Back Cut Progresses Without Facing
- Eventually The Tree Falls Faster Than The Back Cut Progress
- Tree Will Always Barber-chair Split
- Tree Kick Back Extremely Dangerous To The Sawyer
- Quality Of The Wood Greatly Reduced Due To The Vertical Split

Any Tree Can Be Felled Without Facing – Costly And Dangerous

Kerf Face (Saw Blade Thick)

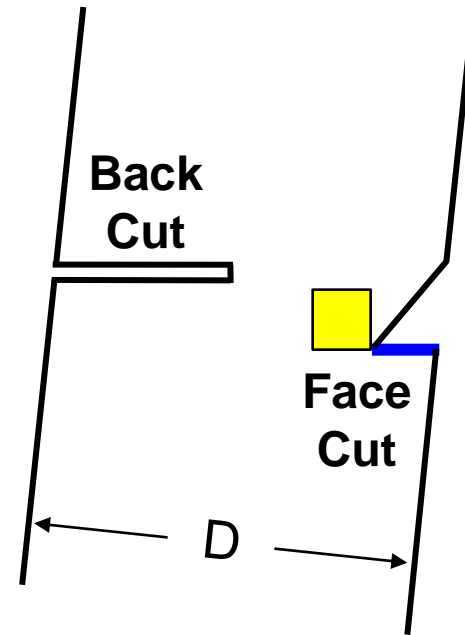
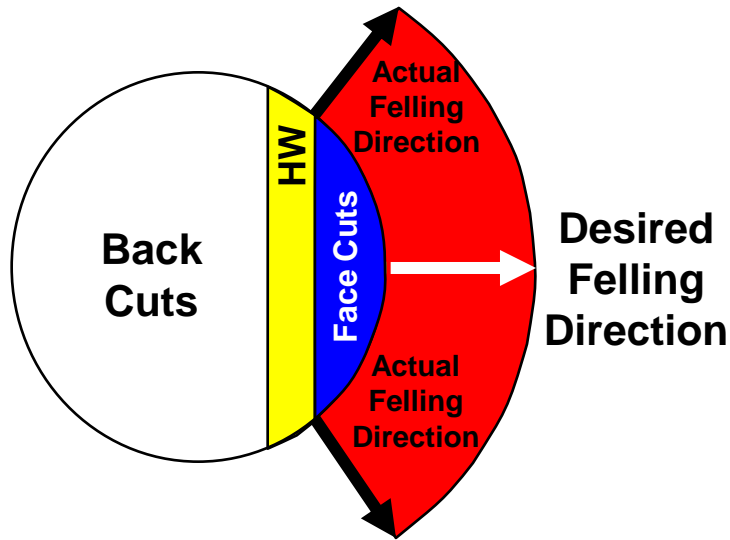
(Improper Facing – Barber-chair Split)



- **Face Closes Quickly**
- **Tree Falls Much Faster Than The Back Cut Progress**
- **Tree Will Always Barber-chair Split**
- **Tree Kick Back Extremely Dangerous To The Sawyer**
- **Quality Of The Wood Greatly Reduced Due To The Vertical Split**

Face Cut < 1/3 The Tree Diameter

(Improper Facing – Barber-chair Split)

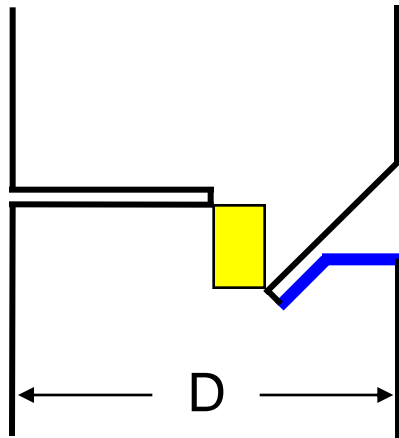


Facing Cut Too Shallow

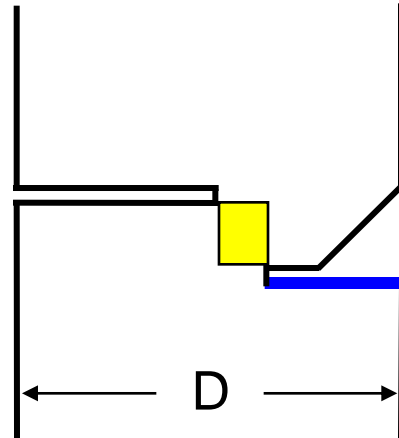
- Small Face Opening Is Ineffective At Directing The Tree
- Holding Wood Is Either Broken Or Torn Out
- Loss Of Control Early In The Felling Process
- Tree Likely To Barber-chair

Dutchman Cut Across The Entire Face

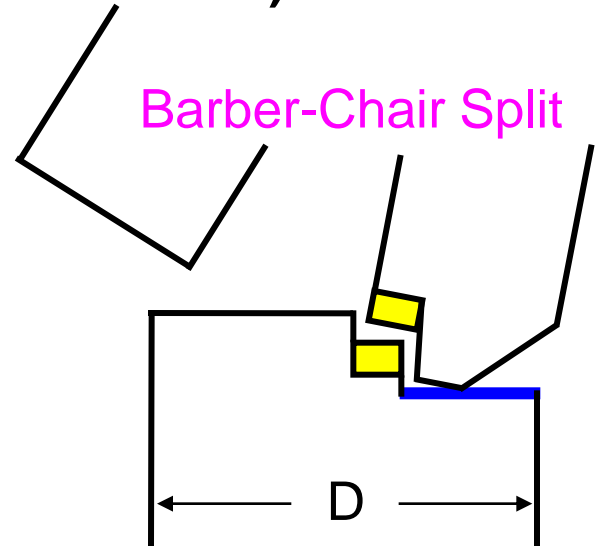
(Improper Facing – Felling Control Lost)



**Sloping Face
Dutchman**



**Gunning Face
Dutchman**

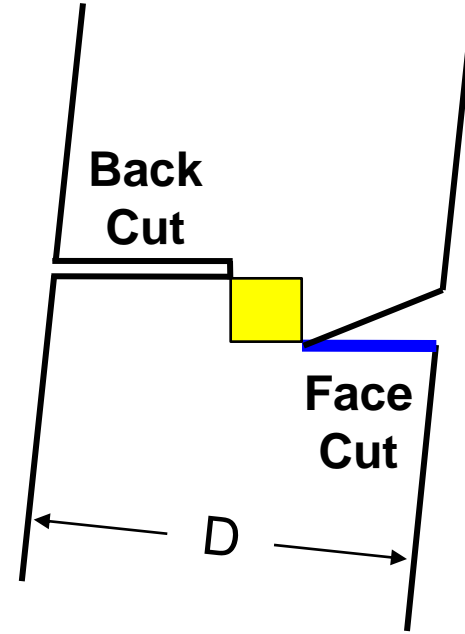
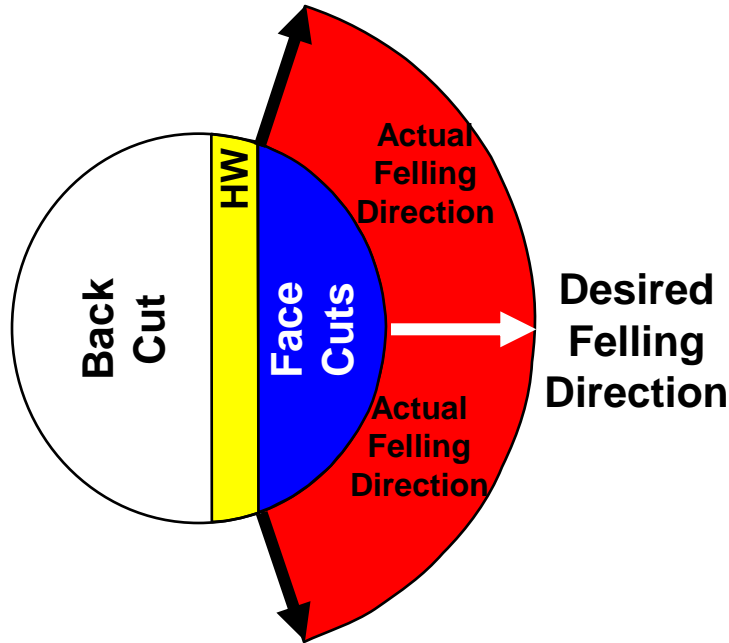


**Result of the
Dutchman**

- **Dutchman Definition**
 - One Of The Face Cuts Extends Beyond The Other Face Cut
 - Face Within A Face
- **Dutchman Tree Felling Mechanics**
 - Dutchman Closes
 - Tree Splits Vertically (**Barber-chair**)
 - Holding Wood Breaks Off Unevenly
 - Felling Control Lost
 - Weak Tree Might Snap Anywhere Along Its Length

Sloping & Gunning Angle Too Shallow

(Improper Facing – Felling Control Lost)

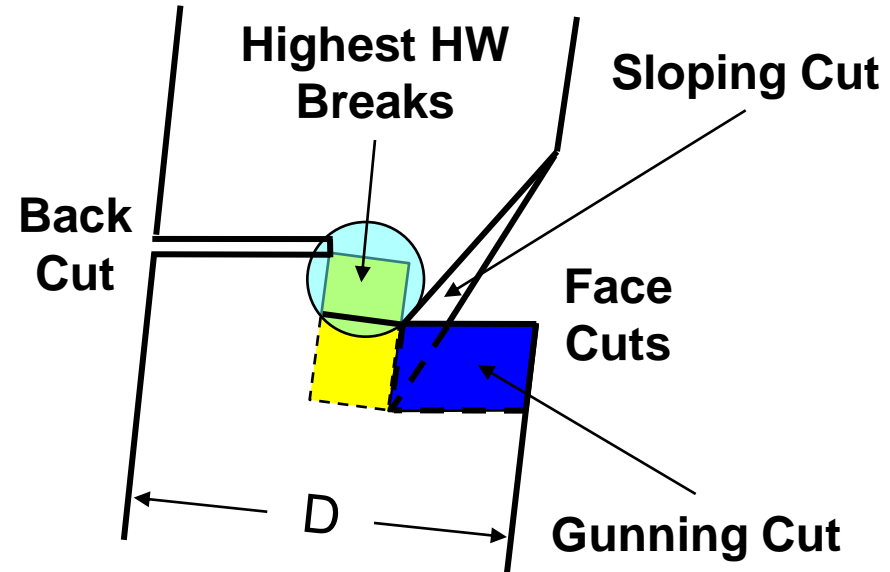
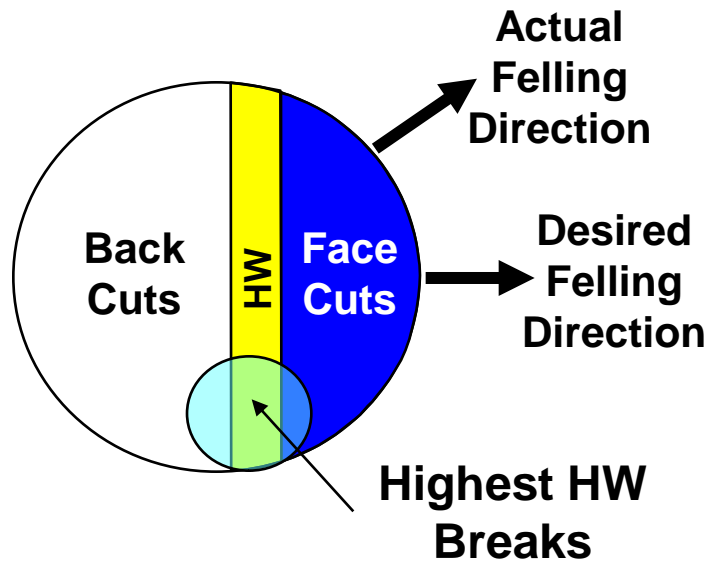


Facing Angle Too Small

- **Face Closes Prematurely**
- **HW Is Broken Or Barber-chair (Very Similar To A Dutchman Cut)**
- **Tree Could Jump Off Of The Stump When HW Is Broken**
- **Loss Of Control Early In The Felling Process**

Vertically Angled Face Cut

(Improper Facing – Felling Direction Altered)

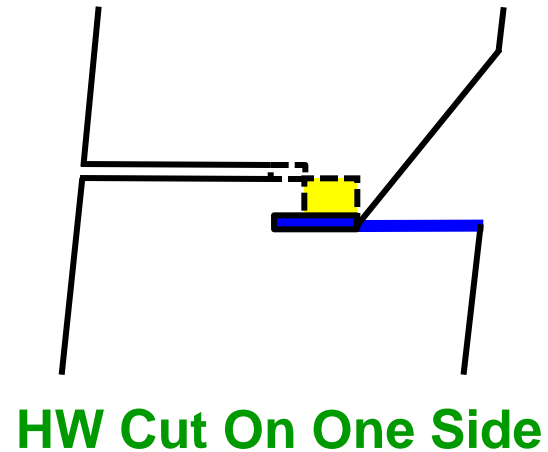
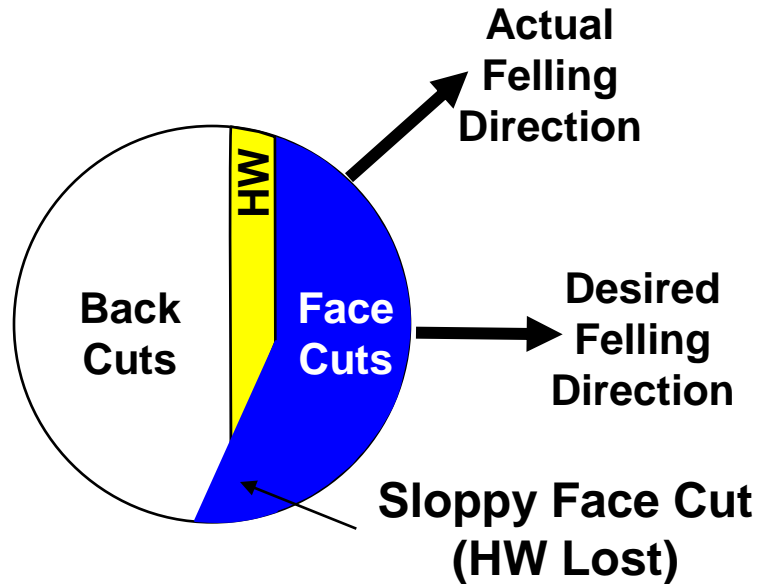


Sloped Face Cuts

- **The Highest Part Of The Face Closes First**
 - Pivots The Tree Toward The Open Part Of The Face
 - The Highest HW Breaks Behind The Closed Faces
- **The HW Behind The Lower Part Of The Face**
 - Continues To Hold
 - Pulls The Tree To The Longer HW
- **Loss Of Felling Control**

Dutchman Cut Only On One Side

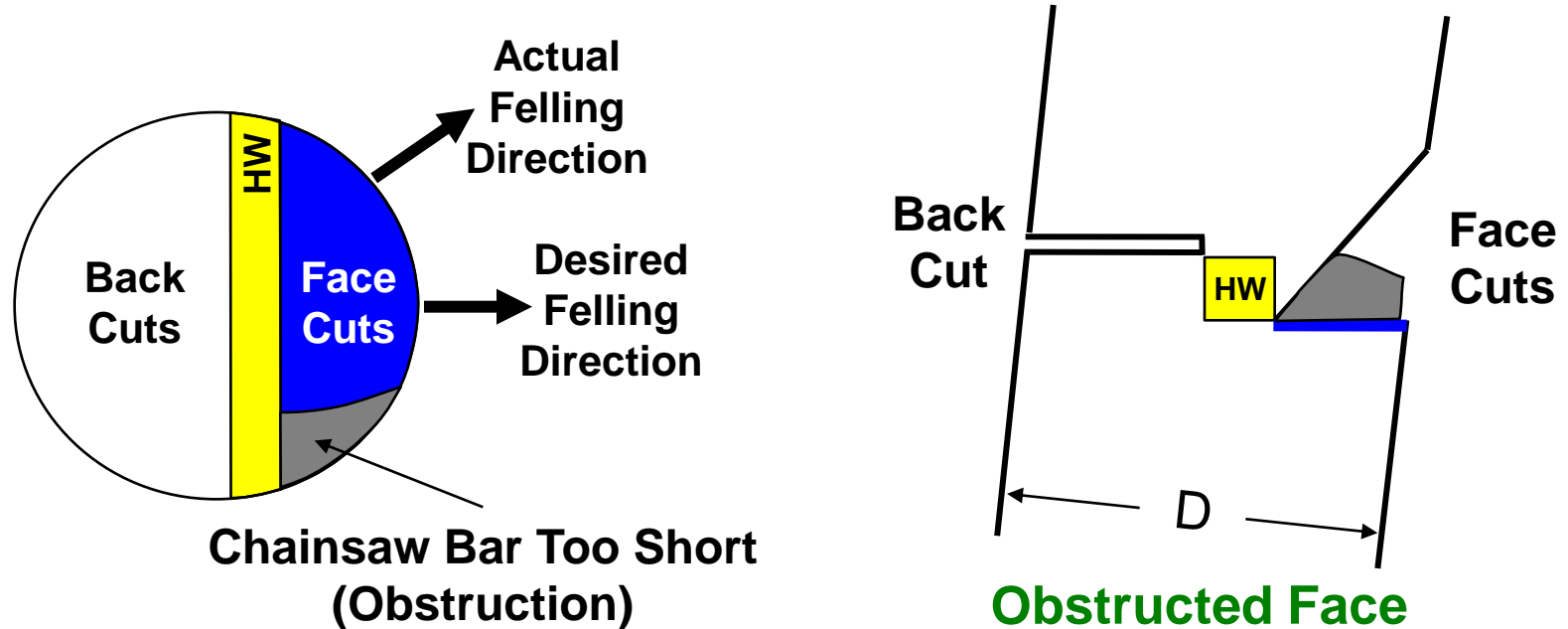
(Improper Facing – Felling Direction Altered)



- Felling Process Unconstrained By The Side Of The Tree With No HW
- The HW Side Of The Tree Secures The Tree To The Stump
 - Pulls (Pivots) The Tree To The HW Side Of The Tree
 - HW Is Eventually Broken When The Face Cuts Close
- Tree Does Not Fall In The Desired Direction (Loss Of Felling Control)
- **Used For Felling Trees In A Direction Different From Natural Lean**
 - Concept Behind Swing Dutchman

Face Not Cleared Out On One Side

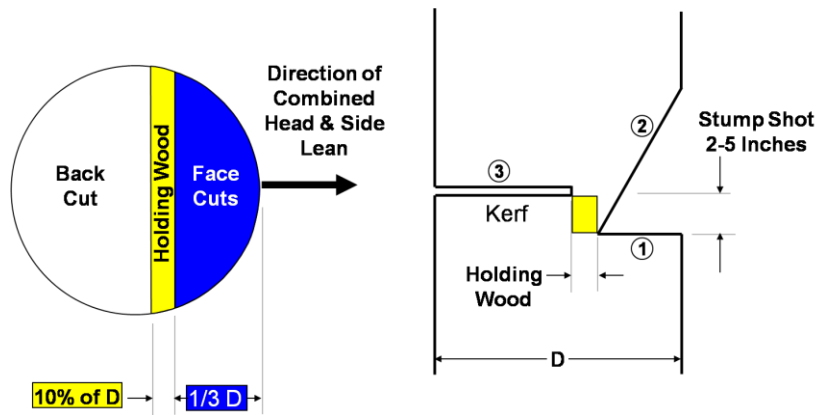
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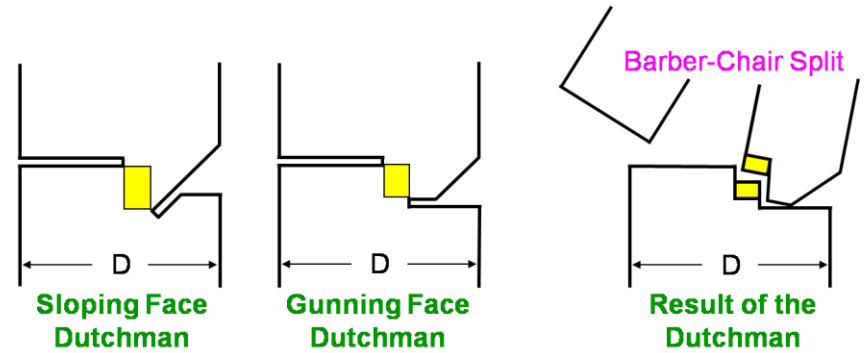
- One Side Of The Face Closes On The Obstruction
- The HW Behind The Obstruction Is Broken
- The HW On The Other Side Of The Tree Pulls The Tree In That Direction
- But Tree Does Not Fall In The Desired Direction (Loss Of Felling Control)
- Used For Felling Trees In A Direction Different Form Natural Lean
 - Concept Behind Step Dutchman

Outline

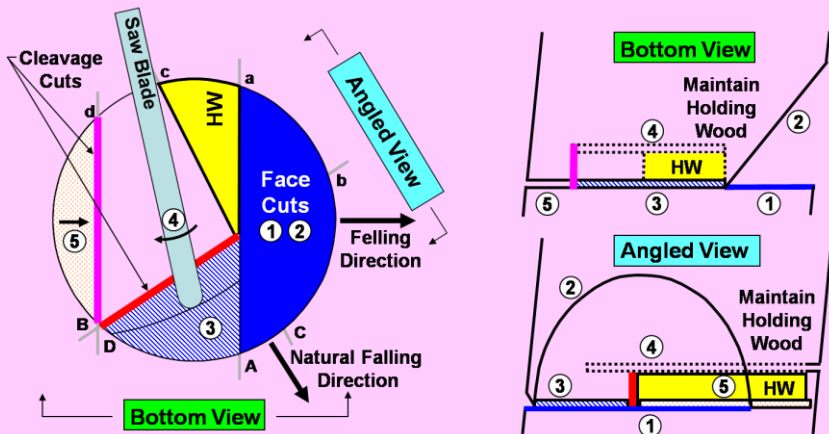
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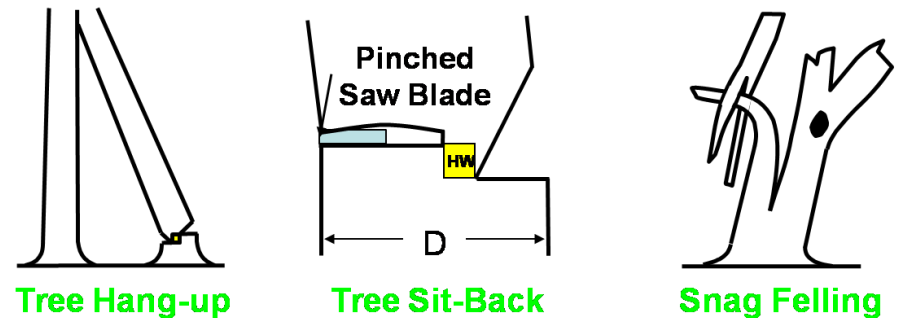
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Felling Trouble Shooting

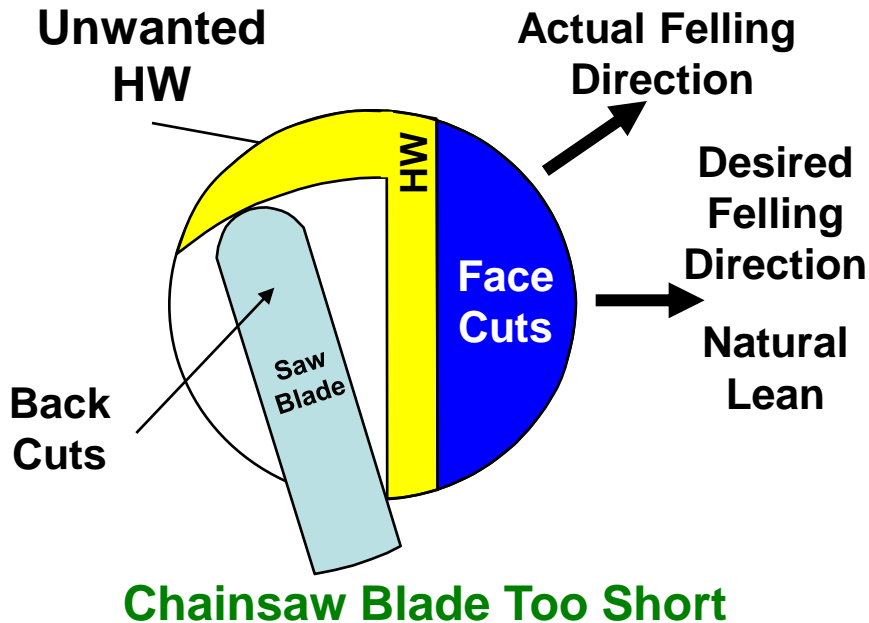


Significance of Tree Diameter

Moderate To Large Diameter Trees

Chainsaw Bar Too Short To Reach Completely Across The Stump

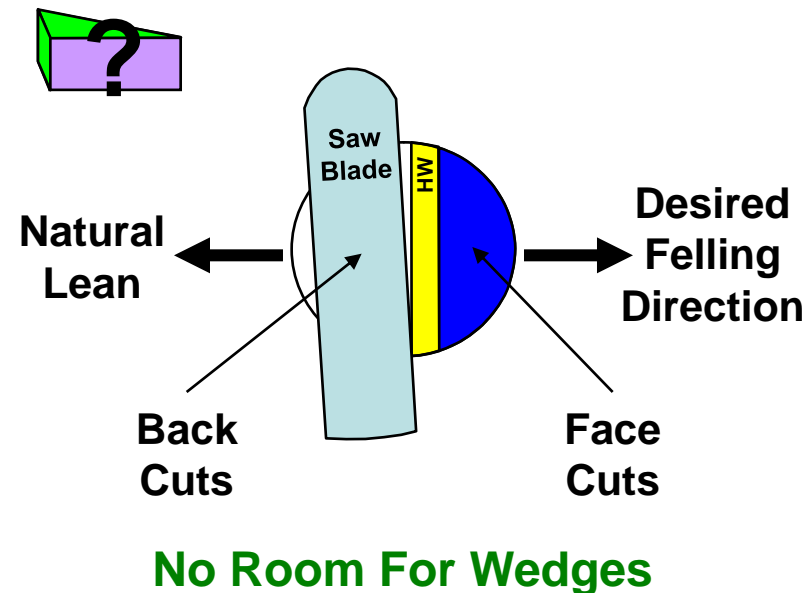
Difficult To Execute Back Cut Fast Enough To Prevent Loss Of Control Or Barber-chair



Small Diameter Trees

Not Enough Room For Chainsaw Bar And Wedges In The Kerf

Difficult To Prevent Sit-back



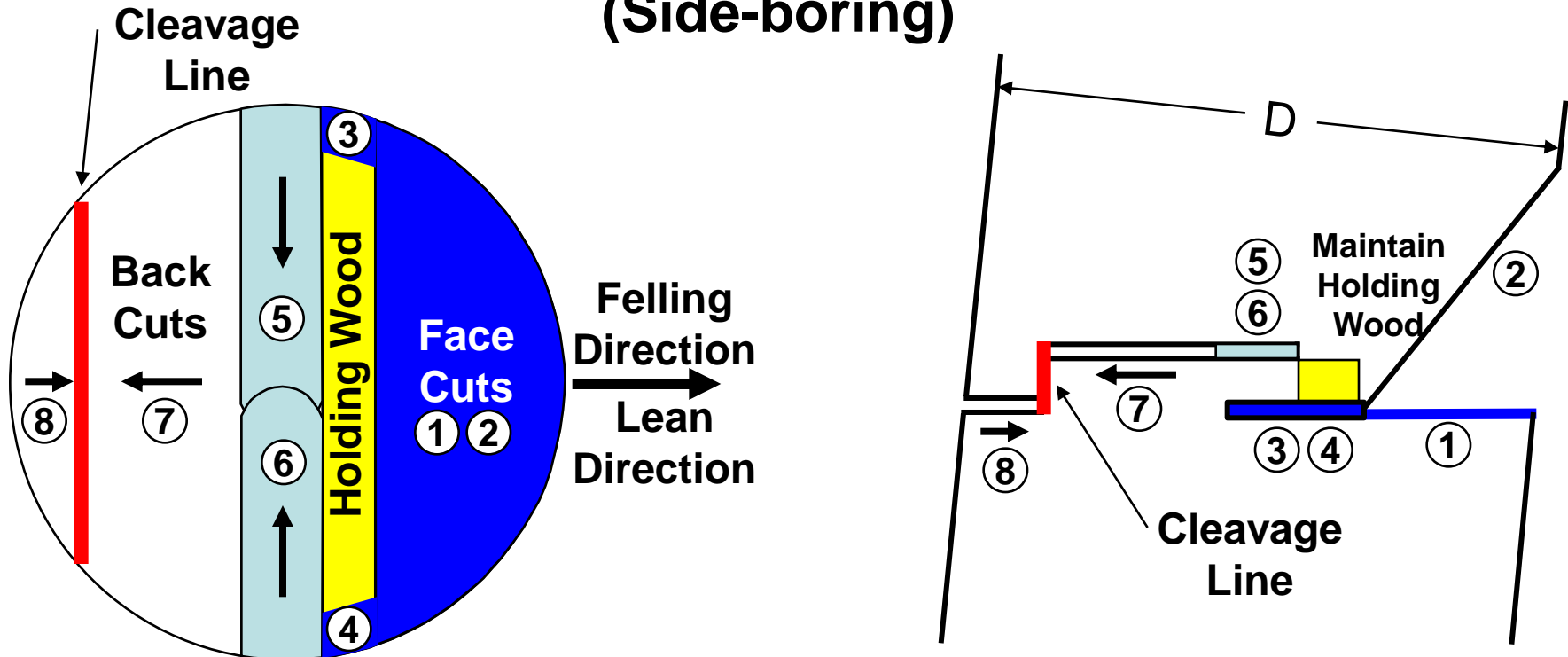
Felling Difficult Trees

(Moderate to Large Diameter)

- **Head Lean Heavy**
 - Side-boring
 - Side-notching
 - Boring The Face
- **Opposite of Head Lean Slight**
 - Lift With Wedges
- **Opposite of Head Lean Heavy**
 - Lift With Jacks & Wedges
- **Head Lean Heavy & Side Lean Slight**
 - Side-boring (Vary Holding Wood Width)
 - Side-notching (Vary Holding Wood Width)
- **Head Lean Heavy & Side Lean Heavy**
 - Swing Dutchman
 - Step Dutchman

Head Lean Heavy

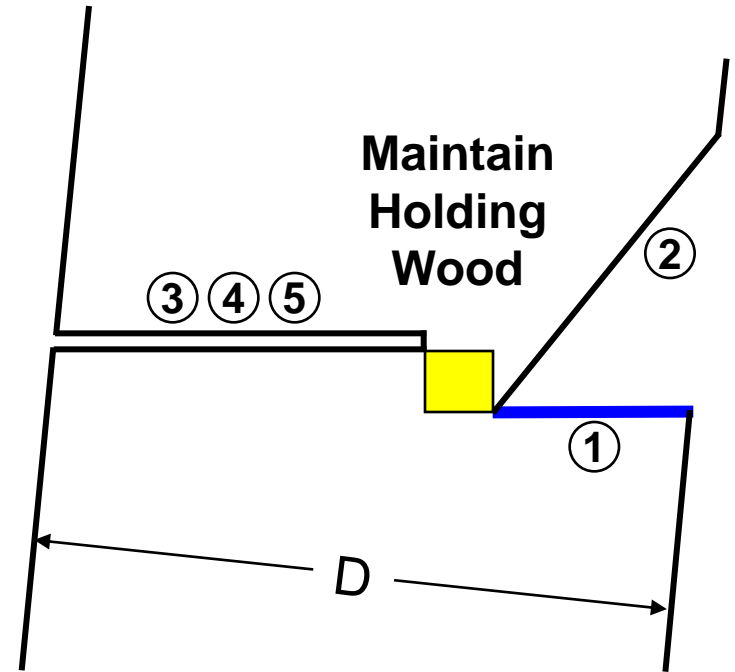
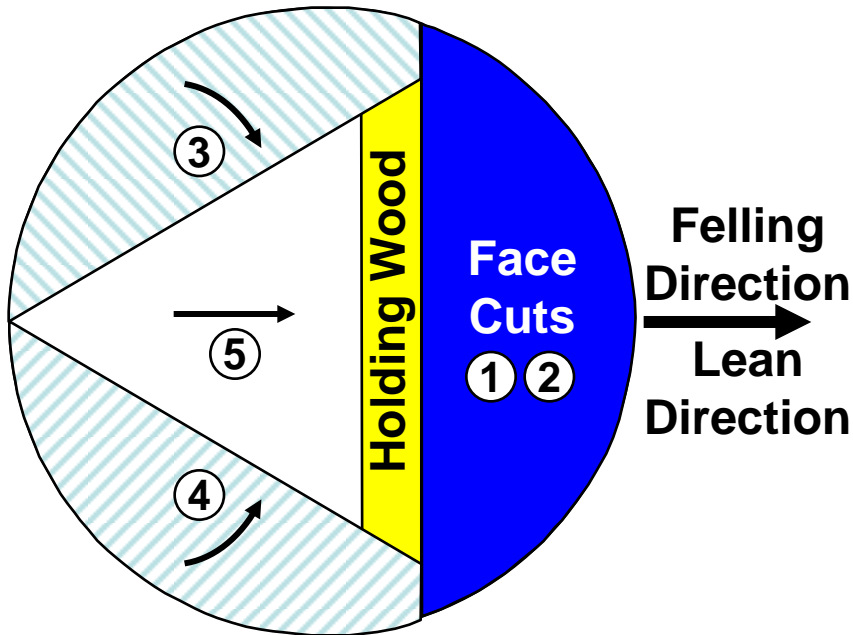
(Side-boring)



- Face The Tree In The Felling Direction (1 & 2)
- Clip Outside Holding Wood On Each Side To Prevent Side Scarring (3 & 4)
- Bar Is Pushed Straight In On Both Sides (5 & 6) (Leave Holding Wood)
- Continue The Back Cut In The Opposite Direction Of The Face (7)
 - Stop The Back Cut Short Of The Tree Falling
 - Remove The Saw Blade Before The Back Wood Is Severed
- The Trigger Cut (8) (Made In The Felling Direction)
 - Releases The Tree To Fall Without Pinching The Saw Blade
 - Allows Sawyer And Saw Blade To Readily Escape The Falling Tree

Head Lean Heavy

(Side-notching)

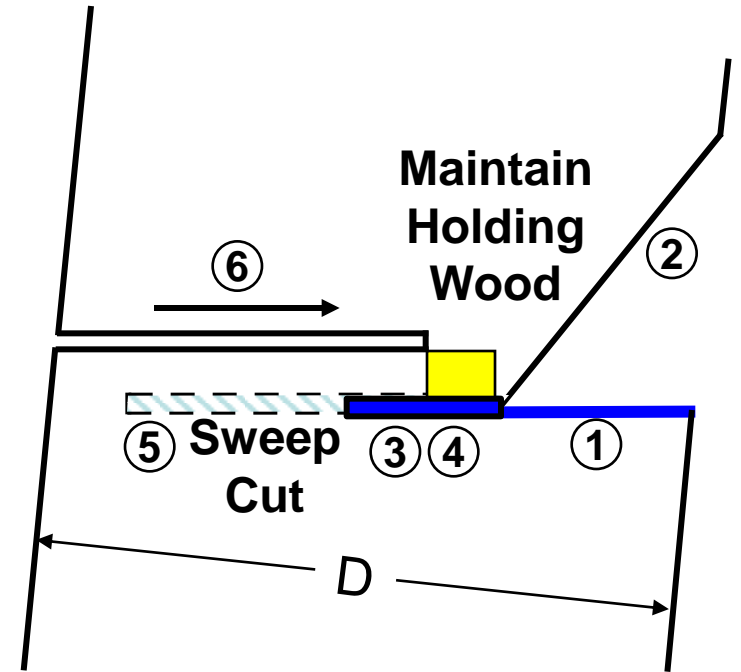
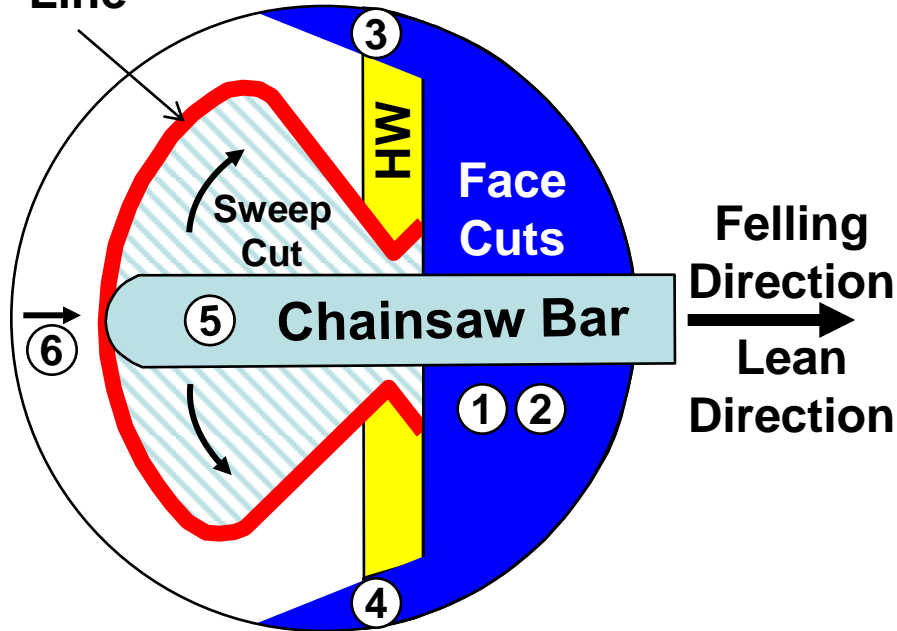


- Face The Tree In The Felling Direction (1 & 2)
- Back Cut Across Each Side (3 & 4)
 - These Cuts Clip The Holding Wood On Each Side
 - Prevent Side Scarring
- Make Final Back Cut In The Felling Direction (5)

Head Lean Heavy

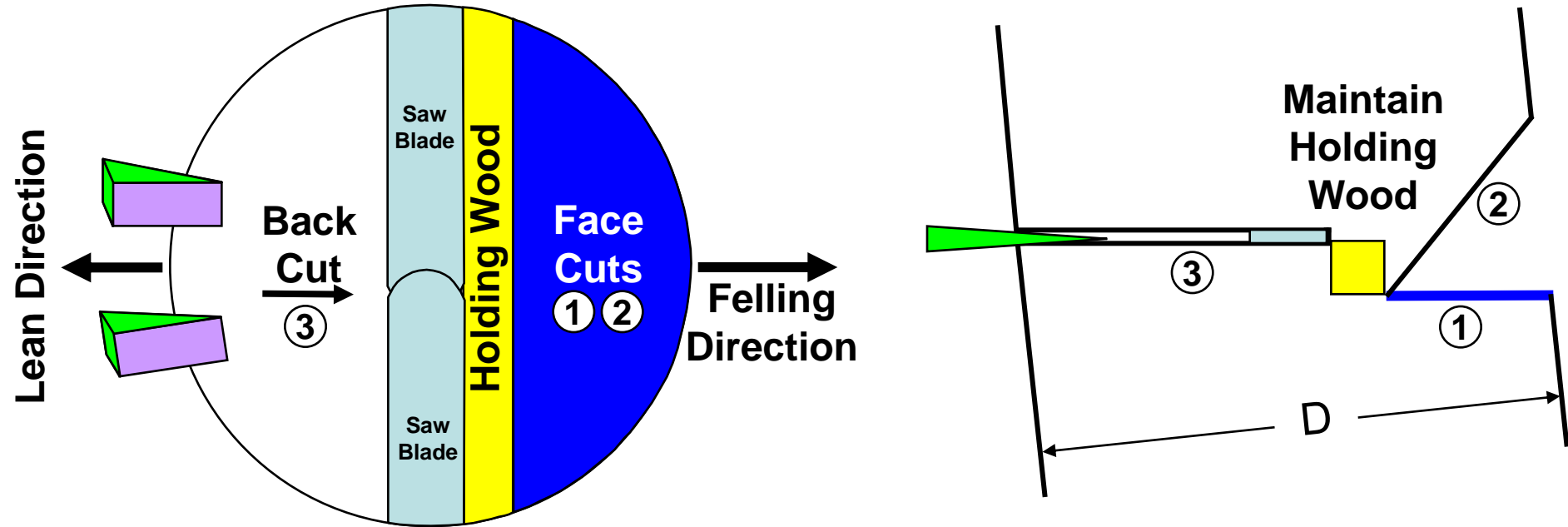
(Boring The Face)

Cleavage
Line



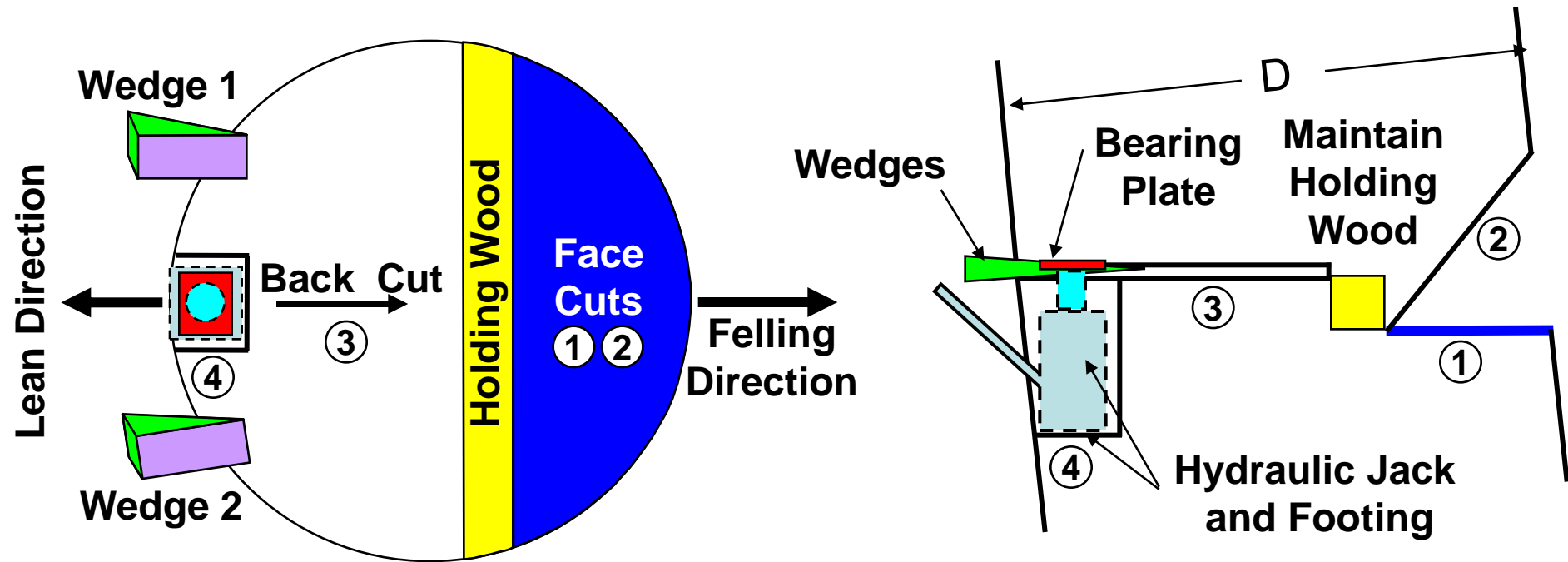
- Face The Tree In The Felling Direction (1 & 2)
- Clip The Holding Wood On Each Side To Prevent Side Scarring (3 & 4)
- Bore The Chainsaw Bar Through The Holding Wood
- Sweep Cut Through The Center Of The Tree (5)
 - Leaving Holding Wood On Each Side
 - Do Not Sweep Too Close To The Back Of The Tree
- Make The Back Cut In The Felling Direction (6)

Opposite of Head Lean Slight



- Face The Tree In The Felling Direction (1 & 2)
- Start The Back Cut (3)
- Insert Two Wedges When Room Is Available
- Remove Bark Around The Wedges To Improve Lifting Efficiency
- Drive Wedges Alternatively Until They Are Tight
- Retighten The Wedges Every 3-6 Inches Of Back Cut
- Continue The Process Until Tree Tips Forward (Do Not Cut Holding Wood)

Opposite of Head Lean Heavy

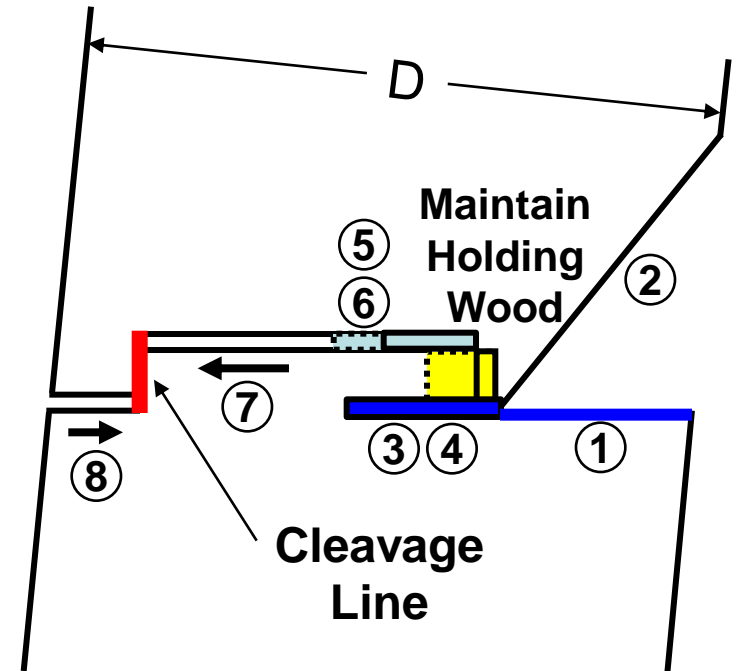
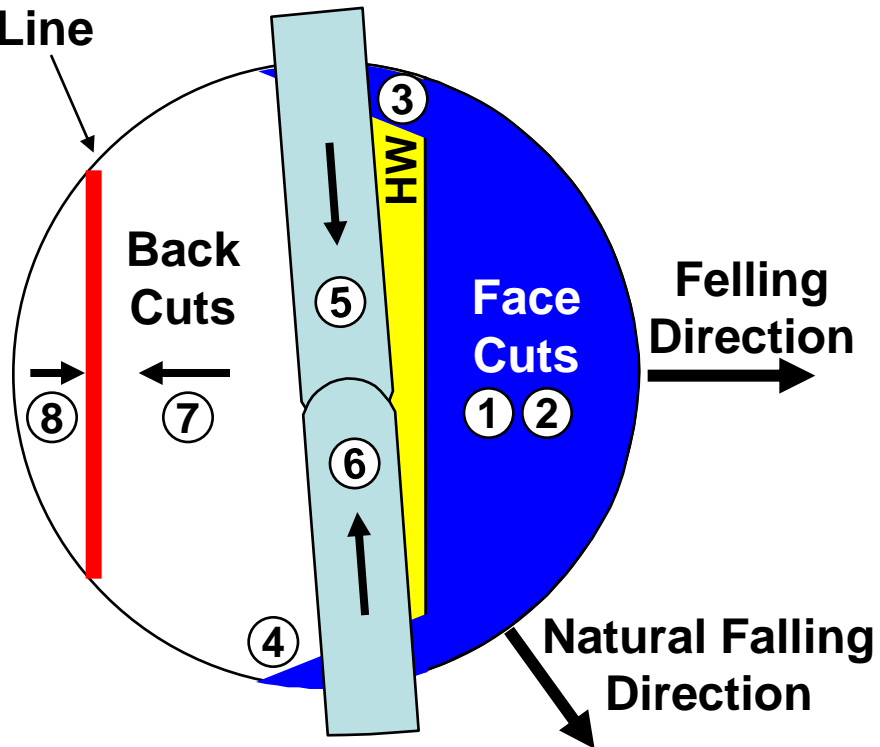


- Face The Tree In The Felling Direction (1 & 2)
- Start The Back Cut (3)
- Cut the Hydraulic Jack Footing (4) (Measure Down From The Back Cut)
- Remove Bark Around The Wedge Locations To Improve Lifting Efficiency
- Insert Hydraulic Jack With Bearing Plate & Two Wedges For Lifting Stability
- Raise The Jack And Retighten The Wedges (Every 3-6 Inches Of Back Cut)
- Multiple Jacks May Be Necessary (Always Use Wedges For Stability)
- Continue The Process Until Tree Tips Forward (Do Not Cut Holding Wood)

Head Lean Heavy & Side Lean Slight

Side-boring (Vary Holding Wood Width)

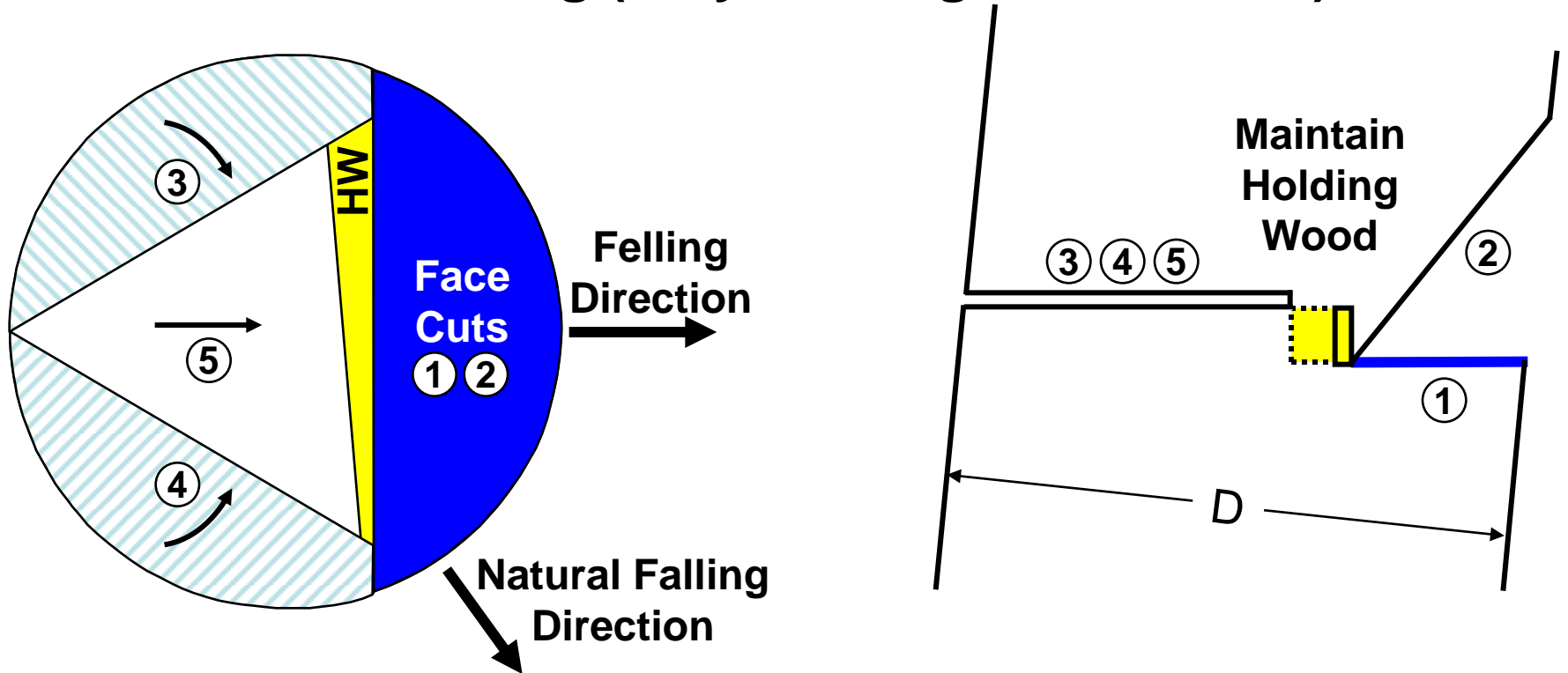
Cleavage
Line



- Face The Tree In The Felling Direction (1 & 2)
- Bar Is Pushed Straight In On Both Sides Leaving The Holding Wood (3 & 4)
- Clip The Holding Wood On Each Side To Prevent Side Scarring (5 & 6)
- Continue The Back Cut In The Opposite Direction Of The Face (7)
 - Stop The Back Cut Short Of The Tree Falling
 - Safer To Remove The Chainsaw Before The Back Wood Is Severed
- The Trigger Cut (8) Releases The Tree To Fall Without Pinching The Saw Blade

Head Lean Heavy & Side Lean Slight

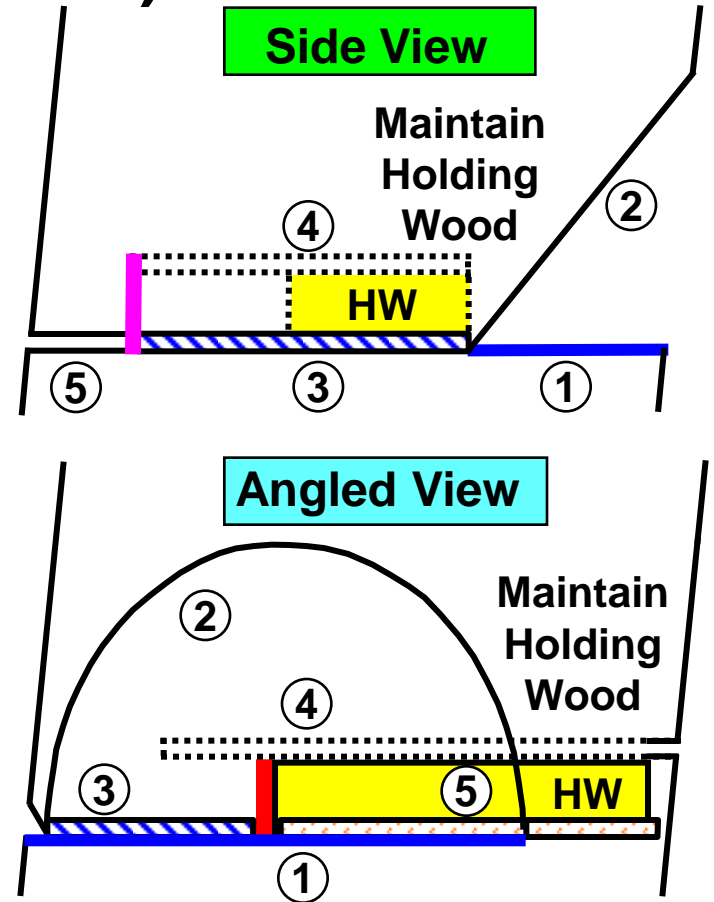
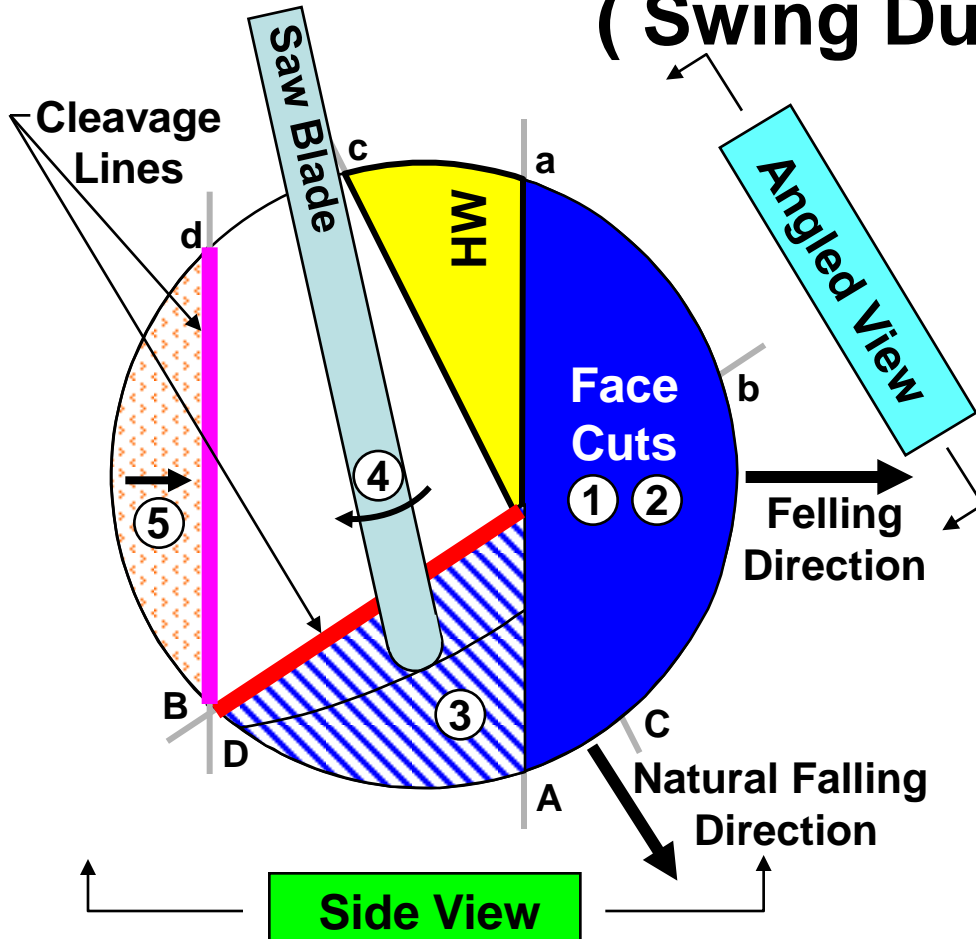
Side-notching (Vary Holding Wood Width)



- Face The Tree In The Felling Direction (1 & 2)
- The Back Cut Consists Of Three Different Cuts
 - One Cut Across Each Side (3 & 4)
 - One Cut Across The Back In The Felling Direction (5)
- Clip The Holding Wood On Each Side To Prevent Side Scarring

Head Lean Heavy & Side Lean Heavy

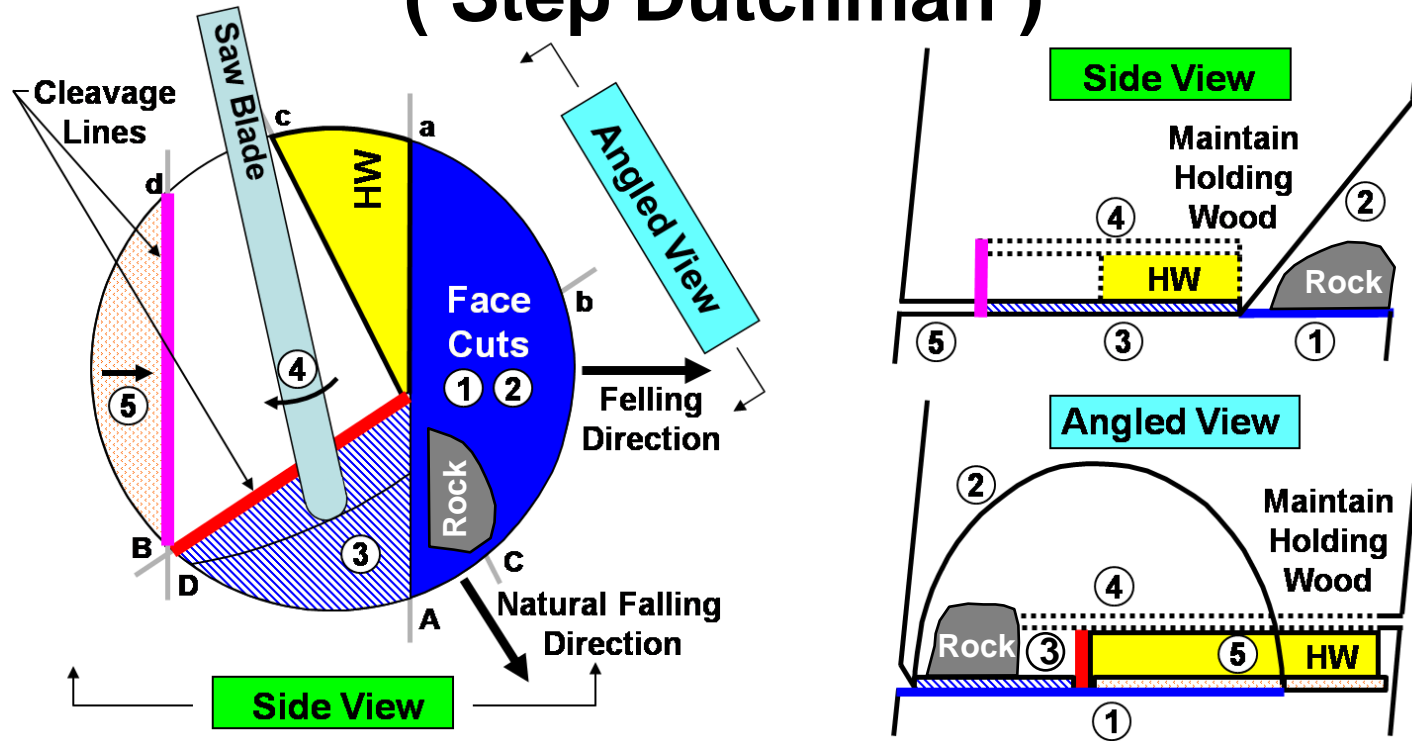
(Swing Dutchman)



- Face The Tree In The Felling Direction (1 & 2)
- The Dutchman Cut (3) Is In The Same Plane As The Horizontal Face Cut (1)
- The Side-boring Back Cut (4) Maintains Holding Wood (HW)
 - Must Extend Across The Cleavage Plane (Minimizes Lean Side Holding Wood)
 - Should Not Extend Completely Across Tree (Lose Stump Shot & Pinch Saw Blade)
- The Trigger Cut (5) Releases The Tree To Fall Without Pinching The Saw Blade

Head Lean Heavy & Side Lean Heavy

(Step Dutchman)



- Face The Tree In The Felling Direction (1 & 2)
- The Dutchman Cut (3) Is In The Same Plane As The Horizontal Face Cut (1)
- Place An Obstruction (Rock Or Block Of Wood) In The Lean Side Of The Face Cut
 - Size The Obstruction Such That Immediately After The Tree Is Committed To The Fall The Sloping Part Of The Face Strikes The Obstruction
- The Side-boring Back Cut (4) Maintains Holding Wood (HW)
 - Must Extend Across The Cleavage Plane (Minimizes Lean Side Holding Wood)
 - Should Not Extend Completely Across Tree (Lose Stump Shot & Pinch Saw Blade)
- The Trigger Cut (5) Releases The Tree To Fall Without Pinching The Saw Blade

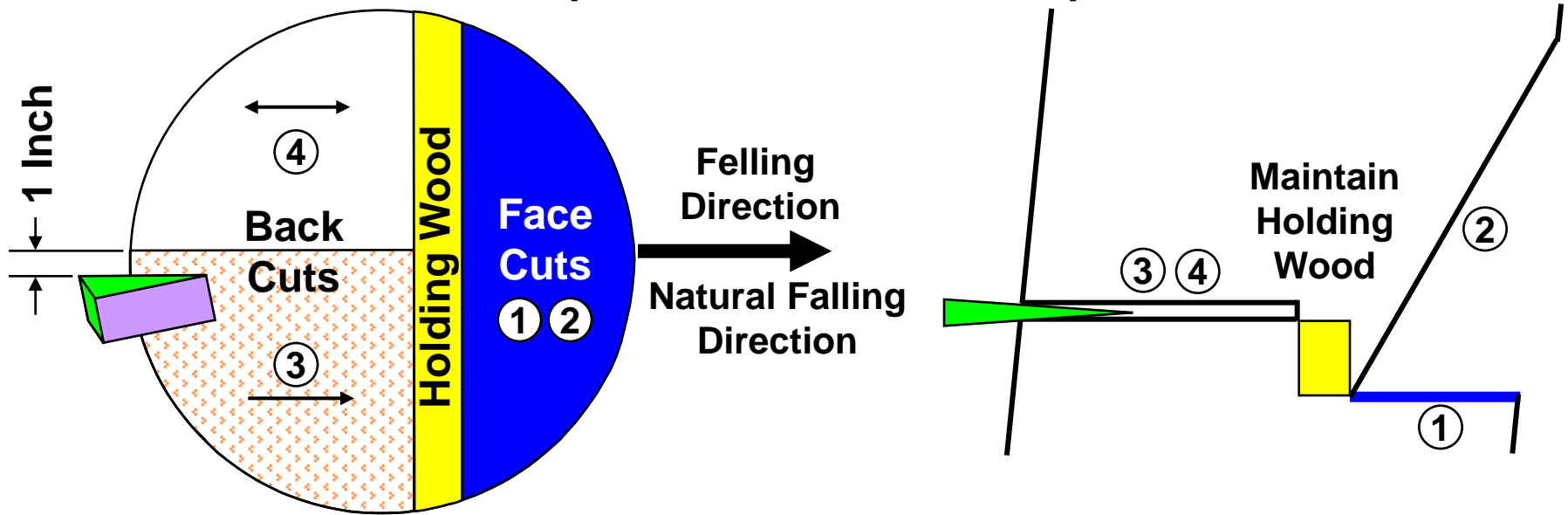
Felling Difficult Trees

(Small Diameter)

- **The Theory Does Not Change**
- **Modify Large Diameter Felling Techniques**
- **Examples**
 - **Head Lean**
 - **Divided Back Cut**
 - **Opposite Head Lean**
 - **Back Cut First**

Head Lean -- Small Diameter Tree

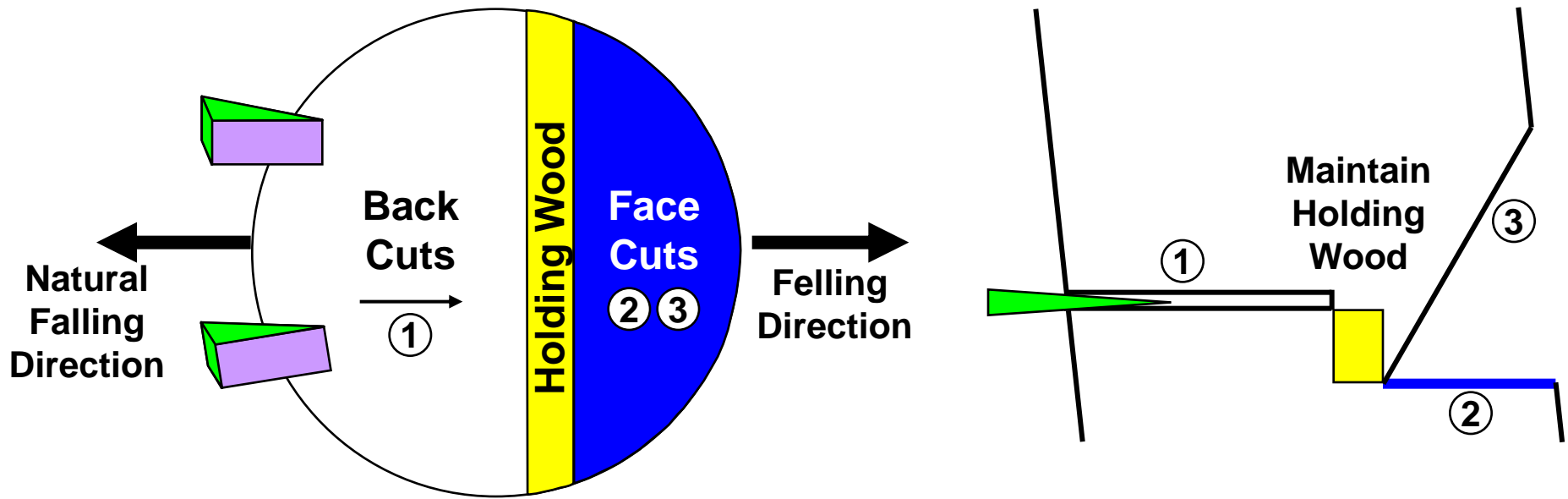
(Divided Back Cut)



- Face The Tree In The Felling Direction (1 & 2)
- Cut Half Of The Total Back Cut (3)
 - Watch Out For Saw Kickback
 - Maintain Holding Wood (HW)
- Place A Small Wedge In The Kerf
 - Located One Inch From The Remaining Back Cut
 - Wedge Will Prevent The Tree From Setting Back (Wind)
- Finish With Back Cut (4) (Watch Out For Saw Kickback And Maintain HW)
 - Head Lean **Slight** – Normal Back Cut (Back Of Tree To HW)
 - Head Lean **Heavy** – Side-boring Back Cut (HW To Back Of Tree)

Opposite Head Lean -- Small Diameter Tree

(Back Cut First)

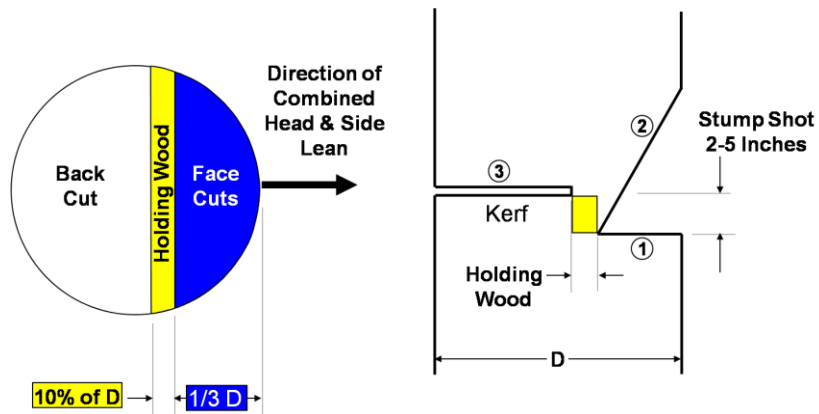


The Order Of The Cuts Is Different, But The Theory Is The Same

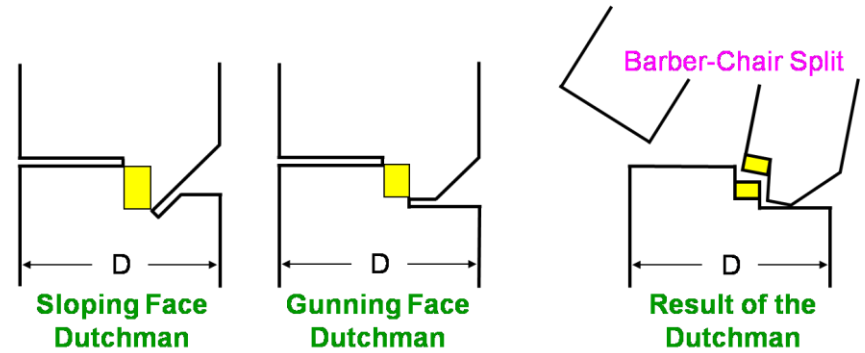
- Complete The Back Cut First (1)
 - Not Enough Space Available For Both The Saw Blade And Wedges
 - Maintain Holding Wood (HW)
- Insert Two Wedges Into The Kerf And Drive Them In Tight
- Complete The Face Cuts (2 & 3)
- Alternately Drive The Wedges Until Enough Lift Is Achieved To Fell The Tree

Outline

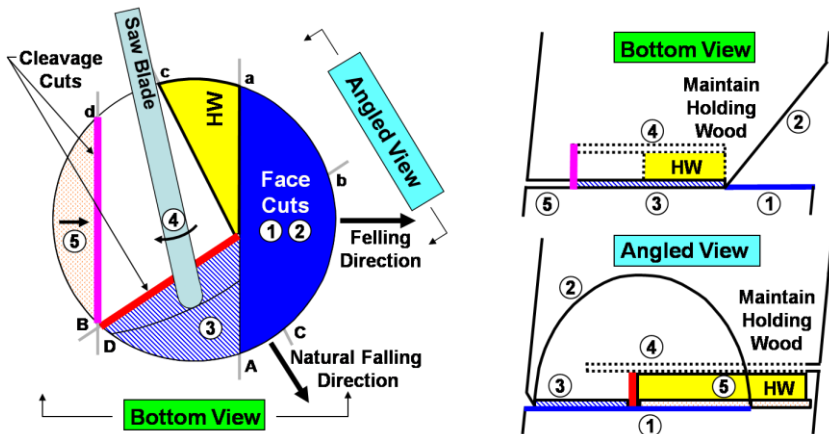
Felling in the Direction of Slight Lean



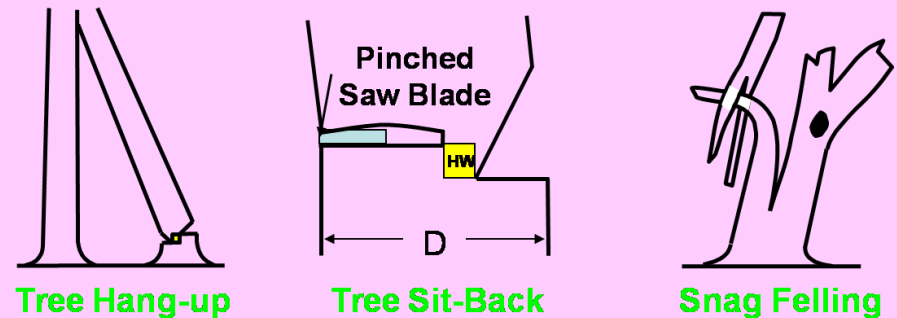
Facing Issues



Felling Difficult Trees



Felling Trouble Shooting



Tell a Felling Story

- **13 Inch Diameter Tree, 70 Feet Tall**
- **Father (47) And Two Sons (23 & 25) – Very Strong**
- **Tree Lean Parallel To House**
- **Felling Parallel To House**
- **Close Enough To Fall On The House (Not Leaning Toward The House)**
- **Tree Sit-back On Chain Saw Bar (Misjudged The Direction Of Lean)**
- **Oldest Son Climbed The Tree And Tied A Rope 20 Feet Up**
- **Both Sons Pulling On Rope – Eventually Freed The Chainsaw**
- **Father Cutting And Two Sons Pulling Ropes – Chainsaw Hung Up Again**
- **Tied The Ropes To The Pickup Truck – Enough To Remove The Chainsaw**
- **Disconnected The Truck From The Ropes**
- **Eventually Started Cutting On The Other Side Of The Tree And The Tree Fell**

Felling Trouble Shooting

Tree Hang-up

- **Falling Tree Hung-up Into A Support Tree**
- **Sawyer Failed To Notice Intertwined Branches**
- **Trees Or Branches Became Bound Together While Falling**

Tree Sit-back

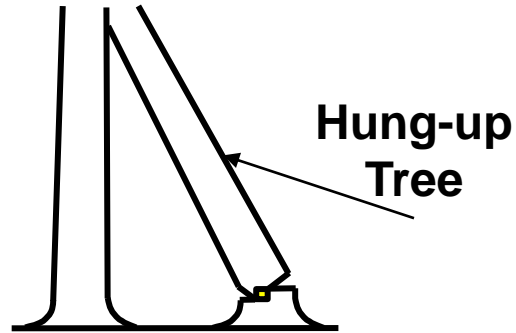
- **Tree Shifts In An Unexpected Direction**
- **Sits Back On The Chain Saw Blade (Pinching The Blade In The Kerf)**
- **Usual Reasons For A Sit-back**
 - **Wind**
 - **Misjudge The Correct Lean Direction**

Snag Felling

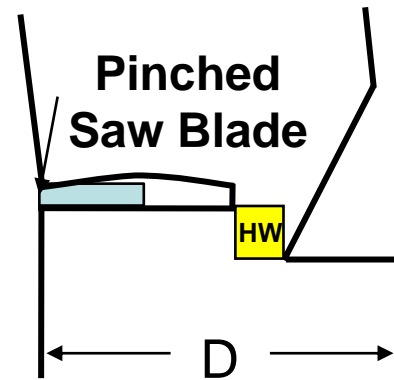
- **Before Attempting To Fell A Tree The Nearby Snags Must Be Felled First**
- **A Snag (Standing Dead Or Dying Tree)**
- **Very Dangerous Situation To The Sawyer**
- **May Fall At Anytime And In Any Direction**

Felling Trouble Shooting

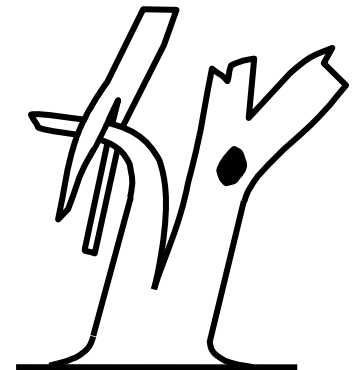
Tree Hang-up



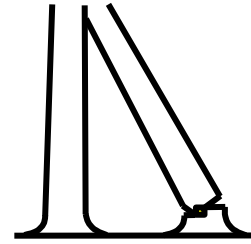
Tree Sit-back



Snag Felling



Tree Hang-up



Falling Tree Gets Hung-up Into A Support Tree

Too Dangerous To Be Near Or Attempt To Fell The Support Tree

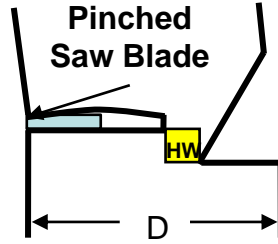
- The Top Of Either Tree Could Break Off And Fall
- A Widow Maker Could Fall (Hanging Dead Limbs)
- The Partially Felled Tree Could Finish Falling
- Support Tree
 - Under High Torque From Weight Of Partially Felled Tree
 - Could Barber-chair Anytime After Being Faced

Solutions Available To Clear The Hang-up

- Identify A Nearby Tree And Fell It Into The Hung-up Tree
 - Technique Called: Using A Driver Tree
 - Use Normal Techniques To Fell The Driver Tree
- Mark The Problem And Leave It
- Get Help (Heavy Equipment, Explosives, Etc.)

Tree Sit-Back

Tree Shifts In An Unexpected Direction



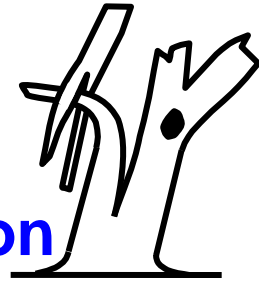
Proper Cutting Techniques Almost Always Eliminate Sit-backs

- Use Wedges At The Earliest Possible Moment During The Back Cut
 - If The Tree Sits Back Wedges Prevent The Bar From Being Pinched
 - Holding Wood Prevents The Tree From Falling Backwards
- If Chain Saw Bar Becomes Pinched (Continue With An Alternate Chain Saw)

Solutions To The Sit-back (Assume Wedges Were Used)

- Attempt To Lift The Tree With Wedges
 - Chop Bark Away From Wedges To Improve Lifting Efficiency
 - Alternate Between Two Or More Wedges To Accelerate The Process
- Use A Driving Tree (Sit-back Tree May Fall In Any Direction)
- Reface The Sit-back Tree In The Direction Of Lean
 - Second Face Located
 - One Tree Diameter Above The First Face
 - In The Direction Of Lean
 - Only Fell A Sit-back In The Direction Of Lean
- Mark The Problem And Leave It
- Get Help (Heavy Equipment, Explosives, Etc.)

Snag Felling



A Snag May Fall At Anytime And In Any Direction

Snag Felling Procedure (Assume Unstable With Rotten Wood)

- Swamp Out Underneath
- Look For Widow-makers Above
- Bore A Hole With Cordless Drill Or Chainsaw
- **No Chopping** (Attempt To Remove The Bark By Prying)
 - Vibrations May Cause A Bark Slide
 - Snag May Break Anywhere Along Its Length
- Only Face A Snag In The Lean Direction
 - Face Cut Should Be Deeper And More Open Than Usual
 - Confirm The Face Is Fully Cleaned Out
- Back Cut Considerations
 - Side-boring Or Side-notching Are The Most Gentle
 - **Never Attempt To Lift A Snag With Wedges In The Back Cut**
- Quickly Follow Prearranged Escape Path When The Snag Starts To Fall



Other Snag Felling Considerations

- Use A Driver Tree
- Never Attempt To Reface A Snag
- Get Help (Heavy Equipment, Explosives, Etc.)

Conclusions

- **Always Be Willing And Able To Walk Away After Assessing The Tree's Lean, Quality Of Holding Wood, Felling Difficulty, And Risk To People Or Property**
- **Perform A Post Mortem On The Stump Of Each Felled Tree To Evaluate What Went Right And What Went Wrong**
- **Choose A Back Cut Type Consistent With The Length And Width Of The Chainsaw Bar**
- **Mark Up The Tree In Accordance With Lean And Falling Direction Like An Artist Marks Up A Canvas Before Painting**
- **Through Understanding Of The Principles Associated With Holding Wood, Stump Shot, And Types Of Back Cuts Allow On The Fly Cutting Modifications For Additional Constraints**

References

Dent, Douglas D., Professional Timber Falling (A Procedural Approach), 1974

<http://www.osha.gov/SLTC/etools/logging/mainpage.html>

National Wildfire Coordinating Group, Wildland Fire Chain Saws (S-212), 2004