The Big Book of the Scythe

Part One – Practical User Guidelines

"If we had written this book a year ago, it would have ended up very different than it is unfolding now – and so it would be a year from now, the next year, and so on. That is the nature of the subject. Even as we work on this text, we're continually adding or changing things. These modifications could probably go on indefinitely, until we eventually print, what will ultimately be, the notes of an unfinished learning process."
– Steven Edholm and Tamara Wilder, Buckskin

Table of Contents

Foreword

With a little reflection it's probably no surprise that there have been very few detailed books available on the topic of the scythe. I can go to my grandfather's bookshelf and find books on tempering steel, animal husbandry, grafting, and so on, most probably because these activities were booming as printing presses made knowledge easily shareable. Not so with the scythe: with the Industrial Revolution and increased mechanisation leading to the easy creation and distribution of print, tools such as the scythe became outmoded by that very same mechanisation. Combined with the fact that the scythe has been used for thousands of years by illiterate people who learnt by watching, listening, and doing, the tool has probably never been a good candidate for a voluminous instructional work. Perhaps it's merely an artefact of postmodernism that the scythe is now enjoying a comeback in the information age, although there's reason to hope that the scythe 'renaissance' is more deeply rooted in a genuine recognition that something has to change; I don't think people are buying scythes for hipster value.

In an obscure field it's easy to become an expert, especially if there are few books already written on that topic. Indeed, there have been some rather 'interesting' statements about scythes made in print over recent years, even in works that are otherwise exceptionally useful.

This particular book has been written to add some depth and correction to the guidance currently available. It's not the easiest read available on the topic, but it tackles some critical areas where others have had little to say, and it comes from the members of the Vido family, who have made exceptional efforts to learn more about the tool on which they have come to rely. In typical Vido family fashion, it's offered free of charge.

Peter Vido rejects the scything 'expert' label because, like all experts, he recognises the ongoing processes of trial and error and continuing education and discovery, as well as the fact that there are other individuals on the planet who each know more about certain aspects of scythe-related topics than he does. Between them, such individuals would hold a collective wealth of information, possibly more than any one individual could reasonably hope to retain. He also acknowledges the 'simple' but deep, intuitive knowledge that a great many mowers who have gone before – whose existences genuinely depended on being able to use and maintain the tool – have attained over lifetimes of becoming one with their scythes.

Nonetheless, Peter *has* tried to tap into that knowledge, and his efforts and successes have been well-recognised. For nearly two decades he has travelled extensively – twenty-seven trips (and counting) to Europe from his Canadian home – to learn more about the tool's production and use. He has discussed enhancements in production with most of the world's handful of remaining blade factories (including having made a home-away-from-home on the grounds of one of those factories), he has consulted on new design development, inspired and co-organized transatlantic landmark events in the scything movement and, along with his brother Alexander, daughter Ashley and wife Faye, he continues (free of charge) to assist and liaise between fledgling scythe movements in developing countries and scythe factories, to promote appropriate 'technology' in agriculture – including making self-funded trips to Asia and Latin America to introduce the tool.

Years ago, Peter, his son Kai, and wife Faye, wrote the addendum to the only scything book available in English at the time and, with his family's help (despite them being otherwise off-grid homesteaders who take self-sufficiency to the point of lighting their home with their own beeswax and tallow candles), wrestled with the interwebs to create the single most comprehensive source of online information available on scythe matters, to fill the void he couldn't bear to see.

Scythes do seem to attract certain kinds of people, including the kind who are interested in them in the same way as someone might be interested in model trains. But Peter isn't one of those people. Rather, his 45 years' of farming experience has helped him appreciate the importance of effective tools, and the scythe quickly proved its worth. His subsequent dogged pursuit of information and drive for improvement has already left a legacy: anyone who buys a scythe at a Western retail outlet today is likely to have benefited from his expertise, whether they've ever heard of him or not, such has been his influence on the tools and techniques related to the art of scything.

Of course, one of the problems of being the leading proponent in an obscure field is that you can't find a more well-recognised expert to write your foreword for you. So he asked me instead. I first crossed paths with Peter when I sent him a link to a suitably self-deprecating website I'd built for our fledgling local community scything group. Many long phone calls ensued. It was during one of those calls that he first suggested starting a local retail scythe outlet here in Tasmania and, seven years later, I'm nearly ready to forgive him. Over that time my appreciation of his encyclopedia-like knowledge of this tool has only grown as I've learnt more about it myself, and I've personally posed scythe-related questions that have attracted tumbleweeds on online forums of mowers, wholesalers, retailers, and mowing instructors, but have, when posed to Peter, been answered more comprehensively than could reasonably be expected.

In discussion, Peter calls a spade a spade, but he also calls a shovel a shovel, because a spade is a different tool to a shovel, and Peter – unlike the person who coined that ridiculous expression – knows the difference between a spade and a shovel, and he'll let you know that there's a difference, what it is, why they're made differently, what effects those differences have in use, and why you therefore should stop calling a shovel a spade. He'll also challenge you to correct him, and will happily stand corrected in the face of good evidence (or so he keeps telling me). Indeed, he'll even correct himself without being challenged, as you'll find in these pages, where he openly revises the instructions he issued in past work.

Because that's what experts do.

Marshall Roberts, April 2018.

Introduction

A brief profile for those new to the subject:

From years of experience with this potentially extremely efficient tool, we can state that given a good version of the scythe with a blade of at least 75 centimeters in length, a person of less than average strength, but *adequately competent in edge maintenance*, can cut a quarter of a hectare (about ½ an acre) in approximately 4 hours.

Please note that this very general estimate applies to a stand of non-woody vegetation that is not overly trampled or laid down by storms, with a ground surface free of loose or embedded rocks, large clumps of earth, and leftover stubs of woody plants previously cut by some other hand tool (axe, machete) or a machine (brush cutter, rotary mower). The scythe can, however, be effectively used in situations with any or all of these disadvantages; it will merely be correspondingly slower.

We also want to emphasize that children – provided with adequate instructions and an appropriate version of the tool – are physically capable of mowing well and often take great satisfaction in it. With a custom-fit snath and a well-peened, light blade, mowing can be significantly less strenuous than playing vigorous sports like soccer.

Keep in mind, however, that the difference in performance between a well-designed, well-fitted and well-maintained scythe, and poor versions thereof, can amount to **several times** the effort required to cut the equivalent area. A good scythe is not necessarily an expensive one. Some of the options for maintaining it, or alternatives for making better-fitting and more ergonomic snaths than can readily be bought, have not been broadly communicated. As a consequence a significant amount of unrealized potential remains. [1]

The information communicated in these pages comprises a mix of the old mowers' knowledge interwoven with the results of empirical trials by Peter Vido and friends. It includes elements of various traditions but abides by the strict dictates of none. Traditions, we feel, can be a double-edged sword – with one edge keeping at bay the forces of development that

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[1] Paradoxically, budding mowers over much of the globe presently turn to the Internet hoping to obtain 'all' needed information. If arrows were provided pointing only to the worthwhile sources, this approach could bear good fruit. Alas, that is hardly the case.
A smaller portion of serious enthusiasts reach for books, only to find (but possibly not realize) that – *on this subject* – ALL of them are incomplete (including this one). Direct access to one of the new generation of hands-on instructors is a relative luxury of only a few novices; besides, most of the teachers still have a whole lot to learn…
It is also a fact that many blades, though they may be nearly "razor sharp" (to use a popular but silly cliché) when purchased along with their "ergonomic" snaths, perform rather poorly, simply due to the lack of a harmonious fit or suitability *for certain applications*. Consequently, a portion of even the best of them ends up being used very little or the experience is discouraging. If, on the other hand, the relevant concepts were broadly understood, a serious 'scythe revolution' could perhaps be *already* taking place…

would all too quickly erase regional identity (this being the worthy attribute of traditions) and the other edge *facing* the culture which continues to wield it somewhat stubbornly and awkwardly – thereby preventing useful (albeit careful) improvements that could actually *help in preserving it.* And, to preserve “scythe culture” is obviously the intent of these guidelines.

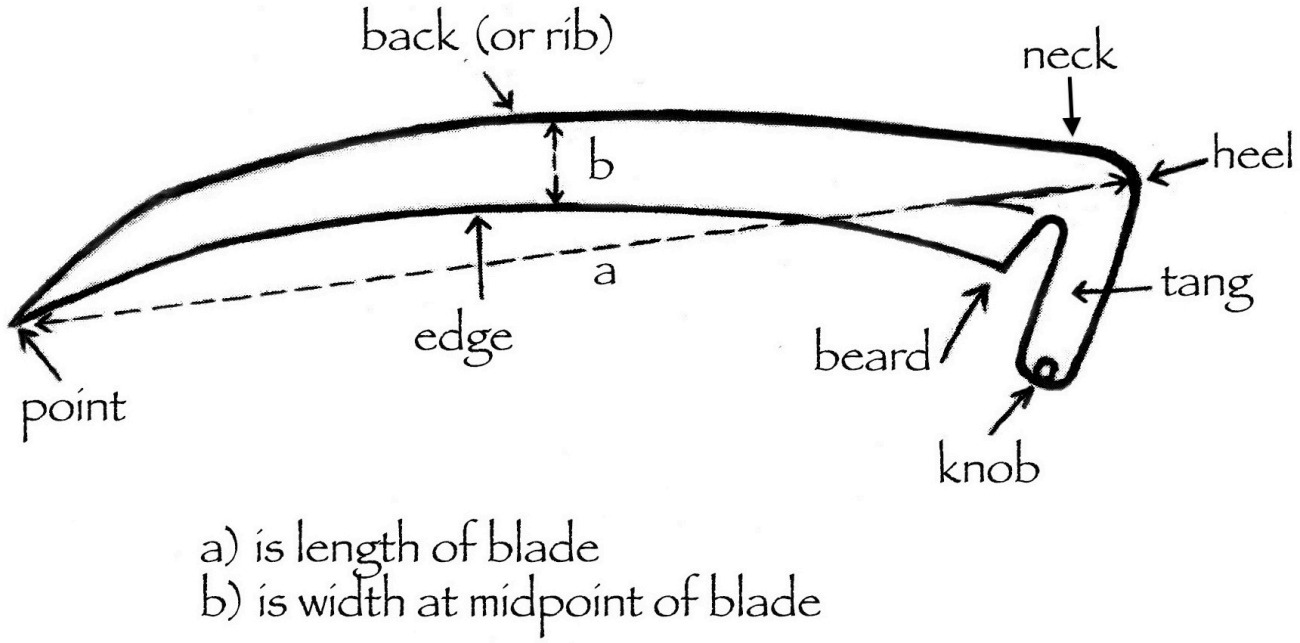
Although considerable in-field evaluations of the outlined methods by experienced mowers from geographically diverse regions give us confidence in their merit, we continue to learn and – as expressed in the opening quote from Buckskin – *do not wish the text below to be perceived as any sort of “final word” on the topic.*

Still, we hope that individuals with prior experience, and especially those considering teaching others, will put to the test some of our unconventional ‘twists on tradition’. These include:

1. The suggested edge preparation *prior* to the initial peening of a **new** blade, as well as afterwards – on **all** blades – especially if peening is performed by means of the common jig
2. Use of the “sanding block” as an aid to freehand peening
3. The use of a loupe/magnifier to periodically examine the condition of the edge
4. Shoulder-powered (as well as both more ‘pulling’ and somewhat diagonal) strikes of the peening hammer during freehand peening
5. While repairing damaged edges, filing off a considerably wider area to both sides of a damage’s center than has been the norm in guidelines written to date
6. The mowing movement propelled by the 'sideways shift', that is, rhythmic rocking from the right leg to the left and back, along with *breathing deeply in synchrony with the alternating strokes of the blade*

Chapter 1. Clarification of Terms – as used in these guidelines

Figure 1. Scythe blade nomenclature



All references in this text concerning direction (left/right) or the use of left or right hands assume the use of ***right-handed*** scythes, which are far more common, and in most countries, the only ones known.

References to the "top/topside" or the "underside" of the blade are in respect to the blade's position while in use.

Measurements are indicated in the metric system, which a larger proportion of the world normally uses. Initially we began using also Imperial equivalents of each measure, but it cluttered the text and felt awkward to do it accurately; it will be especially so in Part 2 where we intend to discuss geometry of edges in terms of fractions of mm. Although many citizens of the USA are unfamiliar with the metric system, they generally have computers and conversion tables at their fingertips, and we trust that they will convert at least the numbers that matter to each of them.

- Mower: a person who uses the scythe. "Scyther" is another term with the same meaning, and one that has in recent years been taken up by the English-speaking scythe users, possibly because nowadays the word "mower" automatically brings to mind an image of a motorized lawnmower. To the draft animal enthusiasts "mower"

means a non-motorized (“ground-driven”) piece of farm equipment pulled by horses, mules, donkeys, or oxen, whereas a modern conventional farmer knows the “mower” as something he pulls behind a tractor in order to cut the hayfields.
To accurately keep up with the times can be a complicated matter, but in this case we stick to the term that has been around since before any alternative for the scythe was even conceived.

- Mowing: The act of cutting grass, small grains, and other herbaceous plants, with the scythe. Also referred to as “scything” (by “scythers”).
- Scythe: the complete tool – a blade, snath and attachment hardware.
- Snath: the handle, traditionally made of wood. Versions made of steel, aluminum alloy, or fiberglass are also available (most of them, in our view, of poor design).
- Grip(s): the part of snath attached to the main shaft, held in the hand(s) to facilitate better control and more comfort.
- Ring: a steel band with specialty “set screws” or an auxiliary wedge; the most common of the various means of attaching a blade to a snath.
- Point (of the blade): its outermost left portion, while in use.
- Beard (of the blade): the innermost (right hand) section of blade’s body. The beard also has a point (‘point of the beard’) – which is the section of the edge closest to the tang.
- Belly (of the blade): the mid-portion of its underside
- Edge: the cutting side of a blade
- Apex: outermost portion of the edge, the point where the bevels from top and bottom intersect.
- Primary bevel: the area of the blade extending from the apex approximately 3 to 5mm into the blade’s body, initially formed in a factory (to a widely differing level of refinement!).
- Secondary (or “micro”) bevel: the zone of the bevel closest to the apex and usually within less than 1mm of it. The micro bevel is *always* steeper than the primary bevel, always more temporary, and there is often one of these on each side of the edge.
- Burr: A thin residue of steel created during the process of sharpening but still partially attached to the edge. It is usually bent *away from* the side to which a sharpening tool (grindstone, file, whetstone) was applied last. Other sources sometimes refer to this as a “feather edge” or “wire edge”.
- Peening: cold shaping of a blade's edge; performed either with a hammer and anvil, or various specialty devices generally referred to as “peening jigs”.
- Strike: one hit with the peening hammer.
- Whetstone (or simply “stone”): natural or synthetic abrasive, used for the final step of sharpening.
- Honing / Whetting: Both refer to the re-conditioning of the edge at relatively frequent intervals during work in the field. With reference to scythes specifically, the term “whetting” is more traditional, but we use “honing” more often.

- Sharp / Keen: cuts with ease; an edge that is appropriately beveled *and* well honed.
- Stroke: A movement with the scythe during mowing. “Stroke” is sometimes also used in reference to honing and peening; for example, a series of strokes with the whetstone, or strokes of the hammer while peening.
- Advance / Forward Bite: the distance the blade (and the person) advances with each completed set of (two) strokes – the cutting stroke and the return stroke.
- Swath: the variously wide, already-cut strip through the field resulting from the progression of strokes.
- Windrow: the ‘row’ of cut material accumulating at the left side of the swath.
- (Knob’s) “seat”, or “hole” – is a place near the bottom of the snath where the tang’s knob is anchored. We use both “seat” and “hole” – somewhat in the manner of “honing” and/or “whetting”.
- The “Haft”, “Lay” and “Horizontal Balance” (of the blade) – these three crucial concepts with regard to the fine-tuning of scythes will be discussed in the appropriate sections below.
- HRc is an acronym used to indicate blade’s hardness on the “c” scale of the Rockwell hardness testing system.

Showing the snaths without grips in some diagrams is a deliberate attempt to NOT imply that the grips must be positioned in a certain way or that two grips on the snath are necessary. In principle, these guidelines apply to most, if not all, patterns of blades and styles of snaths.

Dogmatic adherence to the measurements/sizes (in millimeters, centimeters or grams) provided here is not recommended; ALL of them are approximate guidelines, not rules.

Variations of edge maintenance, blade adjustment and the mowing movement itself that we do not specifically advocate (and therefore are not presented in this manual) have nevertheless produced satisfactory results for centuries. We encourage readers to compare them ‘in the field’ with the suggestions contained herein; if significant improvements are perceived, they can be presented in forthcoming Part 2 by their respective advocates and/or the initial Part 1 corrected.

It was only during the final stage of working on this manuscript that we decided to tackle additional aspects of two or three subtopics, initially intended to be addressed in Part 2. In doing so, we were moved to address some discrepancies within the easily accessible collection of written scythe information. Consequently, considerably more words were added to this manuscript’s total – perhaps unwelcomed by some readers, though hopefully found to be useful to others. To partially alleviate the possible “information overload”, a portion of the pertinent material is included in the form of notes, which, for serious students, especially those who wish to disseminate scythe information further afield, we consider somewhat important.

Below is a list of books on the subject published during the past four decades in either English or German languages, plus a 15-page self printed booklet by B. Anderson. We refer to them mainly in notes of three different chapters, and occasionally elsewhere throughout this manuscript.

In chronological order:

1. David Tresemer (USA) The Scythe Book. (1981) The first edition was also translated into German and published in Germany in 1996 or 97. Its second edition, released in 2001, includes a 70 page "addendum" by us, titled The Scythe Must Dance.
2. Bernhard Lehnert (Germany) Nature Experience; Mowing with the scythe (2000)
3. " Peening; the Art of Scythe and Sickle Sharpening (2005)
4. " Mowing Simply with the Scythe (2008)
5. Botan Anderson (USA) Peening an "Austrian" Scythe Blade with a Narrow Scythe Anvil (2008)
6. Steve Tomlin (UK) Learn to Scythe (2015)
7. Ian Miller (USA) The Scything Handbook (2016)

We regret to have concluded that none of the above was written by an expert in the old fashioned sense of that term. In addition, the guidelines that follow were also not written by experts. Rather, we are amateurs whose keen interest in the scythe and its potential diversity of application had, 20 years ago, prompted us to take the learning beyond the pages of books. And, perhaps it was a blessing that only one book on the subject existed at the time, as it prompted Peter to spend a considerable amount of time in places where the tool is made, as well as in a broad range of situations where it is used by old and competent members of rural cultures whose existence was, not so very long ago, unimaginable without the scythe.

Chapter 2. Blade Selection

Within the industry and wholesale trade, the length, width and “form” (or “pattern”) of a scythe blade are the terms most frequently used to describe or identify it.

The *length*, and secondly, its *weight*, most notably affect the blade’s suitability for a certain task (and for the hands of certain people). For the purpose of this guide, they will be the only features discussed.

Regarding length – a 65 cm blade may be the most “multipurpose” for new mowers, whose livelihood (at least in the “West”) is not dependent on the utmost daily output of a person swinging the scythe, though there are many instances when a blade of this length IS most suitable for real survival situations. This is also a historically and cross-culturally popular length.

Regarding weight – the same (65cm) ‘general purpose’ blade should not need to be heavier than 450-500 grams. At that weight it will be able to withstand some cutting of tough material and can be successfully used in a wide variety of situations.

Of course, any multipurpose version of a tool is a compromise to some degree. For work in tight spaces, shorter blades (40 to 60 cm) are easier to handle and can be used more accurately, making them more efficient overall. Conversely, if the mower is not limited by narrow spaces, extremely tangled vegetation or undulating terrain, longer blades can accomplish more work in the same amount of time. Thus for the purpose of serious haymaking, blades between 75 and 90 cm long were once the norm throughout Continental Europe.

The longer the blade, however, the less forgiving it is with regard to how it is fine-tuned, sharpened and used. (“Fine-tuned” refers to how well the blade/snath/person unit meets the three parameters discussed in Chapter 5.) Most beginners would likely benefit from some experience with shorter or mid-length blades (50-70 cm) before using longer ones.

For the cutting of specifically tough material (young saplings, blackberry canes, etc.), shorter blades and ones of somewhat stouter construction than would be necessary for an efficient multipurpose scythe are desirable. For instance, a 40-45 cm blade of average width, weighing 460-470 gr, if well made, is adequately strong to cut blackberry canes yet highly maneuverable and light enough to not be needlessly tiring to wield.

The *bona fide* “bush” blades, weighing up to a kilogram or so, are still another purpose-specific class of extra strong blades meant primarily for cutting woody stems. They are seldom justified for the average person's needs, in our view, and we consider their popularity among online shoppers to be a temporary stage on the path of learning.

It is an established fact that *the ability to effectively use both longer and lighter blades increases as one gains experience in varied mowing conditions*. Throughout Europe, many now grey haired, life-long mowers have cut everything from acres of grass to mature weeds and green saplings with very lightweight 70 to 75 cm blades, often the same ones they used since youth (and some of those blades could still serve the grass-cutting purposes of their children).

Lastly, the following blade combinations can *significantly increase the versatility* of this tool. If not only length, but also weight/sturdiness are considered, the useful pairs are very many indeed. On the whole, a 15 cm difference in length is a good baseline, with the shorter blade being the sturdier of the two, for cutting the tougher plants.

Some examples of blade pairs, and situations where they may be appropriate:

1. 40 and 55 cm *or* 45 and 60 cm – for densely planted properties and/or certain crop cultures (coffee, small fruit etc.), with relatively small actual acreage to cut, but one varying in terrain and/or material from fine-stemmed grass to, for instance, blackberry canes.

2. 55 and 70 cm – For those on a somewhat larger piece of land, with more spacious plantings, perhaps a few goats or a family cow to feed, and relatively small meadows to be harvested for hay.

3. 65 and 80 cm – For a homestead or a small farm where large quantities of hay or cereals are to be harvested. Besides what can be procured from more open spaces with the longer blade, all those patches of growth along fence lines, roadside ditches, and in orchards can add a considerable amount of livestock feed to the total – and are easier cut with the shorter of the pair. This combination was once the preferred pair for the country dwelling livestock keepers in Slovakia, with *both* blades of a rather featherweight constitution in comparison to the standard "grass" blades of today.

Chapter 3. Brief notes on snaths

The importance of a custom fit

To contradict a popular misconception – this old farm implement is far from "simple". As opposed to tools like a machete, a shovel or an ax, various versions of which can be used successfully by almost anyone regardless of their height, for the scythe to function *at its best* calls for a custom-fit snath with a well-matched blade. Although many tool users intuitively grasped the concept of ergonomics for centuries before the term became popularized, in plenty of instances it was not actually implemented – possibly because under certain circumstances it would slow down the process of getting the job done. Instead, mowers often sacrificed comfortable working posture. Suffice it to say that many thousands of hectares have been cut with what we now consider poorly designed and/or wrongly sized snaths. In many cases such shortcomings continue.

Ideally, the snath should fit the mower in such a way that postural integrity does not need to be compromised in order to maintain *a suitable angle between the blade's edge and the ground.* One's back should be able to remain relatively straight (though not stiff), with the shoulders relaxed, and the hands at a favourable *task-related* distance from each other. What constitutes a suitable edge-to-ground angle (the blade's "Lay") will be discussed in Chapter 5.

Ergonomic design aside for now, it would be helpful to differentiate between snaths specific to at least two purposes. On this count we believe that most people who use a scythe under diverse conditions would be best served by having one of each size of snath, and (preferably) a blade or two for each snath.

The two basic snath sizes are:

A. The "trimming" snath – for mowing in tight spaces (between closely planted trees, small fruit bushes, vineyards, and along garden borders) or on uneven terrain. We recommend that blades 65 cm or shorter be used with this size of snath.

B. The "field mowing" snath – for cutting larger and more open areas. Field snaths are most often fitted with blades 70 cm or longer.

If the scythe is to be used on a more or less level terrain, the right-hand grip of a trimming scythe (with the blade already mounted and touching the ground) stood along side of the body, should reach to the bump marking the top of the femur: the place where the hips are usually widest. In the case of a field scythe that grip should be positioned *at least* 5-6 cm higher. Some individuals prefer their grip even farther from the lower end of the snath. For instance, the fellow in Figure 2 is posing with his "field" snath, on which the (only) grip is

more than 10 cm *above* his hip joint (nearing the level of the iliac crest which defines the top of the hips).

Figure 2.

If the snath has two grips, the *minimum* distance between them should be the length of the user's forearm (from elbow to fingertips, referred to as "cubit") for the trimming scythe, and 5-10 cm *longer than that for a field scythe.* Thus, a snath with fixed grips may be well suited for one OR the other of those types of tasks, but not both. One can opt for a compromise: a "multi-tasking" snath – one with a shaft just long enough for the average person's height, with grips either somewhat adjustable or positioned approximately halfway between the respective distances presented in the example above, and fitted with a mid-length (65-70 cm) blade. Of course, there *are* situations where a scythe of this sort is what an experienced mower, given the choice, would actually find most suitable. On the whole, however, it would be helpful if more attention was paid to the issues of a niche- and person-specific fit than had been practiced throughout the past when the luxury of owning multiple task-specific versions of a tool – any tool – was simply not an option.

Additional pointers: While mowing on slopes for extended periods, we recommend the following:

a) If mowing uphill (the more body-friendly approach to a slope, but not always practicable), the distance between the blade and the lower grip should be *shorter* than what we recommend for level terrain.

b) If mowing downhill (which is advisable when the vegetation leans that way) the distance between the blade and the lower grip should be *longer*, to prevent needless bending forward.

In either case, if the snath has two grips, it will be more comfortable if the distance between the grips is greater than it is on a field snath.

The One-Grip ('Eastern') Snath

A snath with a single grip (fixed approximately in the middle of the shaft's length) is the most widely used, both historically and today. It is the simplest to make and more forgiving when it comes to blade/snath fitting. It also alleviates *a portion of* the sizing challenge addressed above, because the distance between grips is a non-issue.

The length of a single-grip snath is about the same as the user's height for the 'trimming' snath, and 10 or so cm longer for the 'field' snath, with the grip attached near the midpoint in both respective cases. In use, the left (upper) hand holds the shaft most often with the palm up. The design allows that same hand to easily slide – at a moment's notice – to whatever point on the shaft feels most comfortable under varying circumstances. This snath can also be wielded quite efficiently with the left hand facing palm down, which is advantageous in some terrain (steep hillsides) or situations (mowing competition sprints). See Chapter 11 for guidelines on making these 'Eastern' style snaths.

Chapter 4. Preparing the Blade's Edge

"The only thing that a dull scythe downs is the mower"

– From Whetstone Holders: An ode to labour, skill, creativity, individuality and Eros, by Inja Smerdel (the remarkable ethnologist and curator of the Slovenian ethnographic museum).

Seasoned mowers everywhere would certainly endorse that Slovenian saying. An old Austrian adage adds yet another twist: *"You should be able to **rest** yourself while mowing*" [2]

…And if not, then something must be wrong with you or your scythe, is the often unspoken implication. And, though what exactly that 'something wrong' could be remains also unspecified, lack of a good edge was surely one of the chief factors. In the not so distant past, "Guade Schneid!" – "Good Edge!" in old Austrian dialect – was, among the farmers, a greeting equivalent to "good morning," "may God help with your work" or "good luck".

Considering the characteristics of "The Keen Edge", and how to achieve them

Regardless of any other single factor, the *scythe blade's actual moment-to-moment sharpness makes the single greatest contribution to a satisfactory mowing experience,* or lack thereof. It needs to be emphasized, however, that new scythe blades are rarely sold sharp enough for serious use.

Contrary to some retailers' claims, and in spite of labels to that effect frequently put on in the factories (at the request of wholesalers), only a *miniscule percentage* of global scythe blade production leaves the factory in truly "ready to use" condition. It doesn't matter whether a blade was made in Austria, Italy, or any other of the few countries left that still have a scythe industry; this is the rule. There are also significant differences between the various makers' degree of product 'un-readiness'. For instance, the *average* blade made in Austria today is usually closest to being ready to use, while blades made in China are the furthest from it.[3]

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[2] To qualify the term "rest" *in this context*: During the times when this adage was born, the average farmer's daily work entailed more physical effort (than is the case now) and swinging the scythe was considered the easiest of his tasks – hence the association with "resting".

[3] At the time of this writing only two companies – and only on special request from wholesale customers – prepare edges on some of their blades suitably sharp (or nearly so). One of these is Schröckenfux in Austria and the other is Falci in Italy. Schröckenfux blades of this "ready to use" edition are, after factory peening, carefully finished on a small belt-sander, and can be, at least in most general mowing conditions, swung as they come "out of the box". Falci blades of the same "ready to use" edition *still require some edge finishing before actual use*. They usually come with a somewhat thinner bevel overall, but with less consistency throughout the length – the few cm nearest the point as well as the last portion of the beard call for additional peening to make them as thin as the rest. In situations equivalent to cutting the American-style lawn, they

In any case, *most* newly purchased blades need a certain amount of edge preparation before it would make sense to start using them. Understanding the reason for the initial un-readiness of the edge helps with the process of preparing a new blade for use.

The final production step, which is primarily a cosmetic operation, usually involves one back-and-forth pass of the blade's edge on a large grindstone or abrasive belt. This effectively accomplishes the goal of making the edge visually even (which seems to be important for marketing purposes). As a side effect, this “evening out of the edge” also creates very short (less than 1mm) and steep *secondary bevels* that reduce the edge’s ease of penetration. These bevels may be more pronounced either from the top or bottom of the blade, and be wider near the point, or not. Regardless of each blade-specific condition, at the point where those two little bevels meet some burr is left behind. While such an edge may feel “sharp” to the uninitiated (should they conduct that typical, but hardly adequate, test of lightly moving the thumb across it), the blade would perform poorly in the field for two reasons. One is the presence of those too-steep secondary bevels, and the other *the type of* burr that results from most production line edge “finishing.” This burr is usually relatively coarse, uneven, and weak (with portions of it barely attached to the blade), and it either breaks off in use or is rather quickly worn away by the action of the whetstone.

In spite of this, large numbers of blades purchased today are simply put on snaths as they come from the factory and taken to the field. Functioning somewhat like a fine-toothed saw, the blade may perform adequately *in some conditions,* initially. However, the cutting effect of this factory burr diminishes rapidly, leaving behind a progressively duller edge. The reason is that the in-field whetting alone does not bring the blade back to its original “saw-toothed” condition and, given the absence of the serrated effect, the combined angle of those two tiny bevels is too steep to allow for the edge’s easy penetration into the stems of plants. Mowing then becomes increasingly more difficult and the scythe may begin to lose its appeal. The aim of these guidelines is to prevent such a scenario; we suggest inspecting a new blade's edge very closely. The use of a 10x loupe can be very revealing. Figure 3 depicts what will likely be found.

A blade with an edge like this will still cut something, somewhat. But trying to mow a dense stand of grass with it would be like riding a bicycle uphill with the brakes partially on, undoubtedly contributing to many novices’ poor impression of the scythe’s potential efficiency. It is therefore well worth the time it takes to sharpen the blade properly, right from the beginning. Because they slice with greater ease, sharp blades encourage gentler mowing strokes, thus incurring less of the damage that can result from overly forceful swinging of the tool.

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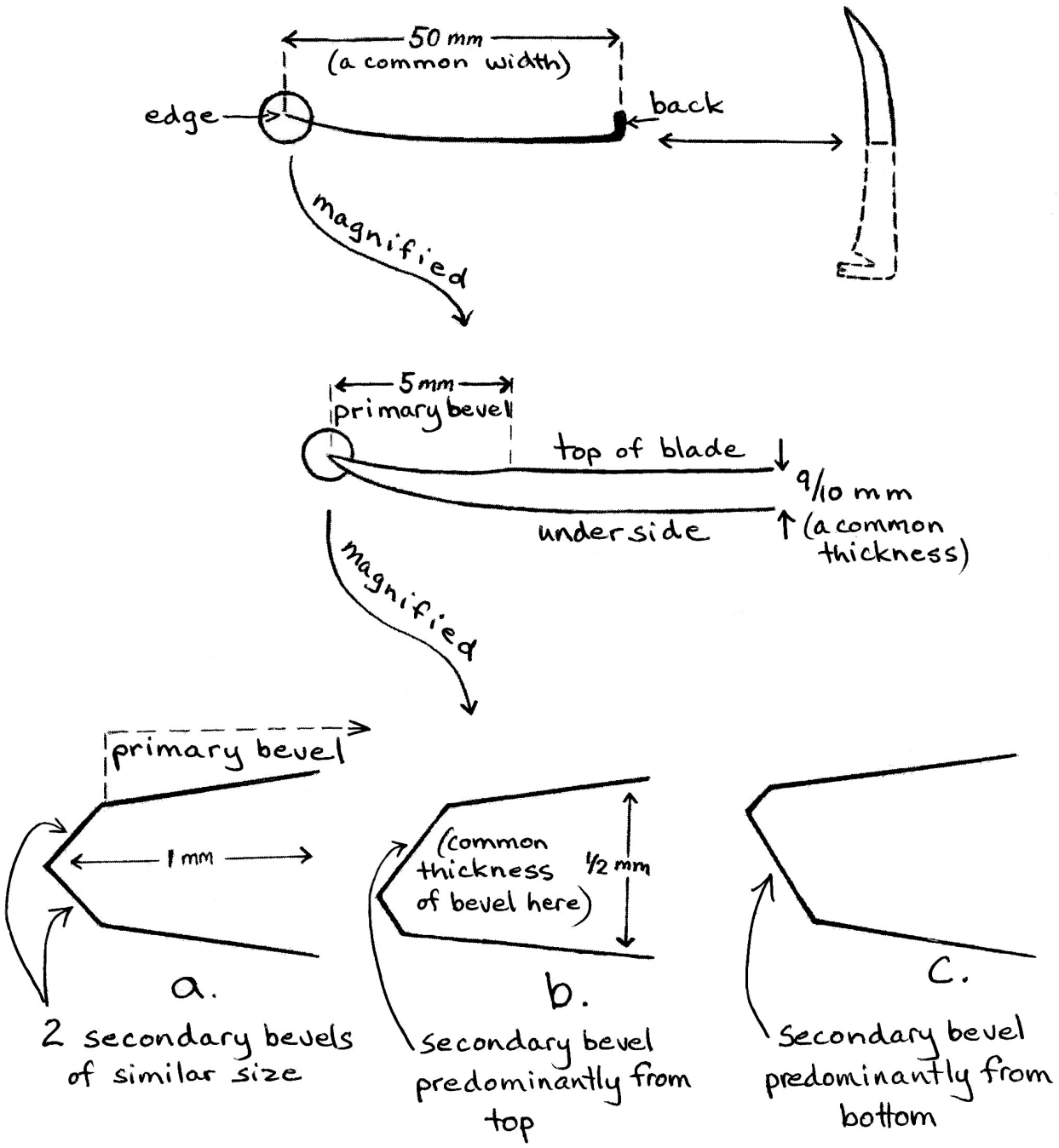
may outperform Schröckenfux blades but only if the new owner finishes the job started in the factory with the good intent of making edges above today’s global standard. That, unfortunately, is a job mostly for those with some experience (because it would be difficult to explain to a novice from exactly which point on the additional touch-up is called for…)

Figure 3.



Sharpening of tools in general is a two-step process consisting of:

1. Beveling (*shaping* the primary bevel), and
2. Honing (the finishing step).

Those two steps compliment each other in ways that defy some simplistic correlation. Performing either one of them poorly can sometimes be partially compensated for by doing the other one very well, but to repeat: only *sometimes* and only *partially.*

In German language, the importance of both respective steps of scythe edge maintenance is expressed by the following maxims:

"The man who sleeps while peening, will surely come awake while mowing", and
"Well-whetted is half-mowed"

Preliminary steps.

The preparation of an average **new** scythe blade for real work involves two or three steps, outlined below.

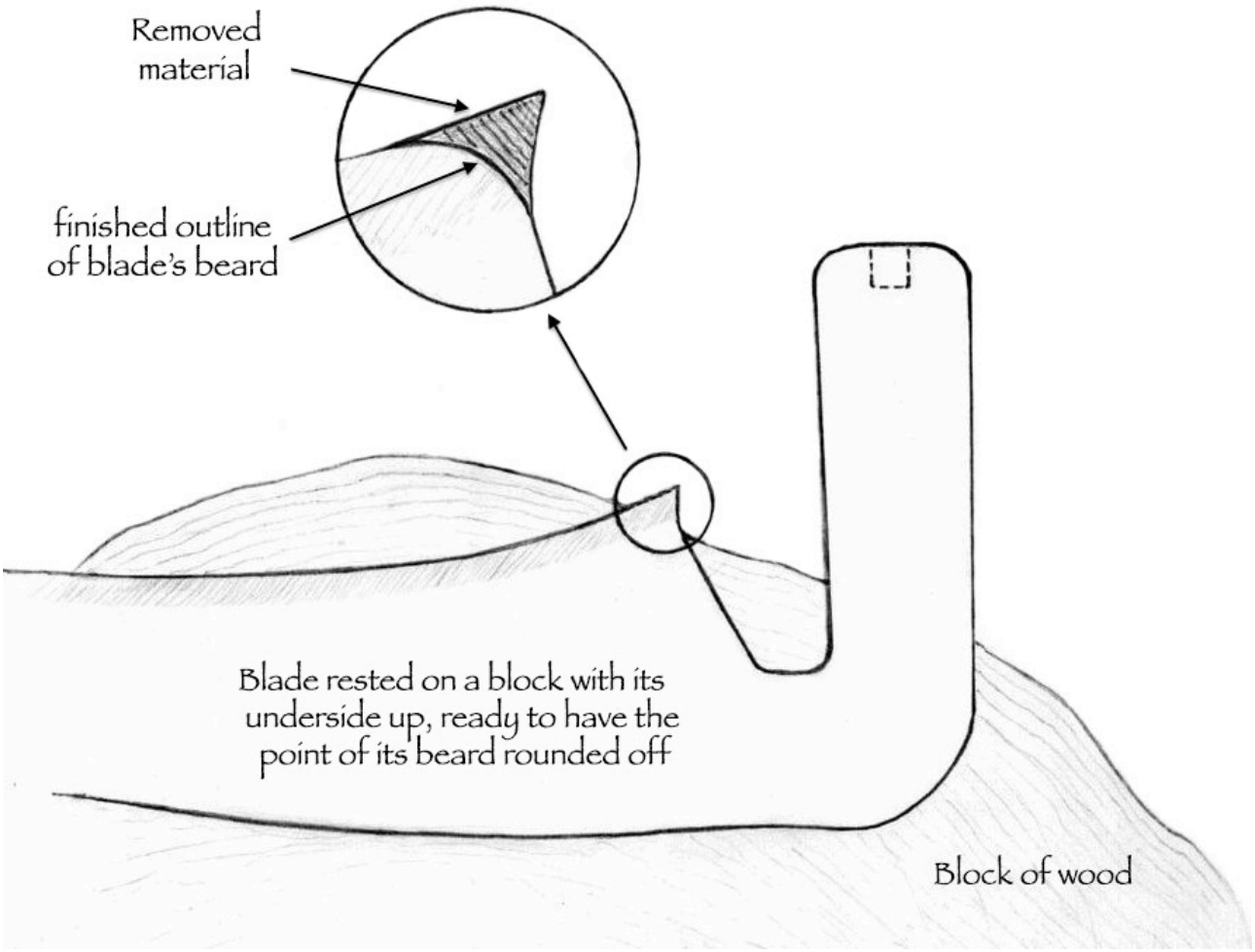
Step 1: Removing the sharply pointed corner of the blade's beard.

This rather uncommon step is listed here first, because that is what *we* do before proceeding further. Having done so countless times with well factory-peened blades of old production, we know that given a steady set up and a sharp file it takes, on average, 15-20 seconds, or less. What we do not know is why this was not standard practice in the past. (One can find scores of old blades throughout Europe still sporting this sharp little point after years of use.) Of course, not all blades require this treatment. Those that do not are ones that were poorly peened at the factory before sale – and into this group, admittedly, belongs the majority of present global production.

That fact, however, we see as no reason to leave this issue unaddressed. Our point here (pun intended) is that blades which are more thoroughly pre-peened in the factory than the average[4] do feature a *variously pronounced* point at the corner of their beard – illustrated in Figure 4. If that point is not removed, it tends to hinder the release of grass at the end of the cutting stroke and may drag a certain amount with it on the return stroke, particularly while cutting creeping or tangled vegetation. Secondly, while loosening the ring, the knuckles of the hand working the wrench could have a confrontation with that sharp point... Well, many of the old timers – bless their hearts and their skill – apparently got along fine without paying attention to this detail. Still, we recommend that beginners make whatever provisions they can to ease the initial stages of their learning, hence this hint.

[4]Chinese-made blades, for instance, have no pronounced corners on their beards because the pretense of a few peening hammer-like lines along the edges of their blades is a joke. Unfortunately, they are not the only ones. However, Peter has, for nearly a decade and a half, worked on the ground with factories in Austria, Italy and (most recently) Turkey with the aim to improve the level of factory peening. Although some definite improvements have been made, there is more work to be done…

Figure 4.



A convenient way to remove this corner is to rest the blade topside down upon a block of wood, an edge of a bench or the peening anvil. Using a flat file, start at approximately 45 degrees to the blade's plane, increasing that angle after a few strokes and continue until the last bit of steel bends over. Then finish rounding it off with a couple file strokes from the other side.

Step 2: Removing paint and lacquer

Please note that if the new blade in question is to be beveled with a file or a grinder – rather than peened – this step and the following one can be skipped.

Scrape away paint and lacquer from within approximately 4-5 mm of the edge on both sides of the blade. While this can be a time-consuming and frustrating task, there are good reasons to justify the effort. For those who will peen their blades, one concern is that minute particles of the lacquer, if driven into the steel, can predispose cracks along the edge.

Various chemical solvents can probably speed up the process, but may not be readily available to everyone, and are objectionable to some.

We endorse the manual or mechanical approach. For instance, the point of a knife, the end or side of a flat file, or even a sharp rock, can be effectively used as a scraper, initially. All of these function better while removing the majority of the material than does the common emery or sandpaper alone, which paint and lacquer tend to plug up rather quickly. Those among the numerous buffing wheels for use on bench grinders or hand-held electric drills which do not remove any noticeable amount of steel, are becoming more commonly used in the industrial countries; for this particular task (lacquer removal) most scythe users would find them very helpful.

Lacquer is meant to protect the blade from rust *only prior to actual use.* Once in the field, it becomes a nuisance because it inhibits smooth gliding action. Perceptive mowers might notice within the first few strokes the difference between the action of a well-used, shiny blade and a new, still-lacquered one. The latter, in our view, 'drags its belly'. As the lacquer gradually cracks and chips away, it also makes thorough cleaning and drying of the blade's topside after use more difficult. For those reasons, it would actually be best to completely remove the lacquer from most of the blade's body – certainly not a quick or easy task, and the main reason why it is usually neglected. Left alone, the lacquer from the underside of the blade will eventually wear off after a certain number of hours of serious mowing. But not so with the upper side! Typically, several seasons of use later, many of the blades purchased by today's generation are still half lacquered (and half rusty) on the upper side, and sport the leftovers of the glued-on labels. Those labels, by the way, also have no place on the blade once it is put to use. In any case, at the very least the outermost 3 mm of the edge should be made *completely clean on both sides of the blade*.

Step 3: Smoothing the secondary bevels.

The surfaces of the secondary bevels contain small grooves left behind by the factory's grindstones, which are generally 100 grit or coarser. The outermost points of those grooves can, upon peening, turn into tiny cracks. We might go as far as to say that this is *usually* the case. Such cracks may be hardly visible to the naked eye and may not, initially, hinder the blade's function. There may even be situations (short, dry grass) where the cutting will seem 'more efficient' with them present than if the edge had no minute cracks but was otherwise poorly prepared (by lack of adequate peening and/or honing). Why? They function a bit like an edge with serrations, irregular and spotty as they may be. However, unlike *deliberate* serrations (either manufactured on some edge tools in factories or user-made by application of coarse stones or files) the possibly 'helpful' effect of what we are addressing here is short lived. During subsequent peening sessions those tiny cracks are likely to increase in size and become more troublesome. Eventually small pieces of the edge between two cracks in close

proximity to each other bend over and break off during use… and then an actual edge repair is in order. In any case, we consider it a better approach to prevent their existence right from the start, which can be done by smoothing those grooves. The principle is somewhat analogous to hemming up a piece of lightly frayed cloth that might otherwise tear further under stress.

Depending on the method used to free the edge of lacquer, not much additional 'smoothing' may be needed. If, for instance, a piece of emery cloth was folded over the edge and held tightly while being moved back and forth along the length, much of the smoothing of those grooves may have already taken place. But if the secondary bevels are rather large (in which case they will also be steep) the lacquer-removal process may have missed them. If so, finish the job with a synthetic whetstone held at *approximately* the same angle as the existing angles of these short bevels – which may be as steep as 30 degrees or even more *per side* (see Figure 10) and move the stone more *sideways* along the edge than is typical during normal honing.

With the preliminary steps finished, the actual sharpening begins with reshaping the secondary bevels, either with or without removing material, **before** the blade is attached to the snath.

The objective, and the differences, between the options of steel *removal* (by grinding or filing) and steel *shaping* (by peening) are illustrated in Figure 5.

If the steel *removal* approach is chosen, there are at least two ways to do this:

a. By using a flat "fine-cut" file or a hand-held stone (preferably a coarse grit synthetic stone which removes steel quickly). This is the option that most people around the globe could implement without any specific training and using commonly available tools.

b. The bevels can also be lowered with a hand-operated grindstone, a belt sander or an electric grinder – but these are options that require somewhat more skill, and equipment not always readily available in many regions of the globe.

Peening (the steel *shaping* approach) involves the use of a hammer and anvil, or the aid of various "peening jigs" (specialty tools described below). The objective of peening is to *flatten* the first 1-2mm of the edge, and thereby draw it *slightly* farther outwards into a thinner profile.

We consider this approach preferable; especially once some competence is gained it will also be faster than a file or a hand-operated grindstone. The added long-term benefits of peening (as opposed to maintenance by filing or grinding) are:

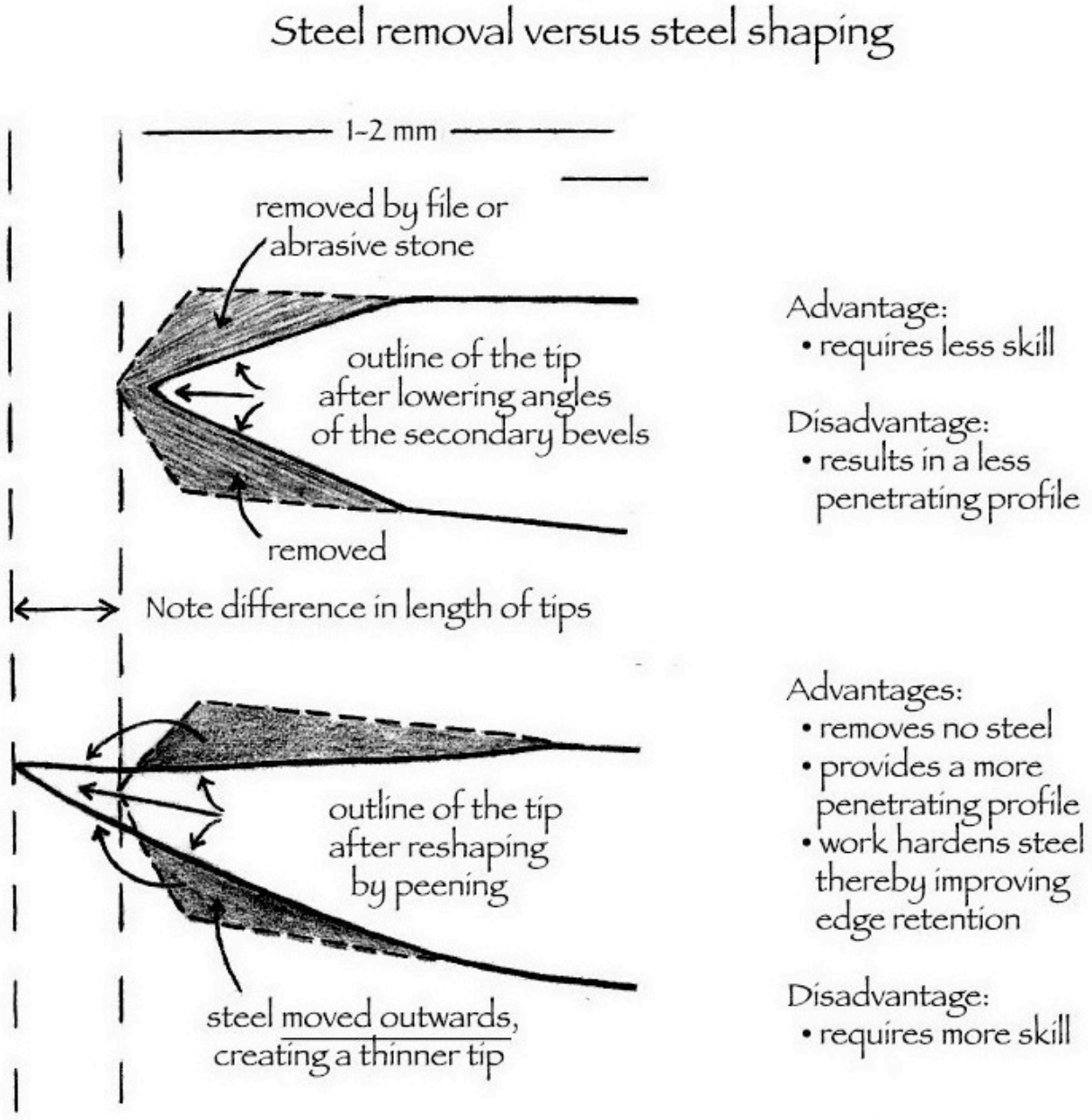
a) Extending the useful lifespan of the blade several-fold
b) Increasing the hardness (and thereby edge retention) of the hammered portion, and

c) The tools required for peening, once purchased or made, can last for several generations.

With the above reasons in mind, these guidelines focus on peening as the method of maintaining the geometry of the primary bevel.

Please note that to peen an already well-used blade, the steps discussed above ("Preliminary steps") are not necessary. However, the edge should still be clean and smooth, and any edge damage (dents, cracks or tears) should be repaired beforehand (discussed in Chapter 9).

Figure 5.



Peening

"To peen" is a term from the metalworking trade and refers to shaping and work-hardening of the material. In applying the process to the shaping of a scythe blade's edge, there are two distinct approaches:

a) The classical method referred to, in today's scythe-jargon, as "freehand", which involves the use of a hand-held hammer and an anvil.

b) Peening with the aid of mechanical devices of various designs, commonly referred to as "peening jigs" in English. The most effective of these (more accurately called "apparatus" rather than "jig") is operated by means of a hand and/or foot powered lever and shapes the edge by compressing it between two steel jaws. Its potential virtues notwithstanding, it is complicated to manufacture, and thus costly. It also requires more skill to properly adjust and to operate than the majority of new scythe users may be ready for. For these reasons we do not consider it a viable option for most people.

On the other end of the spectrum is the German-designed "Dengelmax" which thins the edge by pressure from a series of roller bearings and requires very little training to operate. The theory seems reasonable but the implementing of it less so; it produces mediocre results at best. For thick/neglected edges this one may be the bottom-of-the-line in effectiveness.

Suffice it to say that after well over a century of countless designers' attempts, the perfect device – one that would be readily affordable and more or less automatically produce the ideal task-specific results – has yet to be invented. However, one of the designs (referred to in German as "Schlagdengelapparat", loosely translated as "[Hand] Hammer-driven Peening Apparatus") has become the "Volkswagen" among the peening aids in recent years. To the English-speaking mowers of today, this is the "Peening Jig" (pictured in Figure 6.) Various versions of it are currently manufactured in several countries, including China (and most recently also India). They are readily available in much of Europe and from most mail-order scythe suppliers, internationally.

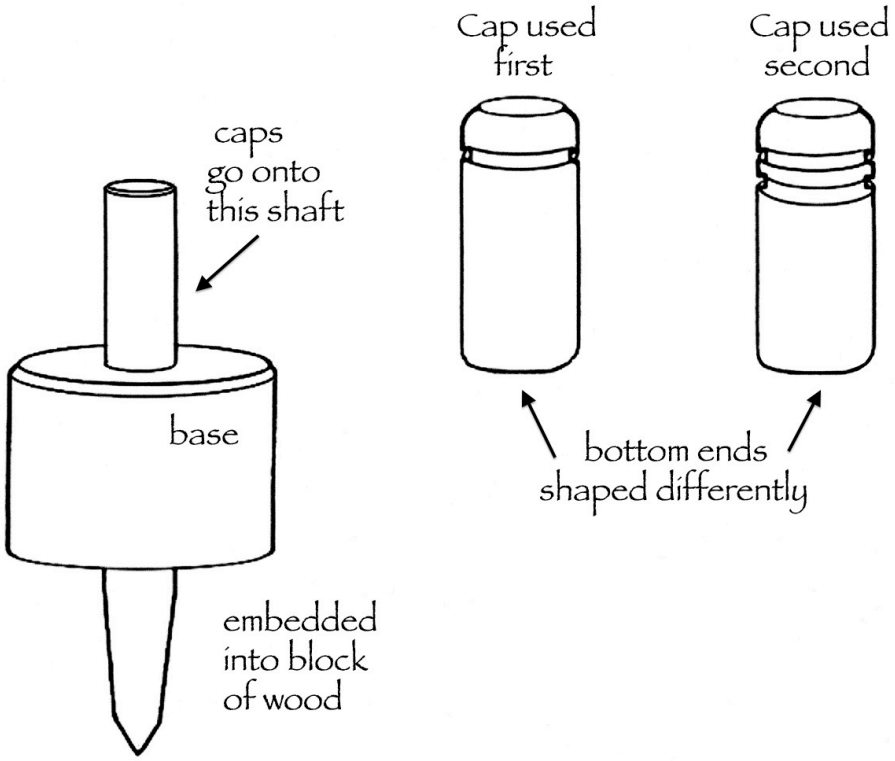
However, it should be mentioned that among the different versions of this popular peening jig there are variations in quality of material used (which affect the longevity of the shape of the caps' bottom end) as well as finesse of their finish. Also, the actual geometry of the contact surface differs, with some better suited for well-maintained edges than for those that have been sorely neglected or inadequately pre-peened in the factory. The latter are sometimes too thick for the jig to handle as intended. In cases where the first cap does not produce an *immediately noticeable* effect (and that without overzealous pounding) the bevel's thickness should first be reduced with a file, grinder or a coarse hand-held synthetic stone.

On the basis of numerous trials conducted in recent years by individuals and groups of

instructors in different countries, there appears to be some consensus that an *average* beginner can achieve *acceptable* results more quickly and easily by peening with this type of a jig than by peening freehand. Its primary advantage is that using it requires less accuracy with the hammer. The design also automatically prevents “overreaching,” that is, striking too far into the body of the blade (a common error of many novices who begin their peening experience by the freehand method).

Nevertheless, even though we outline peening with the jig first, we encourage everyone to graduate to (or even begin with) the freehand method, because in the long run it is the most versatile and economical path to a keen edge. Plus, we have witnessed some complete novices peening very well without the aid of a jig.

Figure 6.



How to use the peening jig

1. Set up a *steady* base.

A block of wood, preferably at least 30 cm in diameter and 50 cm tall, at which a person can sit comfortably, is one example. Setting a peening block directly on the surface of the ground or on a wooden floor is far from ideal, and best avoided. Better options are a solid concrete

floor upon which a fairly heavy block can sit *without a wobble*, or a heavy peening bench. The best option is to bury the block about 10 cm into the ground, as all the old time blacksmiths did with the bases for their anvils. Then place a stool or another smaller block for a seat next to the first one (the anvil base) so that the seat is 10-15 cm lower than the top surface of the peening block. If the block serving as the anvil base is large enough, it can also serve as the seat. In this case, part of its surface will need to be cut away, (about 10-15 cm deep) so that the jig will be level with the top of one's thighs. These are approximate dimensions only; they should be adjusted to each person's comfortable sitting and working position. The relationship between how high a person is seated and the position of their thighs can be fine-tuned by means of various sized cushions (a folded jacket or an armful of grass can serve quite well). This fine-tuning is highly recommended, because it is easier to hold the blade steady if the operator's thighs can readily support both ends of the blade, while the feet are resting squarely on the ground (as in Figure 7). From this position, slightly lifting or lowering the support (by a little shuffle of either foot) can provide precise adjustments in *exactly* how the blade lays on the base of the jig. With this degree of support, the results of peening will be far more consistent than if the blade wobbles, or if the fine adjustments are awkward to execute. Figure 13 illustrates a few examples of many possible peening set ups; in most of those cases the jig can take place of the traditional anvil shown there.

2. Secure the jig into the block.
Drill a *slightly undersized* hole, both width and depth-wise. Without a cap yet in place, carefully drive in the jig most of the way with a small round of firewood, or use a piece of hardwood as a buffer between the jig and the hammer. **The central shaft upon which the caps rotate should never be struck with a steel hammer without one of the caps in place**, as it could be damaged enough to prevent smooth movement of the cap. It is also not advisable to hammer on the caps without a blade inserted; they will retain their lower ends' shape much longer if not beaten against the base itself, which – at approximately 60 Rc hardness – is considerably harder than a scythe blade.
At this point the blade can be inserted and peening begun; the base of the jig will gradually be driven down to fully contact the surface of the block.

The two standard caps supplied with this version of a peening jig (Figure 6) have differently-shaped bottom ends. The caps are used in progression. The first (usually marked with one groove or #1) will reach somewhere between 2 to 3 mm in from the edge (depending upon the model of jig) and should produce a visible depression akin to a shallow trough running from beard to point.

The second (marked with 2 grooves, or #2) cap will flatten the material between that 'trough' and the apex of the edge. Both caps move the steel outward, but the effect of the second one is more noticeable. Exactly how much the steel is thinned and drawn outwards depends on

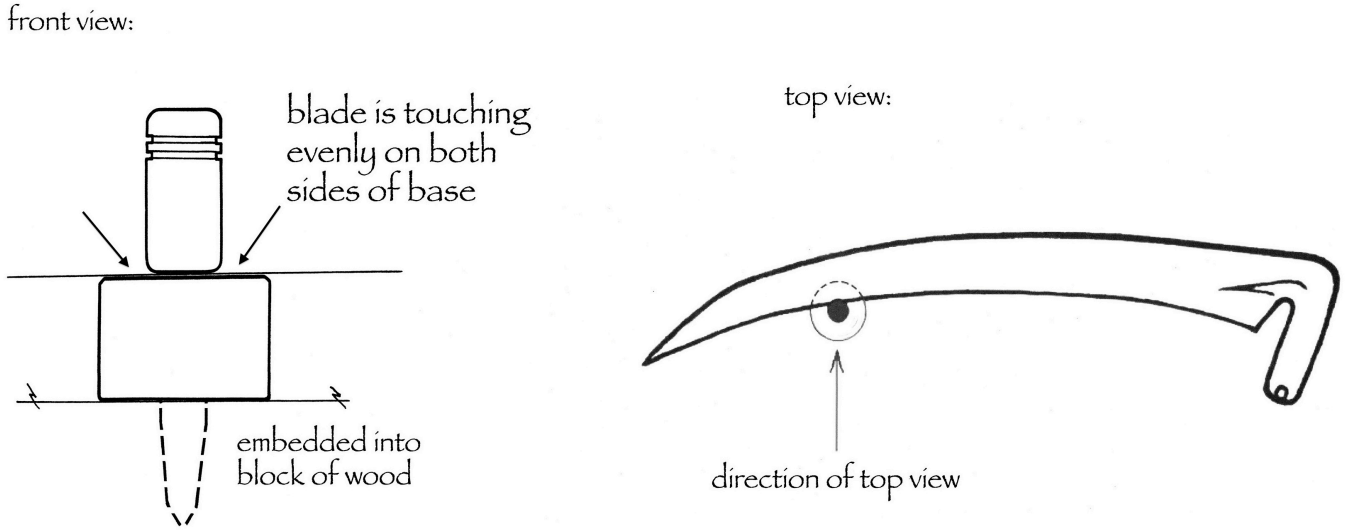
the thickness of the primary bevel and how hard the hammer is applied. If the blade has been used too long without peening, it may be necessary to repeat a step with either or both caps. If peening is done at regular intervals, after perhaps four, but not more than six hours of mowing, the first cap may not need to be used every time.

Figure 7. One example of a convivial peening set up.

While peening, ensure that:

a. The blade's bevel zone is lightly (but completely) touching the base *as it enters the cap* and remains on that angle (horizontally aligned with the base – as shown in Figure 8) during the actual hammering.

Figure 8.



b. The blade's bevel zone is well supported at the very spot where the cap contacts it. The convex shape of some blades requires that they be tilted *slightly* towards the central shaft in order to accomplish this. What exactly is "slightly"? We'd rather not even offer a solid *range*, never mind an exact degree. However, Figure 9 shows an example of the degree of that tilt.

Here it also needs to be pointed out that as the already-peened edge exits from under the cap, it will have been slightly raised so that at first glance it appears that the blade's back is being held too low. Lifting the back more (so as to lower the edge) would only accentuate the effect (of the first mm behind the apex turning upwards). A certain degree of this 'upward turn' is normal and inevitable. Provided the blade's bevel zone is hugging the surface of the base as it *enters* the cap, all will be relatively well. For that reason it is better to keep an eye on the side where the blade's edge enters the jig, rather than on the other side, where it emerges.

Figure 9.

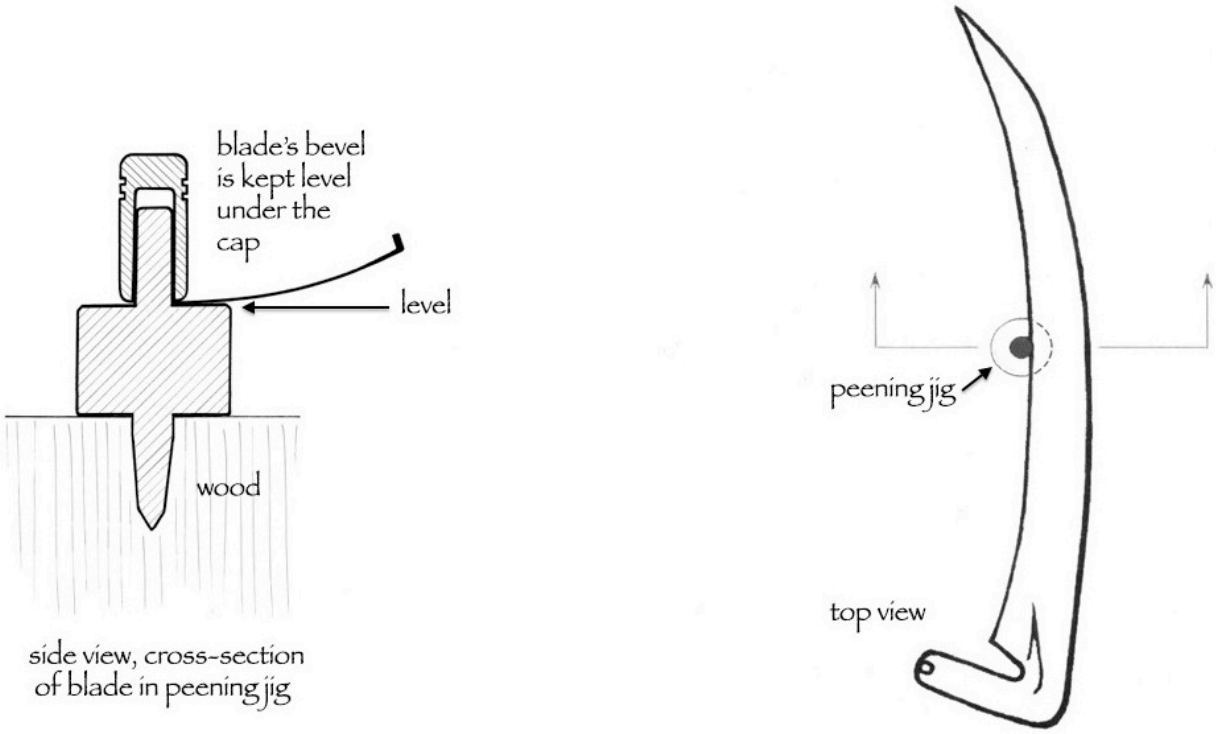
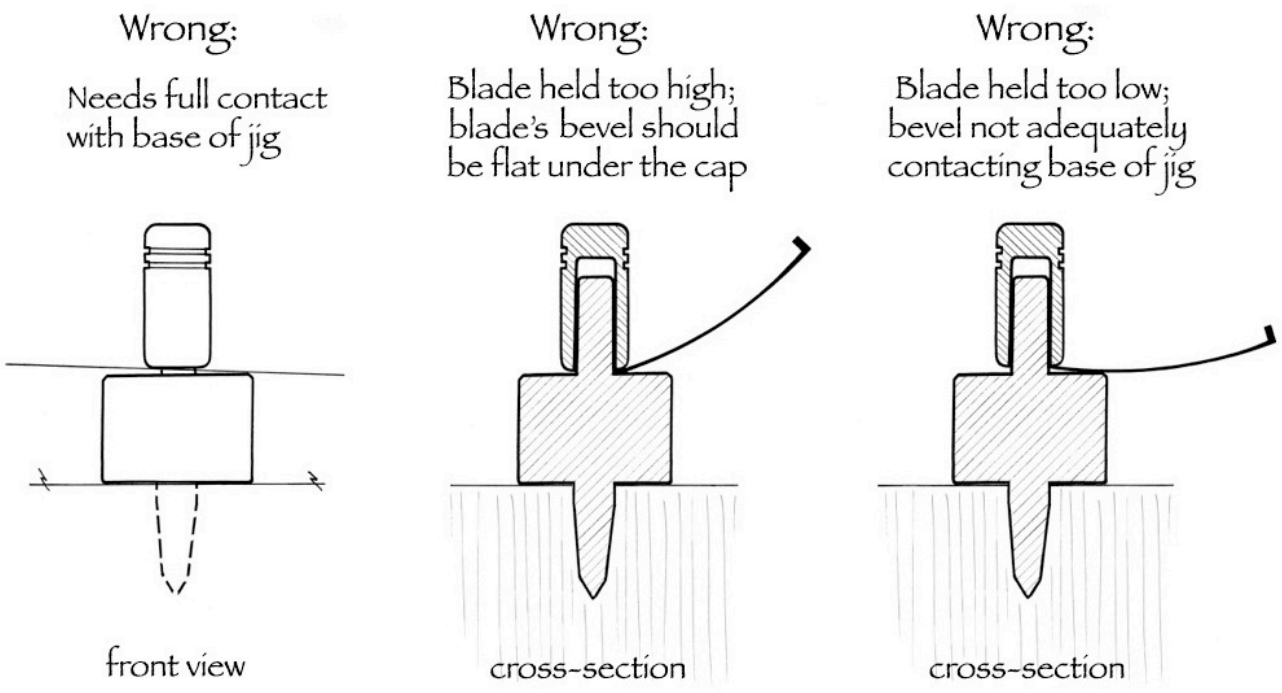


Figure 10 depicts three common errors in how the blade is held to the jig. In ‘A’ the blade (viewed edge on) is shown *horizontally misaligned.* In ‘B’ the blade’s back is held too high, and in ‘C’ too low for the very edge to contact the surface of jig’s base.

c. The frequency of the hammer strikes is *synchronized with the speed at which the blade is moved along* to achieve a frequency of around 1 strike per 1 mm (or 10 strikes per 1 cm, or 25 strikes per inch), and the force of the hammer is uniform throughout.

Beginners usually find striking uniformly easier than moving the blade in synchrony with the strikes. While either pulling or pushing the blade along is technically correct, many people, ourselves included, find the pulling to be smoother. Also, with this style of peening jig it is somewhat irrelevant whether one begins at the beard or the point of the blade, and whether the rib is towards or away from the person during work. We think that facing the edge (with the blade’s rib farther away from the person) and pulling the blade leftwards is the easiest way to do it. However, we suggest that other combinations be tried as well in order to determine what feels most comfortable.

Figure 10.



Further hints:

It helps with steadying the blade (and therefore the uniformity of results) if the middle finger of the hand holding the blade is also touching the base of the jig as peening proceeds.

No specialized hammer is required; any common one weighing *at least* 500-600g will work. For "bush" blades, or any blade that has gone too long without peening, a heavier hammer would be more effective. We consider it better to use a heavier hammer gently than a lighter one too vigorously. In careful hands, even 1kg is fine.

Note, however, that **hammering can be overdone** by striking too hard or making too many passes in succession beyond the blade's need. Especially if the primary bevel is relatively thin to begin with, portions of the edge may tear or lose tension. A narrow strip of the edge can literally be cut off by overzealous strikes with the jig's second cap!

Thus, for one's first-ever peening session, it is prudent to make one pass over the blade rather gently in order to get a feel for steadying the blade, the rhythm of the hammer, and how the steel reacts to the *weight* of that specific hammer and *force* of strikes. Then carefully check the uniformity of the results. If the change was noticeably less in some areas than the

average, make a small mark on the blade's body precisely in line with those spots. Then, pay attention to the marks so that it is clear which places to peen again. Conversely, there may be spots where the blade's gradual movement was momentarily ceased but the hammer strikes were not paused. Those places should also be marked (before making another pass) and *not* re-peened.

Edge treatment following peening with the jig

With the above steps completed, the blade should be well-*beveled* but not yet actually sharp. This is because during peening the apex of the edge abrades against the central pin of the jig, and the blade may thereby be rendered *less keen* than it had been before. Considering this inevitable side effect of the otherwise helpful jig, no more pressure than necessary should be applied to keep the blade's edge held against the jig's guiding shaft.

Even in the best scenario more edge finishing (honing), is required right after peening with a jig than should ever be necessary during any single whetting break in the field. Yet, this follow up step is notoriously neglected, or even omitted altogether.[5]

A common synthetic stone (60-80 grit) or a single-cut flat bastard file will accomplish the *initial* step of the post jig-peening treatment considerably more quickly and better than most natural stones. Also, any used "carborundum" bench stone or a piece of mid-to-coarse grit emery cloth fastened to a small block of wood, or simply wrapped around a stick, can serve as adequate substitutes for a 'proper' stone or file if those are not at hand.

Figure 11 illustrates the approximate angles at which abrasives used for the post peening treatment are to be held. See "Further Notes on Pre- and Post-Peening Treatment of Scythe Blade's Edge" for additional hints.

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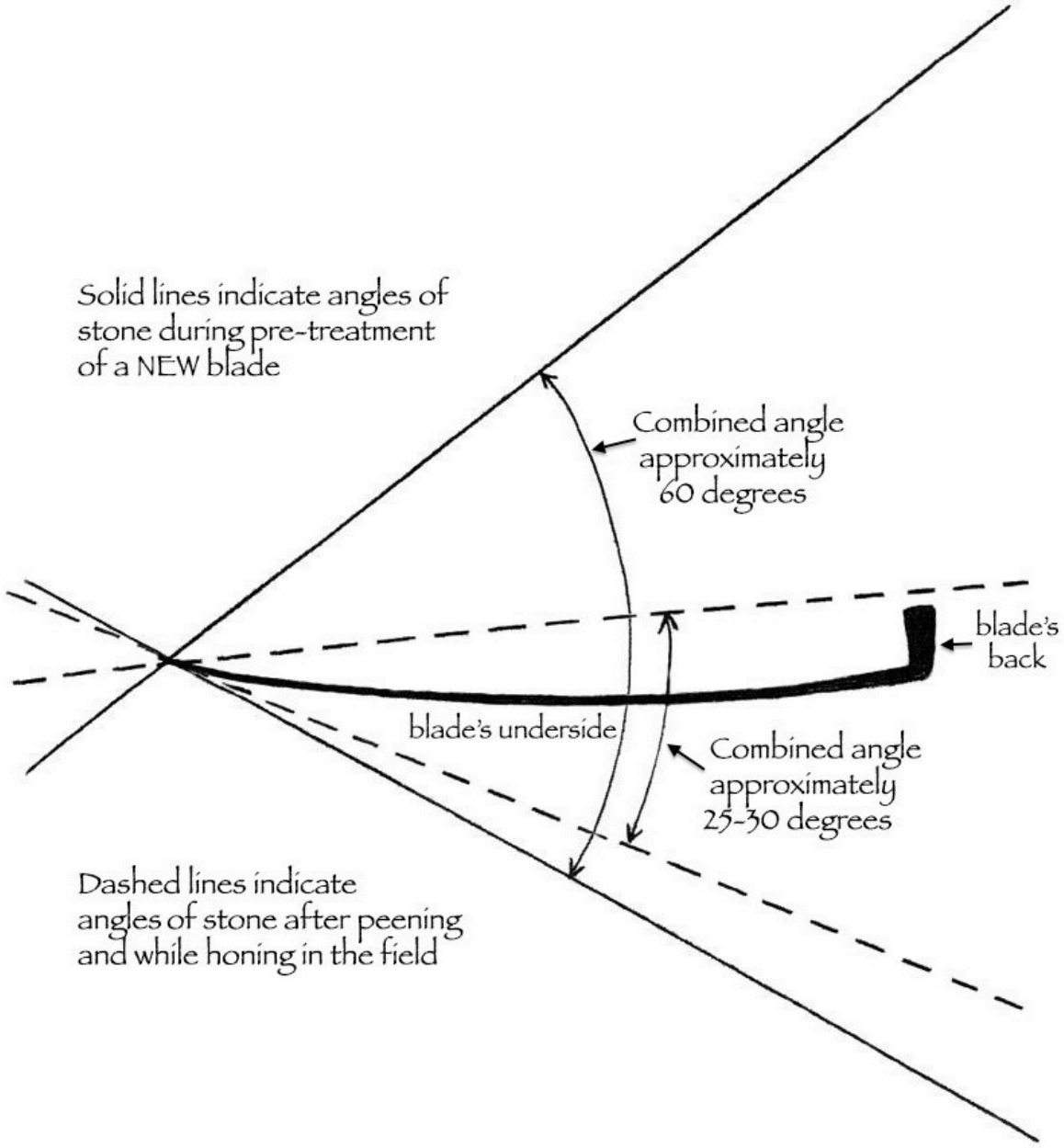
[5] Over the years, some individuals have written to us, complaining that "the peening jig is no good" because after they used it, the blade cut worse than it did before… And, as we learned from further dialogue, they either skipped the step we are now discussing altogether, or used a natural stone for the process – as indeed some instructional videos foolishly (in our opinion, of course) recommend. Most of the *natural* stones presently sold by mail-order scythe retailers are of a rather fine grit and thereby *poorly fit for this particular task*, because, whatever their other virtues, they remove material too slowly. On the other hand, synthetic abrasives and the jig were conceived during roughly the same period of history, and in a way they belong together, at least for the *initial portion* of the pre-and post-peening treatment. We suggest that people keep their precious natural stone for honing in the field and for *finishing* the quick job done by its synthetic version. As mentioned earlier, we are in favor of experimenting with ways of doing things that are generally not recommended. (Are rules not made for fools?) In this case, one could finish the edge with a natural stone only, and take it all the way to a state of no 'light reflection' (discussed below). What we think will happen (and can best be seen under adequate magnification) is that before a *jig-peened* blade ends up adequately keen, the stone will also begin to round the area *just in* from the apex. This roundness – the unwanted consequence of whetting (be it in the field or during post-peening edge treatment) – reduces ease of penetration, and its manifestation should therefore be postponed as long as possible. So, unless one *intends to* create a less penetrating but more durable edge, it may be silly to head for the field with its apex already slightly rounded.

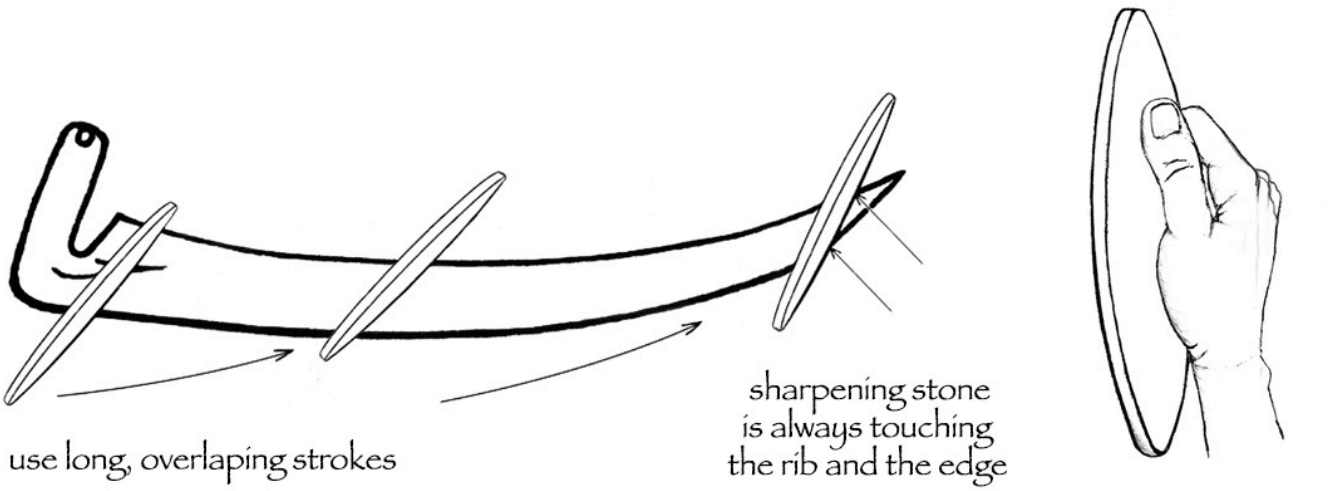
Figure 11.



This post peening treatment is best performed in a comfortable and steady manner *before* attaching the blade to the snath. One option is to simply remain in the same sitting position as during peening, holding the blade's tang in the left hand, initially with its *underside* resting on one's thighs and the edge pointing outward (away from the body). See Figure 12. Some people achieve satisfactory results by resting the point of the blade against the peening block or ground surface (although we find such an approach more awkward, less accurate and thus less efficient overall).

Regardless of the specific way of holding the blade, and regardless of abrasives used, the fundamental difference between the pre-treatment of a new blade prior to peening and post-treatment of a freshly peened blade is the angle at which the stone is held during the process. Both respective angles are indicated in Figure 11, though they do not need to be adhered to dogmatically.

Figure 12



The figure above depicts a blade being honed as part of post-peening treatment. A typical 'boat-shaped' whetstone is shown in use (as it likely represents the most common of scythe sharpening stones), but as is discussed more thoroughly further below, stones of many other shapes, as well as other ways of holding them and directions in which they are moved, can serve satisfactorily. A stone of this shape is usually applied on its narrow surface. For honing before the blade is mounted on the snath, it is easier to hold the stone as pictured in this figure, while still make relatively long strokes and avoiding abrading one's knuckles on the blade's rib; plus, it may be considered safer overall. Additionally, while honing the *topside* of the blade, this whetstone's shape corresponds *somewhat* to the curvature between the slightly upturned edge and the rib of the blade; thus, a *slightly* lower bevel angle can be achieved by using it on its convex side.

Here is our suggested sequence of steps:

Step 1.

Begin with the blade positioned in the lap, the left hand holding the tang, and the topside of the blade facing upwards (as in Figure 12). Applying firm pressure, make one or two beard-

to-point ‘passes’ from the top side of the blade, each consisting of a series of *overlapping* strokes, with each stroke covering approximately 15 cm of the edge's length. As indicated in Figure 11, the stone’s angle should follow the direct line between the edge and the blade’s back “rib” (though it is better to not actually abrade the rib; touching it very lightly for reference is sufficient). One should be able to feel the burr by gently moving the thumb across the edge (in the direction from the blade’s rib towards the edge). Wherever it cannot be felt, another pass with the stone (from the same side, but with focus on those areas) should follow. At most two such passes should “raise the burr” on the opposite (underneath) side of the edge.[6] If not, one or a combination of shortcomings is taking place:

a) The pressure applied with the stone is not firm enough
b) The stone is either of too fine a grit, or is glazed and thereby lacks effectiveness
c) The pressure with the blade’s edge against the jig’s guiding shaft was excessive

Step 2.

Once the burr can be felt *along the complete length of the edge*, repeat the process from the opposite side. The blade, still resting in the lap as before, is simply turned over by the left hand. Now the underside of the blade is facing the sky and the edge is facing the person performing the task. Still applying firm pressure and overlapping the strokes, this time pull the stone *towards oneself* in a diagonal direction from left to right. This time it should only take one pass (at very most two) until *all of* the burr is turned back again, so it can be *readily felt from the blade’s upper side*. Another quick pass can be made with a finer stone (one's customary field stone, for instance), a knife honing steel, or any other hard and smooth steel rod. It will push the burr over a bit more thoroughly (than a coarse stone).

Step 3.

We refer to this step as "cutting off the burr". Although this particular technique is not common with mowers, it is the *most efficient way to remove the majority of the burr.*

Now is the time to switch to a finer grit stone (either natural or synthetic). The previous pass ought to have turned ALL of the burr over – so that the underside of the edge now feels smooth to the touch, while on the upper side the burr is protruding and can be readily felt.

[6] To briefly re-clarify the term burr: Given a few “buts”, it can generally be stated that the larger the burr, the sooner it will bend over or break off under load. While a straight razor-using barber or a craftsman wood carver both strive for burr-less edges, in the case of scythe blades a certain amount of burr is acceptable and under some conditions – such as while cutting mature grains, and the thin yet tough species of grasses at mid-day – even desirable. In fact, *very* few, if any, scythe blades are ever maintained with no burr at all. The question here is how much and/or what size of burr should be allowed to remain. Referring to extra burr (that should be removed) we are merely using some arbitrary definition of burr that would likely break off before its existence can be justified. However, there is no practical way to define it very accurately, and by “extra” we simply mean majority of the burr that can easily be moved from side to side with very light touch of the stone and is readily felt by a finger.

Hold the blade again as in Step 1, and place the stone at the blade's point in its ‘extended’ position (that is, with most of its length protruding over the edge). Pull it *simultaneously* towards yourself *and* towards the beard, *at a considerably steeper angle than that at which the burr was raised.* The angle indicated in Figure 11 – for *pre*-treatment of a new blade – is approximately correct. With each stroke overlapping the previous one, proceed all the way to the point of the beard. These strokes can be made using less pressure, but the burr is cut off most effectively if each stroke does *not progress too quickly along the length of the edge*. With strokes that are adequately overlapping, it might take about 12-15 individual strokes for a “pass” over a 65cm blade. One such pass should suffice.

Step 4.

After the burr has been removed, make one or two more honing passes on each side of the edge with a finer stone, mimicking the motions from steps 1 and 2, but not trying to raise a burr. This entails diagonal and overlapping strokes from both sides (but one side at a time, in this case).

The blade should now be ready for mowing… well, almost. Once it is re-attached to its snath, and *before* being taken back to the field, yet another quick honing (as done regularly in the field), won’t hurt.

With some practice, appropriate stones and firm pressure while applying them, steps 1 to 4, all together, can be performed in less than one minute.

Freehand peening

“Peening is to the scythe blade as bread is to the mower.”
(Mowers' saying from Terchova, Slovakia – the origin of the Rozsutec whetstones)

For upwards of two millennia, the geometry of scythe blade edges was maintained with hand hammers and relatively small pieces of steel that functioned as anvils. Freehand peening requires greater accuracy with the hammer and more attention to details than does the use of the jig. However, *once a certain degree of competence is reached*, the freehand method can lead to better results than the simpler versions of jigs.

Two basic peening tool pairs have traditionally been used: one is the combination of a cross-peen hammer along with a flat anvil, and the other is a cross-peen anvil with a flat-faced hammer. Note, however, that the flat faces of hammers and anvils are usually slightly *convex*; in certain languages they are referred to as “wide” or “dull” rather than “flat”. Conversely, the cross-peen faces are then called “narrow” or “sharp”.

Both of these two peening approaches are still practiced throughout Europe, and it seems

rather impossible to ascertain whether one is decidedly more popular than the other. However, based (again) on group trials conducted with the new generation of aspiring mowers, we have concluded that the combination of a flat-faced hammer and cross-peen anvil is more forgiving of errors and thereby easier for most people to learn.

Before describing the actual process, there are a few popular misconceptions regarding peening that we wish to address; doing so should clarify certain concepts and make the practice of peening less of a “hit and miss” endeavor.

It seems that the majority of novice mowers have been led to believe that peening and thinning are interrelated in such a way that one should always *readily* see the thinning manifested. That is, it’s implied that the peened portion of the blade will be visibly wider than the rest of its (yet to be peened) length. And if not, one can assume that the blade needs more peening.

One author’s advice on the subject is to draw the bevel outwards 1-2 mm each time a blade is peened. Well, we feel that 2 mm is *a lot* of thinning at one time, and most folks still learning the skill should not be expected to meet such a challenge. Although there are cases when this may be called for, the differences between those special cases and routine maintenance need to be clearly pointed out. The three examples that occasionally ‘require’ such radical treatment are:

a) *Some* new blades

b) Used blades which were *purposefully* maintained with a shorter and thicker bevel in order to better handle tough stemmed “weeds” (especially late in the growing season) but subsequently (possibly the following spring) that same blade is desired for other work where a much more thinly shaped (albeit more damage-prone!) bevel is appropriate.

c) Blades that, due to serious edge damage, have had the whole primary bevel completely removed (generally by a grinder) so that now the edge is as thick as the blade's main body, that is (nowadays), close to 1 mm thick. Such a situation calls for the complete re-creating of a new primary bevel. A competent person can do so with hammer and anvil alone, but we recommend that initially the bevel thickness be reduced to perhaps 1/2 mm or less with a grindstone or a file. *Then* the subsequent peening session can involve up to 2 mm of obvious thinning – not exactly a task for a beginner…

To consider what is required in the above three examples as a *general* guideline can be misleading. For one thing, to obtain that much material from the thickness of an edge that was *already fairly functional* (so as to increase its width by even a full 1 mm, never mind 2) may require hitting farther back than many novices can manage without causing cracks, up-and-down waviness, or the loss of tension.

IF an edge used regularly for *cutting more or less the same type of vegetation* should indeed call for such a treatment, a peening session was *already delayed far beyond the optimal frequency*. That, unfortunately, is not an uncommon state of affairs. Still, instead of “drawing out” a bevel even 1 mm during a single peening session, beginners have other options.

As mentioned above (‘c’) a safer approach is to partially reduce the thickness of the bevel with a file, and only then peen. If a peening jig is available, making the *initial* pass with its first cap can help. The resulting groove will not only mark an accurate line to subsequently follow with the hammer, but also make the job of flattening the material between that groove and the apex less difficult. Then, attempt to strike no farther than 2 mm in from the apex, and be satisfied with ½ mm of visually obvious widening of the bevel. This approach can also be followed in the cases of ‘a’ and ‘b’ above.

The hard-core traditionalist might scoff at this file/jig/hammer sequence, but that alone is not a reason to dismiss it. Let’s respect, however, what the old mowers always knew and put into practice – that peening the regular ‘everyday’ blades *frequently* is the path to follow.

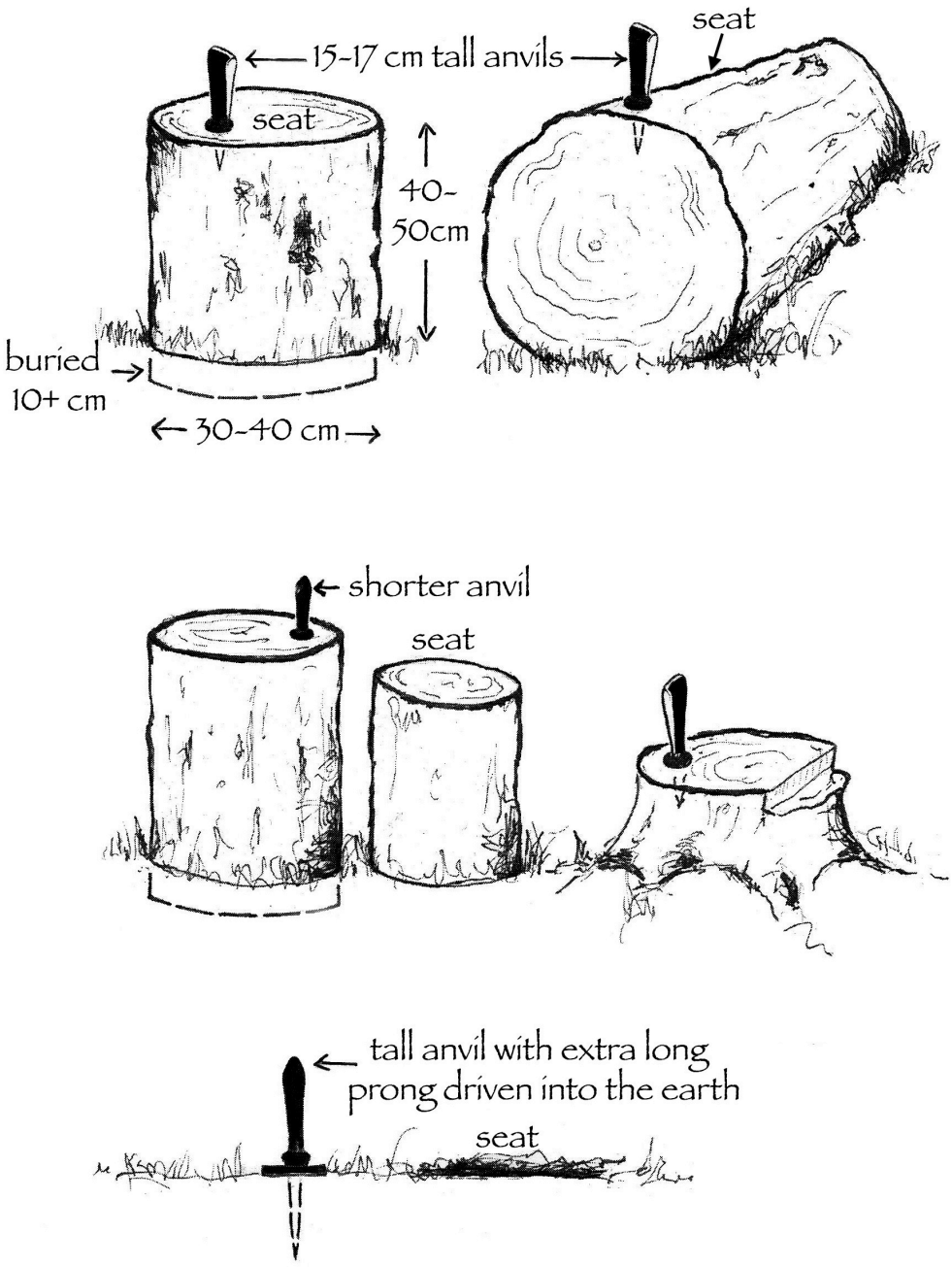
Step by step process:

1. Preparing the set-up
The guidelines in the jig peening section that emphasize the importance of a solid base and precise seat-to-anvil height relationship, apply here even more so. Three examples of traditional set-ups not mentioned earlier are trunks of sizable trees lying on the ground, leftover stumps which were cut off rather high above ground, but are still sound, and large rocks that have sat in the same spot for years. In the case of the latter: using a masonry bit, drill an oversize hole, drive in two softwood wedges and then drive the anvil snugly between them. Keep in mind that in addition to having a steady base, *the anvil itself should be solidly inserted*.

We repeat for emphasis: while peening, it helps if one sits (in relation to the anvil) in such a way that the left hand and both thighs can easily steady the blade. This, of course, does not mean that the blade rests across *both* thighs throughout the whole process. By studying Figure 14 it should be obvious that at the start the left knee is positioned very close to the anvil, merely touching the blade's tang (Figure 14 a) and near the end of the process the right knee can only touch (but still steady) the blade's point. (Figure 14 b).

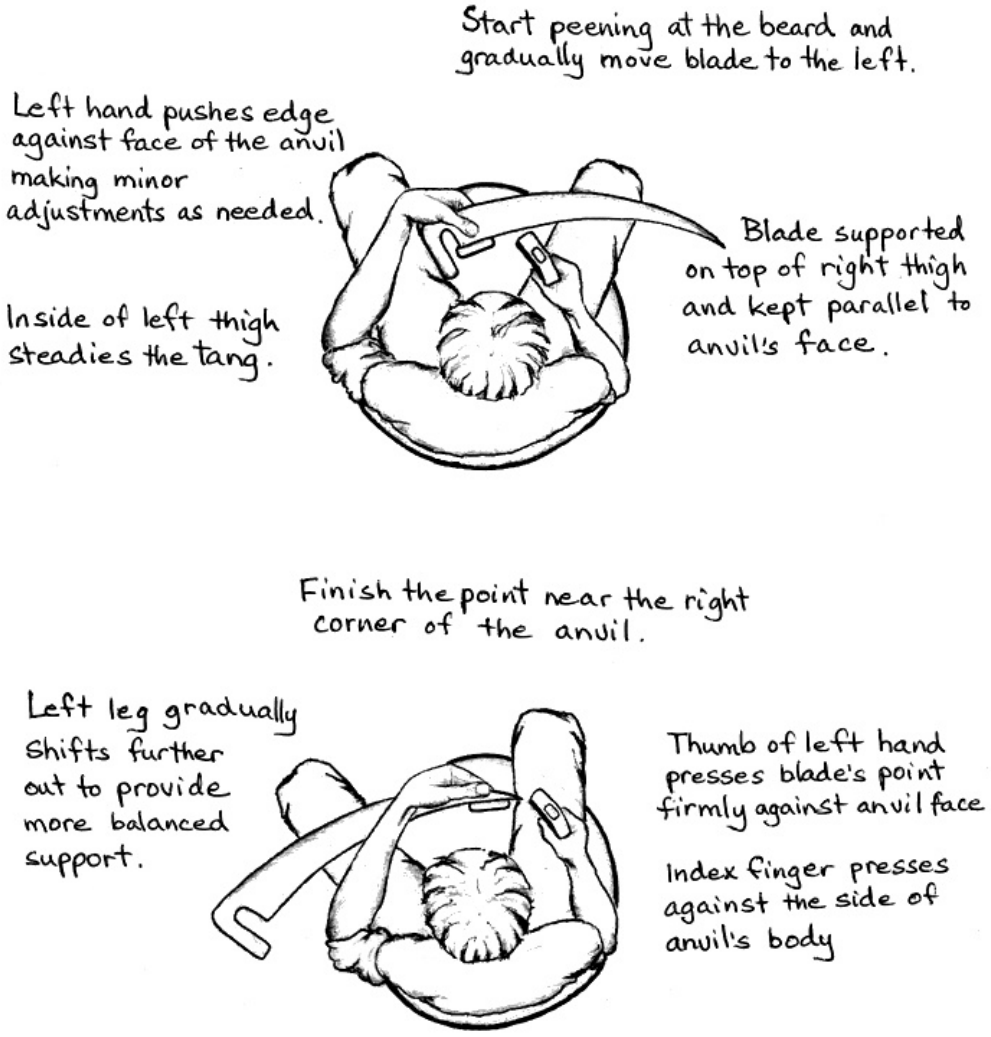
For the sake of this all-important steadiness of the blade during peening, we also recommend keeping the middle finger of the blade-holding hand in contact with the outer side of the anvil, while the thumb is pressing the blade *firmly* against the anvil's face.

Figure 13.



Looking at Figure 14, note the difference between the angle at which the anvil's (elongated) face is set in relation to the person's arm in a and b of the figure. Although both of these are common enough and neither is necessarily more 'correct' than the other, we recommend the angle illustrated in the top drawing – which puts the face of the anvil closer to perpendicular to the forearm of the hammer-swinging hand.

Figure 14 a, b, Bird's eye view of person seated and beginning to peen (top) and nearly finished (bottom)



2. Enhancing visual clarity of the edge while peening.
In the section on jig peening we emphasized the importance of cleaning all paint and lacquer from a *new* blade's edge, while recognizing that well-maintained and regularly used blades may have their edges adequately clean for peening. Specifically for the freehand method, however, a final pre-peening polish of the edge can significantly increase the visual clarity and aid in accurate placement of the hammer strikes. Among the various means to do so, we

have a favourite abrasive, described in Note 7.[7] Although the mowers of old apparently got along fine without it, we have yet to meet someone who, once having tried this particular accessory, would want to be without it while peening freehand.

Additional pointers:

- Provided the blade's edge is otherwise clean (i.e. neither rusty nor covered with the dried-on plant juices that accumulate on blades used to mow green grass during the dry hours of the day) only the side facing the hammer needs to receive this polishing treatment.
- While applying the sanding block, use a sequence of diagonal strokes across the bevel *towards* the apex, rather than moving it along the edge's contour. This will prevent the common slips by which the block sustains cuts from the blade's edge, substantially reducing its lifespan.
    - After polishing the edge with the sanding block, all the resulting fine 'dust' should be completely wiped off the blade. If this step is skipped, the carbide grit in that dust may end up between the working surfaces and, being harder than either of them, leave tiny indentations in the face of hammer and/or anvil.
    - During a peening session, periodic re-polishing of the hammer's face with that same block is helpful in maintaining visibility of the hammer strokes. With brand-new blades, however well cleaned one may think they are, this will be found extra helpful, or even 'necessary'. The reason for this is that some bits of smeared lacquer are *likely* to remain in the groves left behind factory peening, and if so, they will affect visual clarity by 'smearing' the hammer and/or anvil faces.

3. Positioning the blade

Using the method we suggest, the blade is placed upon the anvil upside down with the cutting edge facing the person, as in Figure 14. We think that worrying if the blade is held "perfectly level" in relation to the anvil's face is superfluous. The only relationship that DOES

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[7] Around the year 2000 we discovered, much by accident, that the use of a particular abrasive 'block' greatly improves visibility while peening. Its application leaves the edge with a matte finish, against which the marks left by hammer strikes stand out clearly. This makes it *considerably* easier to see each successive hammer print than if the edge was merely clean or polished with common emery. No other abrasive or polishing aid we have tried is comparable in this regard.

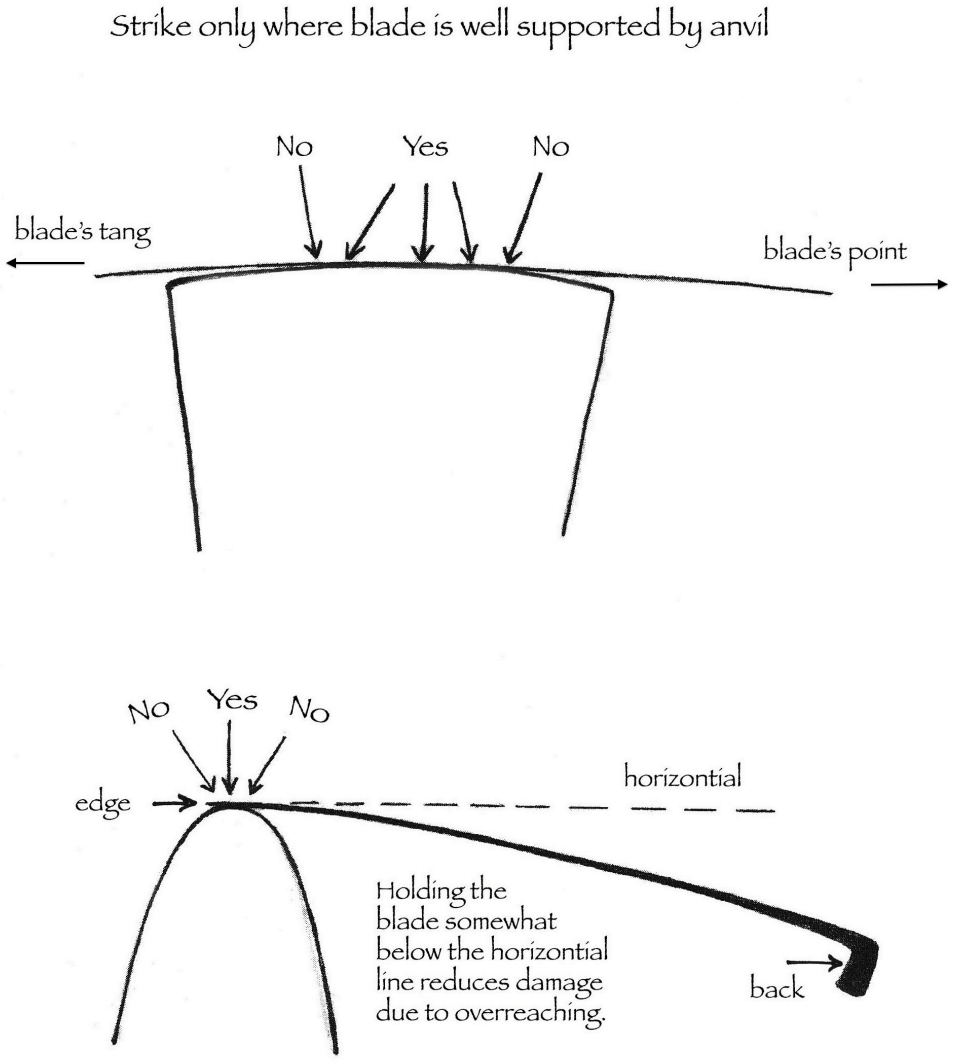
Now widespread in its use among the new generation of mowers, this handy little accessory, referred to as "the sanding block", is considered by some to be a necessary part of scythe maintenance, and is sometimes sold as part of a "peening kit".

Please note that this is NOT one of the common foam sanding blocks covered with glued-on pieces of emery found in every hardware store these days. We are referring to a block of a rather solid matrix in which silica carbide grit is embedded throughout, and which continues to function equally well until the block slowly becomes too small to hold. Used for this purpose alone, it can last for many years before wearing away to the point of uselessness. Of course, this little chunk of long lasting abrasive can also be used to keep the rest of the blade free of rust, and the surfaces of peening hammers and anvils polished, as indeed they should be. We have first-hand experience only with the German-made version of this abrasive block – "Sandflex", from Klingspor, which is available in three grits. For scythe blade maintenance, we recommend the medium grit. But there is at least one other manufacturer who produces a very similar product, available in the UK and possibly elsewhere.

matter is the one of adequate contact between the blade and anvil *at the exact spot or very close to* where the hammer contacts (the parameter emphasized in Figure 15). Note, however, that although most of the work takes place at, or very near, the center of the anvil, we tend to use the area just to the right of the center more. And because we like to thin the edge as near to the blade's point as possible (which cannot be very well peened at the anvil center), for that section of the edge we find it necessary to use the extreme right side of the anvil's face.

4. Target
Beginners are advised <u>not</u> to hit farther in from the edge than 2mm. Drawing a line exactly above that zone with a felt pen (and keeping it unmarked by the hammer as peening progresses) helps with orientation. In fact, 1mm of a peening zone may be enough for many novices to start with.

Figure 15.

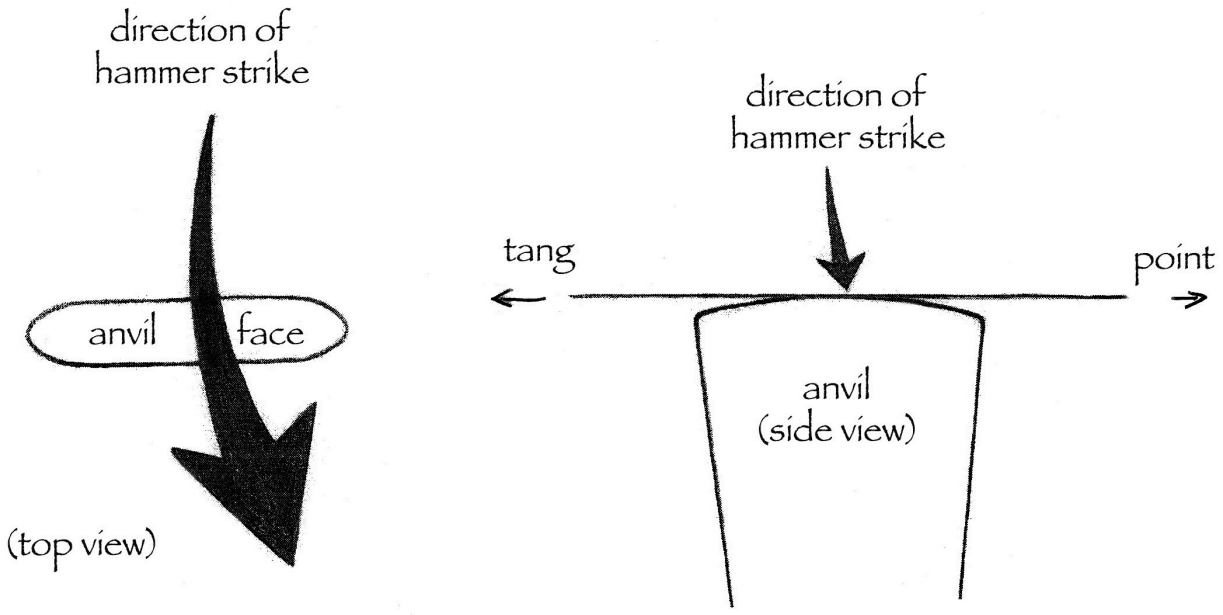


5. The ‘diagonal draw’

This section looks at how the striking path of the peening hammer influences the shaping of the bevel.

Our approach to peening involves striking on a *slight diagonal towards the blade's point*, while the blade is being moved from right to left. (See Figure 16.) Simultaneously, this method of peening includes a somewhat exaggerated pull of the hammer further downward immediately upon impact, which can perhaps be visualized with the help of Figure 17.

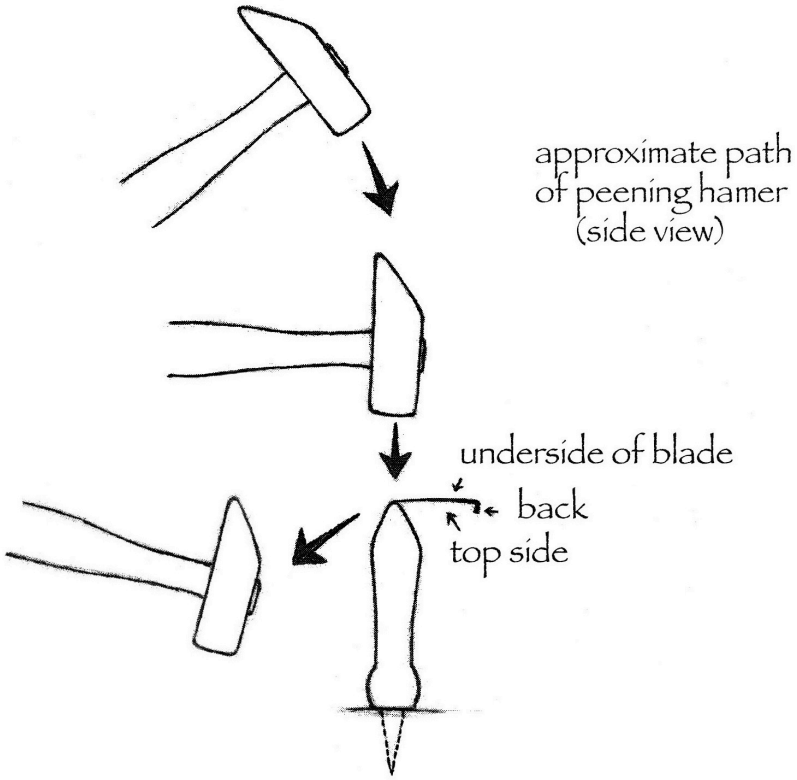
Figure 16.



Despite not being common traditionally, the diagonal striking direction of the peening hammer reduces the tendency of the steel to buckle or ‘wrinkle’, especially whenever (intentionally or otherwise) the limits in bevel thinness are being reached. At the same time, an extra pull downward facilitates the shaping of the bevel.

This technique involves increasing the hammer’s pull downwards, off the face of the anvil just upon contact. With other words, while applying this technique, the hammer is not pulled back up immediately at the moment of contact, but instead moves away from the edge on a somewhat downward direction, ending its path below the face of the anvil (and if the strike is vigorous, *nearly* on the person's right thigh). Just how far downwards it could sometimes be is shown – *approximately and with inevitable real-life variations in mind* – in Figure 17.

Figure 17.



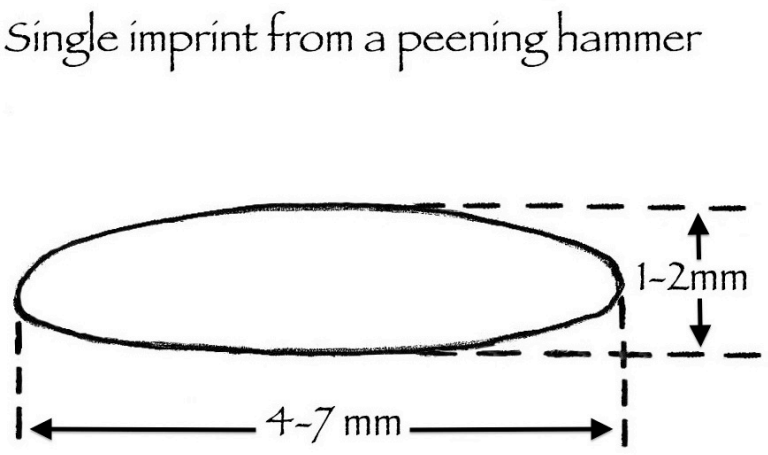
6. The effect of each strike
The exact size and shape of the hammer's imprint is influenced by a number of factors. Listed in arbitrary order, these are:

- The weight of the hammer and the force with which it is swung;
- The hardness and thickness of the blade's bevel;
- The exact shapes of hammer and anvil surfaces, and;
- The pattern in which the hammer strike is guided; the more pronounced is the 'pull' upon impact, the larger/wider the imprint will be *in the shorter dimension* (that is, from the edge towards the rib) and the more the hammer is pulled diagonally sideways, the *longer* will be the imprint. Of course, the extent of both of the 'pulls' must be kept within reason.

The *shape* of the hammer print illustrated in Figure 18 is one generally good to aim for. Regarding its *size*, the smaller dimensions indicated (1mm x 4mm) is what may be expected from beginners, the larger (2mm x 7mm) from the experienced. This does not mean that peening should proceed at the rate of 4 to 7mm per hammer strike. The overlap will slow it

down to about half, or even less while beginning to learn. What else specifically affects the size of the imprint is the combination of the blade's hardness and the force of the hammer strikes – something that can best be understood by repeated practice, *while paying close attention*. (But see the section on that topic near the end of this chapter.)

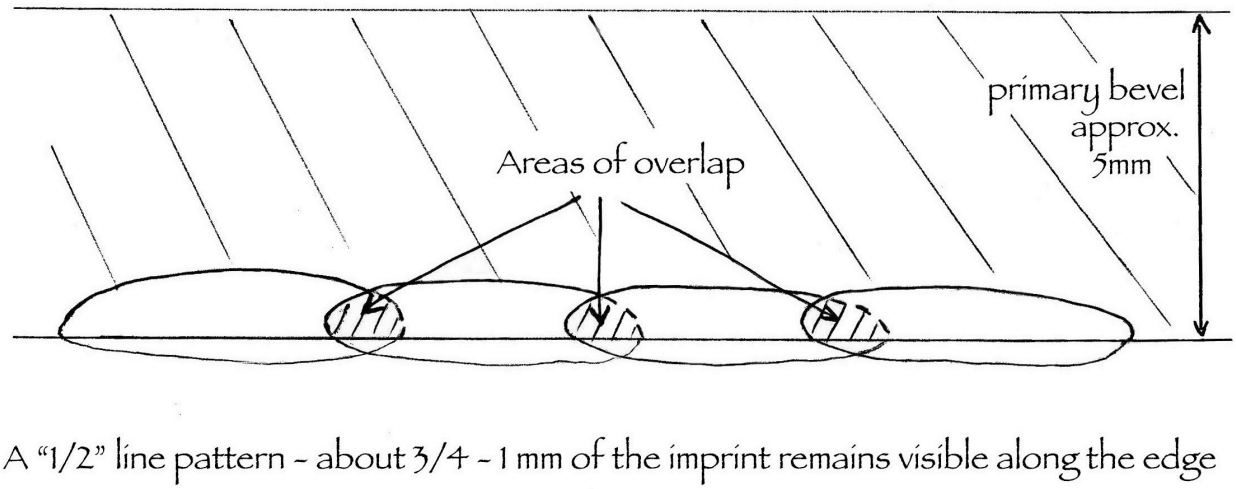
Figure 18.

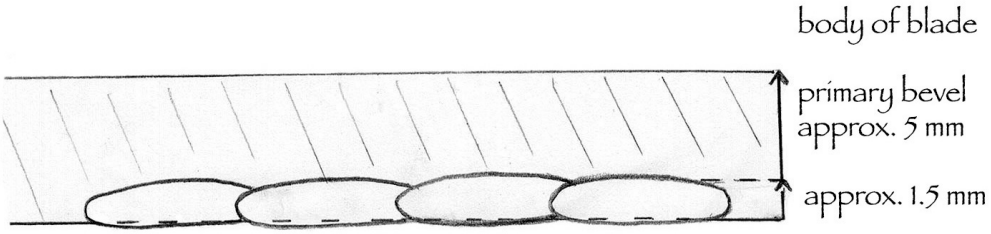


7. The strike patterns

The hammer strikes should be partially overlapped (sideways, as they progress from beard to point) and, preferably, placed in deliberate patterns consisting of one or more continuous "lines" (see Figure 19.) If more than one line is placed during one peening session, the lines themselves should also overlap in the up and down direction and the line farthest from the edge should be placed first.

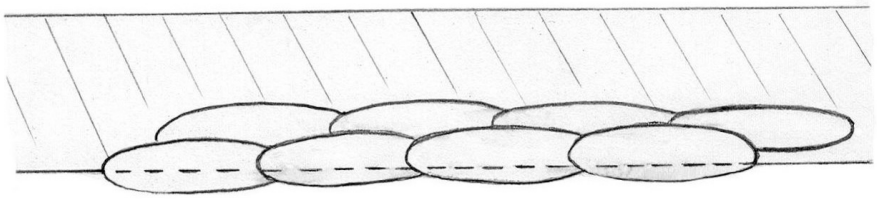
Figure 19.



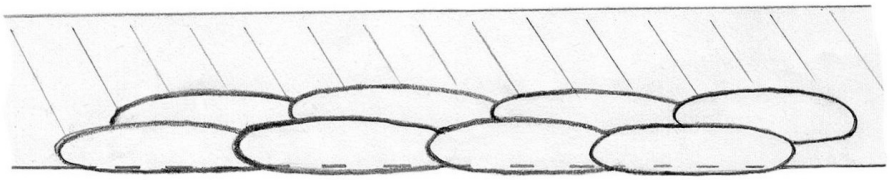


1 line pattern: usually sufficient for a general purpose edge on used blades if frequently peened

In multiple line patterns the strokes should overlap in both directions (sideways as well as up and down).



1 1/2 line pattern: Many new blades require at least this much of a peening treatment. Also good for slightly neglected edges of used blades.



2 line pattern: A periodic compliment to the single line

Multiple line patterns (up to 5 or 6) are best attempted only after some practice with the simpler ones.

8. Frequency of strikes.

We advise a slower rate of hammer strikes per minute than one can see demonstrated in most of the available peening videos, or than may be common throughout Europe's countryside. A steady pace of about 60, but no more than 70 strikes per minute offers *adequate time to note where and how the previous strike contacted* and to *focus* exactly on the spot to aim for next. This increases accuracy and thereby the quality of the results.

Additional concepts related to peening

This section contains details beyond the level of many other topics in these guidelines, and may be an overwhelming amount of reading for the average reader. However, they are included precisely because we consider them important in helping to fill some gaps in the "how-to" of scythe-related conversations which are gradually involving more international participation. To do that, we are moved to challenge some of the established theories and advice now broadly communicated.

Here we are concerned with two subtopics:

1. Further thoughts on what may be the most efficient path of the hammer.

2. Questions pertaining to edge hardness.

1. The path of a peening hammer

Through numerous seasons of many trials and errors, we eventually came to settle on the peening approach communicated in these pages as our preferred one. Its most distinguishing feature is the direction of hammer's path.

The rationale behind this non-traditional, somewhat radical peening style was likely inspired by Peter reflecting on his former experiences at the forge for the general needs of a draft horse-powered farm, but the conclusions are based on principles that every practicing blacksmith and metalworker quickly comes to understand.[8]

The very same phenomena taking place upon a blacksmith's anvil (described in Note 8 and illustrated in Figure 20) – of the steel being moved (though *not equally*) in all directions – also happens during the shaping of the scythe blade's bevel. Figure 20 is a crude representation of the steel's relative deflection in the respective directions when hit with a peening hammer in two different manners. In Figure 20 a) the strike is straight down and in Figure 20 b) it is diagonal.

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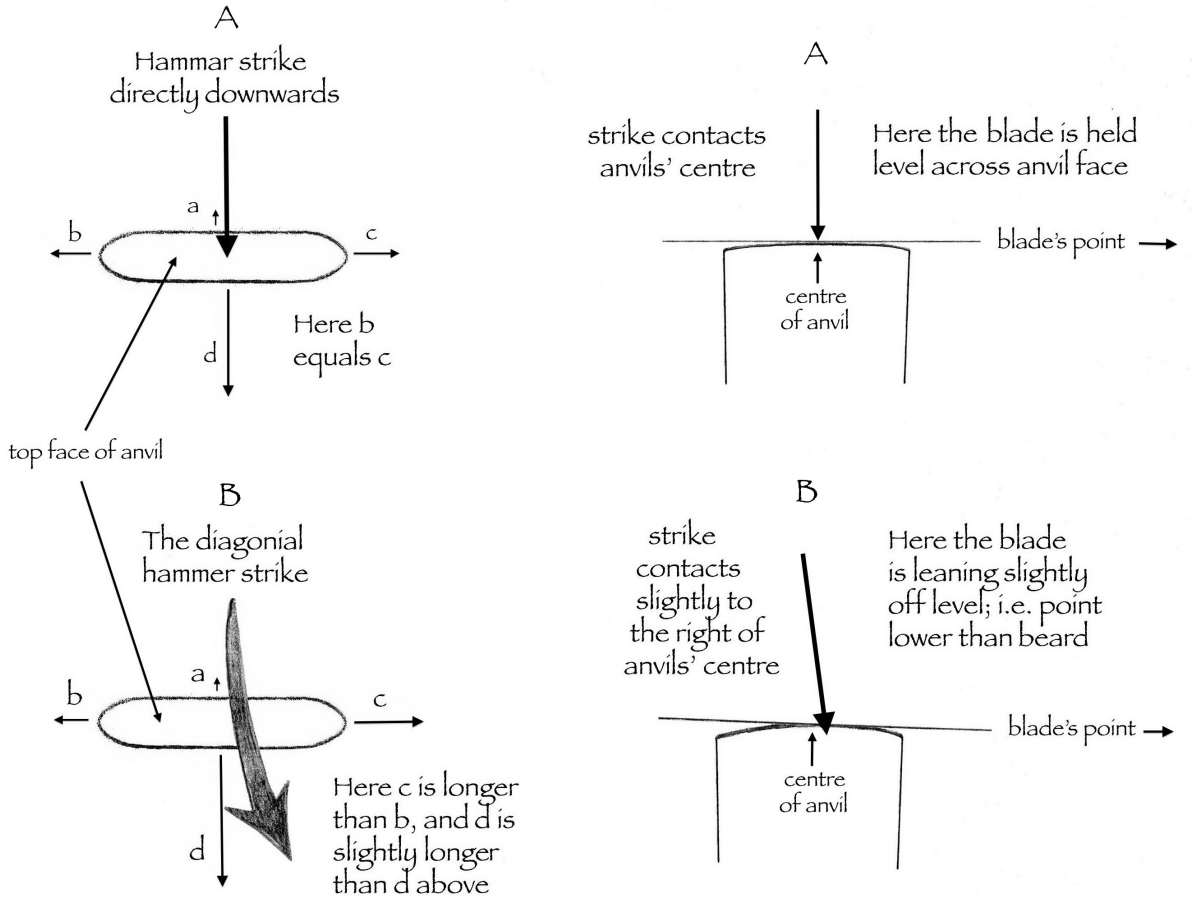
[8] In that line of work the cross-peen hammer is mostly used whenever it is desired to move material only in one direction, but accomplishing that goal depends, besides the shape of hammer's head, also on the technique applied. For instance, if a hot rectangular bar of steel of equal thickness throughout were hit with such a hammer near its center and exactly perpendicular to its length, it would deform an equal amount in *both* directions perpendicular to the longer dimension of the hammer's face. That is often not the objective. If the bar is to be lengthened in one direction only, (as is desired while peening the edge of a scythe blade) the smith will tilt the hammer's face slightly off the perpendicular (either toward or away from himself) and apply force in the direction the material is to be moved. However, in spite of his intent, the steel will *also* move a certain (smaller) amount sideways (to the right and left) – something that must be periodically compensated for, in a separate step, by turning the bar so as to place its narrower side against the anvil's face and, using the flat face of the hammer, correcting the irregularity.

Figure 20.



One reason peening is not still more demanding of skill and attention than it is, and (given some practice) more or less leads to the intended results, is because the bevel (unlike the steel bar example in Note 8) is *already* thinner near its outermost edge – precisely where we want the steel to move. Upon impact, steel naturally *moves more in the direction of less resistance*, in this case towards the apex. However, it is different with regard to the sideways direction along the bevel's length, because to the left and right of the hammer's impact the bevel is more or less equally thick. For the purposes of attaining a more penetrating edge we do not intend to move any steel comprising the bevel lengthwise, of course. Yet every little deviation of the hammer's face *sideways*, or lack of accuracy regarding the blade's support upon the anvil, favours either one or the other sideways direction of the steel's flow. Usually it

goes unnoticed, but whenever a certain threshold is passed the shifting of material to either left or right is precisely what can lead to 'up-and-down' waves along the edge (see Chapter 9).

Though to completely prevent a *certain amount of* such sideways deflection is rather impossible, we can help *direct it to where it causes less trouble.* The technique suggested in these guidelines is geared precisely to that end. What we are doing with the slightly diagonal strike is 'chasing' a portion of the steel ahead of the hammer against the not-yet-newly-stretched/thinned material, and on towards the blade's point. And what exactly is the point of it? Obviously, we think that it will 'behave' better. There are times when the most obvious demonstration of the phenomenon pertinent to understanding the concept can be seen, though it requires that at least the first width of the bevel is peened more or less to its maximum tolerance in thinness. At that point, the edge would *readily* "run" more than the common ½ to 1mm in from the apex, possibly 2mm or more. (For an explanation of the "run" see "How thin should the edge be", further on in this chapter.) Then, whenever mis-aims occur and *the overlap of strikes is too great*, the steel just behind the last strike (that is, to the left of the hammer's last print) will show a little 'wrinkle'. At first glance such a wrinkle may appear to be a crack, but it is not. (Cracks can also happen under these circumstances, but it would be a result of the edge not having been adequately supported from underneath, rather than too much overlap.) Counterintuitive though it may seem, attempting to "fix" such a wrinkle with a gentle strike directly on top of it will only cause it to move slightly sideways and remain there, grinning. How then is it to be 'repaired'?

Well, it calls for a light tactical touch. We back up with the hammer (*without hitting*) a couple of strikes' worth, and then progress again towards the point, *gently* and with an exaggerated sideways pull of the hammer. In this manner we move the steel comprising the wrinkle not further downward against the anvil's face, but rather (still on *slight* diagonal) towards the as yet untouched portion of the edge. This works well, though requires a bit of practice to get the amount of force and the degree of hammer's sideways pull coordinated.

Nevertheless, this discussion is <u>not</u> intended to imply that there is anything inherently "wrong" with the various traditional approaches to peening. Those methods, differing from what we practice and suggest, have served mowers for centuries and in countless cases continue to serve them still. We are merely sharing what seems to us to be an improvement in efficiency. Sometimes the discrepancy between something like longer versus shorter hammer's striking path may *not be simply a matter of one opinion as opposed to another*. (See Note 9 for an example of what we mean by this statement.[9])

[9] The first time I came across the recommendation of raising the hammer only 3-4 cm above the blade during peening was 18 years ago in Switzerland. Two scythe course instructors representing the Bio-Terra organization showed me an older pamphlet on scythe blade sharpening, and there it was, along with diagrams! Not new to peening, but with far from enough practice under my belt, I dared to question it: "Could that advice be somehow fundamentally wrong?" It took me several

2. Demystifying the mystery of edge hardening

Already many centuries ago, scythe users recognized that the edges of their blades became harder as a result of peening, and also that the harder they were, the longer they retained their functional sharpness. In the absence of hardness measuring instruments they could not say exactly how much harder, but for practical purposes what they learned empirically was enough. Not much has changed since then in this regard; both scythe sellers and users still keep reiterating that peening makes the edges harder and as such they retain their sharpness longer, cut better and/or for longer between whetting spells. They *still* don't really know *how much harder* the edge becomes by being peened, and have no descriptive terms by which to indicate even approximate differences in edge retention, other than "harder" or "longer", respectively. Individuals who utter the related statements are mostly repeating what they've heard stated by the leading information-presenting voices – the "experts" on the topic.

Various instruments for accurately measuring the hardness of both the blade as a whole and its respective sections are now available, but those among them that are suitable for measuring anything so thin as the edge bevel in the peened zone of it are few and far between; even scythe factories do not have them. (The "Rockwell" scale testing instrument version – which they all do have – is not well suited for measuring the hardness of material thinner than a blade's main body.)

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seasons of further learning, both about peening and aspects of the scythe's broader history, to eventually conclude that the likely answer to my question was: "No, not really". Rather, the booklet *was intended for a certain region and for a certain time period…*

Switzerland, you see, was without doubt a country where a greater variety of blade (and snath) models were once used than in any other region of equivalent geographical area. Although in a few niches of that same country relatively sturdy models were preferred, in most others very light blades were used. Back in those days *all* blades had thinner bodies than their model 'equivalents' have them today. In addition, in Switzerland peening hammers with 1000gr. heads were often used – the heaviest among the standard versions I have seen anywhere. (They are still available from Swiss scythe accessories suppliers, though the 600g versions seem to be preferred these days.)

Now, it is a fact that thinner metal moves under the hammer easier than does thicker metal, and also that the hammer's weight plays an additional, at times substantial, role. Plus, the meticulous old Swiss probably seldom neglected the edges of their precious blades and kept them in a state where they required only light, though frequent, touch-ups. Put these factors together, and those old guidelines were likely "just what the doctor ordered" – *for that place and period of history*. As pointed out elsewhere in this manuscript, sometimes outdated or region-specific information is passed along without qualification, and is then applied somewhat 'universally', whether or not someone has taken the time to critically evaluate its merit to the circumstances at hand.

For instance, it so happened that around the same time I saw that old booklet, a gentleman in Germany (one of the authors we refer to several times in this manuscript) was writing the first actual book on scythe use in that language. New to the subject but eager to learn, he scoured the countryside in the German speaking countries seeking information, and among other pearls of scythe wisdom he evidently also came across that old Swiss booklet. The pages of his guidelines now contain some of the very same old Swiss diagrams, along with the advice that a peening hammer should be lifted 3-4 cm above its target, and it is repeated in all three of his books, the latest published in 2008. Well, I venture a guess that those who came across that advice and followed it – while peening the now thicker (and frequently neglected) edges of contemporary scythe blades with the common 500gr hammer – may have found the process very slow and/or the results disappointing.

Yet, there are numerous questions that one might ask with respect to peening, such as: Is there a difference in hardening effects between the various tools or methods used? How does the force of the hammer's impact affect the process? Does the increase in hardness continue indefinitely, and if not, then for how long?

Answers to these and other related questions have not been easy to find. (Even scythe factories' technical personnel can't generally answer them.) In fact, as far we know, the questions themselves have hardly been asked. Certainly none were brought up in any of the published books on scythe use. Thus it seems to us that addressing the subject here may be fitting.

It doesn't take a metallurgist to know that the softer the steel, the easier it yields to the strikes of a hammer. Tool users also typically understand that, in general, harder edges will stay sharp longer. And so it has been said and written by many that some blades are "made of harder steel than others" and [therefore] "hold their edges better". Practically everyone writing on the topic of peening has reiterated that oft-mentioned fact that "peening hardens the edge", sometimes adding a layman's level of explanation of why that is so. "The hammer 'packs' the steel" is how an old farmer in Europe might put it. David Tresemer offered a more sophisticated explanation in The Scythe Book: "*In the molecular realignment of cold work, the steel becomes strain-hardened without loosing its ability to dent under severe stress"*. David had a way with words, and his one statement on this topic comes across as something worth noting. And noted it has been, and extrapolated upon by others in their various versions of "why to peen". Yet neither David's nor any subsequent version of it we've heard or read so far, really answers the questions presented above. Here we take the opportunity to add a bit more to the pot and spur on the investigation; some improvement over the existing fog might be helpful and perhaps not that difficult, at least on the level of a farmer's needs. Inadequately qualified (non-metallurgists) as we may be, we attempt doing so by help of reference to hardness tests that we had commissioned a specialty lab to many years ago.[10] That, and our subsequent continued experimentation at the peening block.

What we learned not only from the tests themselves, but also from conversations with the director of the lab plus a brief study of some tables found in the books of his extensive library, can be summed up as follows:

- The compression-caused scythe blade's edge hardening process begins from the very

[10] The lab's professional report, along with our commentary to it, has been posted on our website since January 2005. The report is focused on the actual tests themselves; speculating how the results can be made use of by mowers was not the investigators' mandate. That is something we partially covered in the mentioned commentary, but attempt to address more thoroughly in the discussion below. (It appears that the authors of the how-to publications on scythe use have not been among those who read that report; at least we do not see any evidence of it reflected within the contents of their subsequent instruction on peening. Nor have any of the technical sort of questions we have received over the years, been related to the findings presented in that report.)

first serious contact with the peening hammer and continues to a much lesser extent with subsequent peening sessions – but not for very long. With other words, that initial hand peening, if somewhat thorough, can bring the hardness fairly close to what it will ultimately be. The notion that *each time* we peen, following the first few sessions, we further harden the edge is a flakey one, *unless* that particular peening pass includes *also* a portion of previously un-peened bevel. In such a case *that new addition,* and the new addition alone, is getting harder in the process. (Of course, the distinction between them quickly becomes impossible to delineate, and would at best be fuzzy.)

- The degree of increase in hardness of cold-worked steel – in this case *only* the bevel itself – is directly proportional to the steel alloy's carbon content, not to what HRc the scythe factory tempers the (whole) blade.

Perhaps the most frequent advice that may lack some understanding of the related concepts states that the very last 'pass' of each peening session should entail careful hammering of the outermost 1mm of the bevel – *in order to harden the edge*.[11]

As can be seen, all the scythe publications' authors, except for Tresemer (whose recommended peening technique did not consist of "passes" as such) advise that last "compressing" pass. Be it as it may, the science behind that very technique has not been well explained by those who advocate it, and based on the tests outlined in Note 10, as well as our own practice, we are prone to question its validity. Namely, we think that by the time of that last 'touch up', adequate edge hardening has *already* taken place. That would certainly be the case with a used blade already peened numerous times. Thus we are led to consider

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[11] Lehnert (2005, 2008):
"During the compressing peening strike the hammer is not pulled towards the person's body but comes down directly perpendicular to the edge. During the compressing peening strike the metal will not be thinned. This striking technique's effect is to 'pack' tighter the metal of the edge, with other words, cold-harden it. Often it is suggested that the last pass of a peening session is performed with this compressing technique in order to increase the hardness of the edge and optimize the edge retention." (The version in the author's 2008 book is practically word by word the same as above.)

Anderson (2008):
"Once the metal at the edge is the desired thinness/sharpness, you make the final pass or passes, with a straight-on, and straight downward (no pulling) hammer strike. This compresses molecules of the metal and hardens the previously stretched metal. It gives the blade a very tough, hard and durable cutting edge, If you skip this step, you will need to re-peen sooner, and you will be more likely to dent your edge, if you unexpectedly hit a tough woody stem, or pebble or something."

Tomlin (2015):
"The final row of blows is placed on the very edge of the blade. Rather than drawing the hammer towards you, these blows are made vertically to slightly work-harden the edge, rather than further widening the bevel."

Miller (2016):
(After two previous passes) *"... hammer the blade one more time, this time at the very edge. Have the edge of the blade exactly at the peak of the anvil. This last hammering hardens the material at the very edge for maximum sharpness and durability*."

the need for that extra "hardening pass", suggested in nearly all published guidelines, as yet another scythe-related semi-myth, similar to "wet grass is easiest to cut" (addressed in Chapter 6). Since the publishing of the latest of the sources quoted in Note 11, that advice has been passed around among English readers with growing frequency. Its author did not just come up with it "out of the blue" or, evidently, by his own trials with sophisticated hardness testing instruments. It may be one example of "country wisdom" generations old, often region specific, and previously passed along from father to son, but it is by no means some across-the-board standard. According to in-field observation in several countries, there are far fewer mowers deliberately practicing this last 'edge compressing' peening approach than those who do.

As far as anything *in print*, the advice seems to have initially come from Lehnart's books. It was later picked up Anderson, and spread further afield by way of his little peening manual. Subsequently, Tomlin and Miller advocate the same technique in their respective books.

That said, there is certainly nothing "wrong" with that extra little pass, even if it does not really fulfill its claimed purpose. What it *does* accomplish is additional evening-out of the (probable) inconsistencies of the previous pass. So other than that it takes extra time, it is by no means useless, and we do not intend to dissuade folks from adding that finishing touch, if they wish. Plus there is yet another unknown… actually two of them. One of them may be related to a more esoteric aspect of peening than the contemporary science of metallurgy would easily wrap its compartmentalized head around.[12] The other reason is more rational and closer to

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[12] The only written material we have come across which includes more than a word or two of this alchemy-like explanation, is in three of the books detailing the philosophy and works of an eccentric Austrian forester, philosopher and inventor, the late Victor Schauberger (a contemporary of Rudolf Steiner). One of the sources is Living Water (originally published in Sweden, later translated into German and English). The other two are Living Energies and The Fertile Earth, each containing a wealth of information on Schauberger's theories, translated and compiled by Callum Coats, bless his heart. It would have been an extra treat if those two authors were at all familiar with the actual use of scythes, though as far we can tell, that was not the case. Nevertheless, they bring to attention a rarely mentioned reason for peening, or let's say an *additional* one, that may well be much older than the time of Schauberger. As is probably common knowledge, alchemy was, centuries ago, far from rare in the region we now call Europe, and metallurgy was its prime field of play. What all happened deep inside its atomic structure when first iron and later steel was hammered, was likely understood in terms quite foreign to our present minds. Schauberger may have grasped it better and merely 'interpreted' it on behalf of his contemporaries in the clearer, more modern science-like terms. He evidently approved of peening of scythe blades and advocated the practice; it certainly fit like a glove with the rest of his philosophy so far as natural processes are concerned. The interpretation of his understanding (by Callum Coats) in brief, is as follows:
"By hammering a scythe or sickle opposing charges are created in the metal, which are subsequently discharged via minute serrations as the scythe is swung through cool and dew-laden grass at a low angle. … Elsewhere it has already been explained that the radiation intensity is strongest in the morning and results in the peak-production of oxygen. … In this way the grass is cauterized by an animalistic current that flows from the point of the scythe toward the handle, resulting in the immediate closure of the wound… As a result of these phenomena, fields cut by properly designed ad expertly hammer-sharpened scythes will maintain their productivity with little use of fertilizer…"

Now, it is possible that the technique of those old alchemy-practicing scythe-hammering men did include that last little "edge compressing" pass. Perhaps Schauberger noticed it or perhaps he did not, or perhaps he mentions it somewhere in his voluminous papers (he did not write books) and his interpreters missed the importance of it, and did not pass it on. Who

the slant of the rest of this discussion.

It is true that we have never had tests commissioned specifically to determine the effect of that final "hardening" hammer pass on the outermost ½ - 1mm of the edge. With that information still missing, it can rightly be argued that there *could* be a further increase in hardness. Even so, we question the wisdom of being so, hmm… 'hardness-greedy'. As one could read in that lab report, merely *one thorough hand peening session took the hardness of the worked bevel from the factory's initial 44/46 HRc to 53 HRc*! Now, may we ask: *just how much harder do scythe users really want their edges*??

On a related note, Anderson (in his peening manual) emphasizes that the peening hammer and anvil "*must be harder than the blade*". Yes, that would certainly be helpful, though is not always the case. For instance, due to German government's safety regulations with respect to striking tools, the Pickard hammers and anvils Anderson sells leave the factory door no harder than 54 HRc, which doesn't leave much of a difference in hardness between the peening tools and the blades' 53 HRc… Of course, during peening, the faces of hammer and anvil will, just like the blade's bevel, eventually become harder. But how much harder, exactly? With questions such as these in mind, we share further reflections in Note 13.[13]

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knows? Furthermore, the '*surface'* concept of "edge compressing" may have remained in little enclaves of scythe's old homes, but the alchemical reasons gradually ceased to be communicated along with it. So now (who knows how many generations later) we receive some diluted version of the why and how of the practice – something not happening for the first, or last time in history… And diluted it is, because without the stipulations communicated by Schauberger (protection of the peened blade from the sun, mowing before sun up, etc.) the edge compressing exercise loses its magic.

[13] Is it not common knowledge among tool users that the hardening of edges can be taken too far and that harder edges are *more difficult to sharpen*? And are many beginners not having difficulties getting their edges well honed? How useful is high edge retention if the blade's owner already has difficulty in *first creating* the potentially well-performing edge?
There are plenty of tools, scythe blades among them, which their manufacturers could have tempered to a higher HRc, but didn't. Certainly not for the purpose of making them easier to sharpen, but (in the hands of those new to sharpening edge tools) that is a "fringe benefit" of their concern with damage resistance. On that theme, Anderson states: "*If you skip this* (extra-hardening 'compressing') *step… you will be more likely to dent your edge, if you unexpectedly hit a tough woody stem, or pebble or something."*

The pertinent question tool user might here ask is "which of the two 'evils' possibly faced upon encountering a tough target is the lesser one – a dent or a crack?" Chapter 9 (Edge Repairs) should help settle that question. However, it is already a long established fact that harder edges are more prone to crumble/chip/break off than those less hard. The latter – under the same challenge – might dent instead (provided, of course, that factors such as edge geometry, steel and workmanship quality, etc., are on par).

Many axes, chisels and knives are good common examples of how edge hardness has long been considered holistically, first by their makers and subsequently by the informed among their users. It is, for instance, well known that the Japanese (typically harder) versions of the above trio are not always the best choice for the average Western hands. For the benefit of novices on the tool using scene: As a culture, the Japanese tend to be not only naturally more careful but also more determined to perform a task to perfection, than is the average Westerner. The careful aspect of their ways enables them, for instance, to make better use of a woodworking chisel with an edge tempered to HRc 62 than would be the case with (again!) the *average* Westerner. The Japanese would be not only less likely to crumble it in tough knotty wood, but are also more patient to put the tool through 5-6 progressively finer grits of stone while sharpening it, and often still do so by hand.

The aforementioned tests clearly showed that even *one* thorough peening session can take the original factory hardness several notches higher on the Rc scale than it was when it left the factory door. Just exactly how much of an increase on that scale and how much harder depends on *the carbon content of the steel the blade was made of* – *not* to what degree the maker decided to temper the final product before sale. The differences between blades available on today's market are*, in this respect*, so minor as to be mostly disregarded. Rest assured that even those among them which upon initial peening are identified as "soft", and hence declared "cheap" or "no good" can, after but a few peening sessions, be as 'hard' as they really need to be for working purposes. This is not to imply that there are no significant differences in blade quality, or that it does not matter how hard/well-tempered are the actual *bodies* of all those blades when they leave the factory. There are certainly differences on both of these counts, and factories each have their own reasons to heat-treat their products as they do, but that is not pertinent to the topic at hand. What we think is pertinent for scythe users to understand, consider and apply during edge maintenance, is that the hardening process resulting from peening does not continue indefinitely. In rather short order the edge will reach the maximum hardness its carbon content pre-dictates, and then generally will remain as such until it is worn away by the subsequent honings. Why do we believe this to be pertinent to understand and consider?

Firstly, the increase in hardness caused by the peening hammer makes subsequent shaping of the bevel more difficult – something that for the duration of a scythe blades' years long service is simply an unavoidable aspect of the edge maintenance equation. However, knowing that this is so, a person involved in the peening process can take advantage, whenever possible, of the times when the steel is still lacking its eventual hardness. That would be mostly in cases of brand new blades with overly thick factory edges (very common these days) or in the aftermath of a more serious repair when a significant portion of the bevel was removed and needs restoring (discussed at some length in Chapter 9).

Secondly, some unnecessary hammering *with the specific intent "to harden the edge" yet further*, can be spared…

On the other hand, the inevitable increase in hardness following peening has long been an ongoing consideration in our own edge maintenance. Thus whenever we begin to peen a blade that has not yet been peened by hand, we take the opportunity to move the steel as much as possible with the very first hammer strikes. To an observer, these may, on average,

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An example less classic but closer to home: How many owners of the well known "Buck" knives, made by a USA company (whose advertising motto is "famous for holding its edge") have a relatively easy time sharpening them – *provided their tools for that purpose are on the level of stones in the tool kit of the average scythe user*? (With other words no sanding belts and diamond hones.) On the other hand, scores of other old and equally popular knife brands such as the American "Old Hickory" or the French "Opinel" are more user-friendly with regard to sharpening.
On our homestead we also prefer the hardness of the average among old American axes (typically in the range of HRc 45) followed by the German "Oxhead" (a little harder, perhaps 50 HRc, but still fine) to the HRc 58 Swedish "Granfors Bruks". For those same reasons – with an eye towards '*resilience*' – would we rather our scythe blades' edges not be *extra* hard.

appear more serious regarding their pull as well as force applied than should be necessary; some might even consider them outright 'dangerous' (edge damaging) but a qualification is in order: Depending on the task at hand, the force behind the hammer ought to vary considerably. In descending order of strength applied (with the nuances left out) here is our *approximate* guide:

- Whenever a completely new bevel is being created from the actual body of the blade. In such a case, and with contemporary "grass" blades, we are expecting to shape steel ranging from 0.9 to 1mm in thickness, occasionally even more. As discussed in Chapter 9, this can be done *without* first reducing the thickness by grinding or filing, but needless to say, gentle taps would accomplish nearly nothing in that case…
- Nearly all brand new blades (exceptions listed below). Many of them really should have the first pass started further away from the edge than beginners are advised to attempt, but even in the 2mm zone the extra hammer momentum can help.
- The average used blades with edges already variously neglected. This is, of course, a category outside of the 'still soft' edge, but we list it here to provide some reference to the overall strike intensity. In some cases, if the person handling the hammer does not want to "take all day" to do an adequate job, it may be necessary to increase the force of the strikes even beyond that needed for a (likely thicker-edged) brand new blade.
- Blades in a condition approximating those above, but ones of older production (say pre-early 80s and further back) because, on average, their bodies are thinner. And, in as much as thinner blades are more pleasure to use, they are also more prone to lose tension in the body (not just the bevel) if handled too roughly with the hammer.
- New blades with more honestly "ready to use" edges (see Note 14 for specifics). This is the exception to the second group above, and they do not need much force behind the strikes until at least the first 1/2 to 1 mm of their factory bevel has been worn away.

Now to tie up this subsection of edge-shaping, we briefly address a couple of other hardness-related statements which have been loosely thrown around in the overall spoken or written scythe use information package. For instance, while some warn novices not to buy those "cheap, soft" blades, the German scythe books' author turns the reason for that warning right upside down when he states: "*It is not recommended to begin the peening practice on the so-called "low cost/economy scythe blades". These are often too thick near the edge and also of too hard a metal. Starting the peening practice on one of such blades, will lead to the proverbial breaking of one's teeth".*

One of the issues confusing the topic is the prevalence of statements along the lines of "some blades are made of harder steel (than others)". This technically inaccurate semi-truth may have been begun long ago by the makers' own promotional efforts, and that by way of

labels or hot stamps accompanying their *honestly* harder products.[14]

All in all though, the encouraging aspect of peening that we want to point out is that there appears to be a certain amount of grace ever present in association with the art of peening. It is a plain fact that most of us mortals are unlikely to execute the task with utmost perfection. Yet, in spite of our various errors, the majority of blades end up somewhat functional. Should it all be written off to mere luck? Or could it be the doing of St. Florian – the patron saint of scythe-smiths – ever hoping that the creations of his 'flock' will be useful and appreciated? We may never know…

How thin should the edge be?

Among mowers there are numerous perspectives – some of them based on experience, many on hearsay or the reading of (usually vague) instructions – as to what constitutes an appropriately thin edge. Using terms like "razor sharp" or "paper thin" may allude to a distinction between this cutting tool and most others, but does not really clarify the issue.

"Paper thin" is the sillier metaphor of the two (even though paper is made in a wide range of

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[14] To begin with, while procuring raw material from a steel mill, scythe factories do not order either "harder" or "softer" steel. Rather, from a wide range usually available, they choose a certain alloy, the composition of which meets their needs. The carbon content is the single most deciding element, and also the one that either limits or expands the range of actual hardness the tool made from it can eventually be tempered to. Up until perhaps 3-4 decades ago a few companies in Germany and Austria did use, in limited quantities, also raw material with around 1% carbon and from it the so-called "Hardstahl" blades were made. It was generally known that such blades, though they held a better/longer lasting edge, were also considerably harder to peen and thus not recommended to those lacking in the necessary skill. Other than used leftovers of the true "Hardstahl" blades, their production is now over, and only the labels to that effect remain on the market… The tool alloys used by the scythe industry these days are the same as is generally employed for making of many other tools, and they range between 0.7 and 0.8 carbon content. From any of such alloys a scythe blade can be made that fulfills the desired range of the *initial factory-set* hardness of 'Continental' blades produced in Europe and in Turkey. That range, today, is between 42 and 46 Rockwell hardness. Still not so many years ago the average used to be somewhat higher, although in view of the disappearance of former peening skills, the lowering of it has probably been the one good direction of recent developments within the industry.
To repeat: given the carbon content of the material from which it was made, all of these blades will, if peened, reach a hardness high enough for its intended use.
What probably confuses a lot of folks who may purchase those "economy" blades is the fact that a portion of those that for well over two decades have been widely available in many European chain stores are from China. And while the material they are made of is likely on the lower end of quality, having played with some new and used samples we do not perceive them to be of an especially low carbon alloy. Rather, the issue is that there is a notable inconsistency in the hardness as they are *when purchased* – and this is what throws off all those hasty one-shot "hard"/"soft" evaluations. The differences are probably due to the sloppiness of the tempering at the factory, but given appropriate beveling treatment by the new owner, the edges of single specimen do seem to 'even out' and can be actually functional. Another significant portion of Europe's "economy" blade supplies are made in Turkey. These are more consistent regarding their temper (HRc) and likely to be declared as "too soft", again, *when purchased* (unless their sometimes overly thick bevels skew the beginner's evaluation). After two peening sessions their edges will become quite on par in hardness with the average of the authentic European production from Austria, Italy and Slovenia. Eastern Europe is full of blades from Russia, but nobody trying them out is likely to declare those "too soft". Their factory hardness, at about 48 HRc, is above anything presently made or imported into mainland Europe.

thickness and textures); we surmise that plenty of novices taking that advice to heart have gone overboard on the thinning of their blades.

Regarding “razor sharp”, we doubt that many of the scythe blades with this exalted prefix are really fit to shave hair off their owners’ arms (never mind the face – the traditional task of a razor) before they head for the meadow… or any time thereafter. In any case, unlike the shaving razor, whose cutting task is solely to sever human hair, scythes are used for the cutting of material *all of which* is not only considerably thicker but varies greatly in resistance to the cut. Many stands of “grass” include species of vascular plants ranging all across the spectrum of toughness, a portion of which would have the edge of the classical straight razor promptly crumble upon attempting to “shave” them.

Furthermore, there is a considerable difference of understanding among novice scythe users as to what constitutes “grass”, “weeds” or “bushes”. Hence designating one scythe blade a “grass” blade and another a “bush” blade is only so accurate *so far as edge geometry is concerned*. The meaningful difference between this tool’s somewhat arbitrary classes or ‘types’ lies in the *overall strength of their whole body*. The edge itself is ‘user-made’ on a rather continuous basis and *can* be prepared for a task quite opposite to that for which the body it is part of was made in the factory.

To put this in a more concrete way: A “grass” blade can have its edge fittingly shaped for the cutting of bushes *of a certain diameter*, and the edge of *any* “bush” blade can be made so thin as to cut grass with an ease that would put the *average* new “grass” blade swung these days to shame. And (by more than just “hearsay”) we are led to think that inappropriately shaped edges are notoriously common, and/or used for inappropriate tasks. Thus, while some people need to apply more force than should be necessary to cut an average meadow or a lawn, others quickly damage their much too thin (*for that very job*) edges working in areas containing saplings and over-mature “weeds”.

Ultimately, only experience in cutting wide variety of plant matter, and doing so with different blades and/or variously-shaped edges can lead a person to a deeper understanding of what 'properly thin' means *with respect to this* versatile tool.

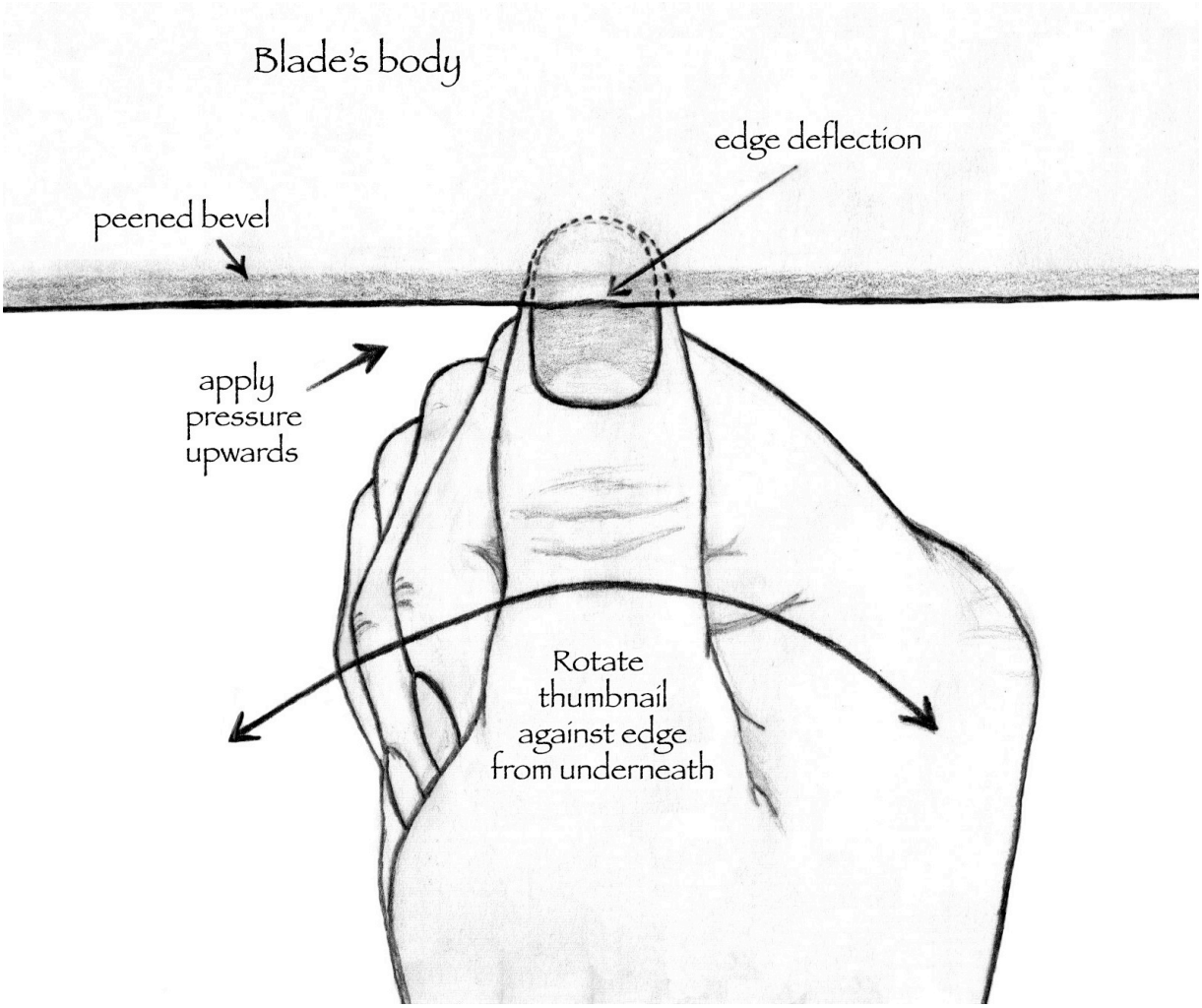
Now, with the cautionary notes covered, we can proceed to offer some actual guidelines:

While to our knowledge, there are no gauges available expressly for the purpose of conveniently measuring the “correct” thickness of a scythe blade bevel’s outermost portion, there is a suitable substitute close at hand. Traditionally, the mowers' own thumbnail has long been used for that very purpose.

The expression “a well-peened scythe blade edge must run over the thumbnail” (commonly used in German and Slavic languages, plus likely many more) roughly sums up the method.

“Running” in this case means that the outermost portion of the edge shows a small wave or deflection when the thumbnail is carefully (albeit with firm pressure) pressed against the edge, slowly moving along with a slight sideways rocking motion. Traditionally, such an edge is referred to as “one that runs”.

Figure 21.



It is a convenient ‘measuring’ method because the thumb is (usually) at the job site. For the safety-conscious, a fine to mid-grit whetstone can be used in place of the thumbnail, even if some nuance may be lost. In either case it is important to have adequate lighting in order to readily observe the deflection, which may (and often should) be only very slight.

The additional decision a mower must make is exactly *how much depth of the bevel* should deflect under thumbnail pressure, and under exactly how much pressure. This is usually not spelled out in the old mowers’ maxims, and when posing that question to many experienced men, we have received a puzzled look, or at best a vague answer of “not too much”, on both

counts. Though the extent of the pressure would be difficult to somehow set in stone, the depth of bevel is measurable and should be easier to agree on. From a combination of much questioning, along with our actual experience, we have concluded that two mm of “run” may be considered *the widest advisable.* That is also the standard in many European peening competitions, though by no means one that every participant manages to attain. Keep in mind that such an edge is well suited *only* for terrain free of stones and tough stems. Some old European farmers do peen their blades that thin, but they are the ones who, as opposed to the majority, know what they are doing, both in terms of how to arrive at such an edge, and how to subsequently use it.

The more common standard is one mm (of a “running” edge); suitable for places where one can hope the blade won't encounter rocks or old dry sapling stubs hidden in the grass.

One half mm we consider enough width of “run” for novices – both regarding what they can safely accomplish with the hammer and how competent they are in judging the challenges of an anticipated mowing task. *For the deliberate cutting of somewhat woody material it is safer not to thin the edge that much.* While performing decidedly tough “bush” blade-type work, it is better to have an edge that does not yield to thumbnail pressure at all, but still with the outermost one mm relatively flat, not rounded. (And, yes, even “bush” blades’ performance can be considerably enhanced by peening!)

In all cases above, the blade should readily respond to the whetstone and perform well when put to *the respective tasks for which it was shaped*.

Frequency of Peening

Peening should be repeated after *approximately* every four hours of sustained mowing, or even more frequently if used for cutting in demanding circumstances (a lawn during the heat of the day, for instance). According to some guidelines, this would be excessive. However, throughout Europe, roughly four hours was traditionally the most common length of time between peening sessions, and one that our own experience also confirms to be advantageous.

Of course, the time it takes for the edge to acquire the degree of roundness that calls for re-peening can vary widely. (See Chapter 6 for a more extensive discussion on this theme.) The differences in frequency of whetting, how exactly it is performed and what kind of stone is used, all confound any attempt at some consistent formula for a proper time span between peening. The range from 2 to 6 hours of use between peening sessions is one with which to experiment.

All things considered, we think that it may be better to err on the side of a little too often

rather than not often enough. Besides, "El ejercicio hace al maestro" – is how the old Spanish mowers would likely put it…

In addition to all the above, we venture a guess that if one would think of peening as simply “flattening” (a thin strip of steel) rather than "drawing out the scythe blade's edge", it might not seem so daunting a task. Consequently, this ‘touch-up’ would perhaps be performed much more often, that is, soon after the mower notices that honing in the field becomes less effective and the blade pulls harder, *even if no stems are still left uncut*.

Then, with relatively little time invested, a single line of light hammer strikes in order to *flatten the rounded apex* can be placed just along the edge (see Figure 21; the ‘half’ or ‘one line’ patterns). Followed by the post peening treatment outlined below, this should restore the blade's cutting edge for another efficient spell in the field.

Here it ought to be re-emphasized that a *well-beveled edge* and *‘functional sharpness’* (arrived at by additional honing) are *not necessarily synonymous*. To arrive at ‘functional sharpness’ quicker than is common, another bit of attention is in order…

The post-peening treatment.

As pointed out in “Post treatment of a jig-peened blade”, we consider it also a good habit to hone a newly freehand-peened blade *before* it is put back onto the snath. This step is not traditional, although some scythe-using cultures have sayings to the effect that “[once a blade is re-peened] only after the fifth honing does it again cut at its best”. It is sometimes even said that the number is ten, not five! Why it should be so, or how that number could be lowered, is never explained, nor, it seems, seriously considered.

The unequivocal fact is that *most* people are unlikely to do a perfectly uniform job of peening (as can be done by the best of scythe factories’ machines and skillful operators). There will likely be some high and low spots, even if imperceptible at a glance. One way to make the non-uniformity visible is to lightly apply the flat side of a stone on more or less the same angle as used during work in the field, but *sideways* along the edge. (A synthetic stone, being more “aggressive” than a fine-grit natural one, makes the effect easier to see.) Then look closely. For those with less-than-perfect eyesight, a loupe would be helpful.

We congratulate those who, while conducting such a test, do actually obtain a perfectly even shine across the whole length of a freshly peened edge; they are among the rare ‘masters of the trade’. Their blades consequently do not need the additional post-peening treatment suggested herein, in order to function as well as a newly peened blade actually can. For the rest of us (meaning the vast majority) until the minor but ‘inevitable’ high spots are sufficiently abraded, they will prevent the whetstone from contacting the lowest spots completely. Thus,

initially, and for a gradually diminishing period, tiny portions of the edge will not actually be properly honed. How much of an issue this may be depends on how uneven a peening job was performed, how coarse a whetstone is used in the field, and with what degree of skill.

The process we advocate (honing more thoroughly with the blade *still off the snath*) enables one to "skip ahead" and begin mowing with the blade as sharp as it may otherwise be only after several in-field honings. As we see it, *this is not a question of extra time, but rather time taken sooner rather than later*. Once it becomes routine, it should take literally less than a minute.

While performing this step, the stone should be applied on the angle approximating the one each respective individual uses *in the field,* NOT as during pre-peening treatment (examples of both angles are shown in Figure 11). As with a jig-peened blade, a convenient moment to perform this post-peening honing is while still in the same sitting position at the peening block, holding the blade by the tang in the left hand and resting it across the thighs. While in this comfortable and steady position, the stone to edge angle is likely to be more consistent. Alternatively, the blade can be honed with the point pressed into the edge of the block while kneeling or standing and holding the tang to steady it, although we prefer the sitting position.

Further notes on pre-and post-peening treatment of scythe blade's edge (written with fledgling edge tool users in mind)

Disregarding for a moment the thickness of the bevel as a measure of sharpness, a well-honed edge on any tool is so *thin at its very apex* that it provides inadequate surface area to visibly reflect light, when viewed edge-on. At a certain stage between that sharpness and *obvious* dullness it begins to reflect a bit of light here and there in spots where minute amounts of steel either broke off or were pushed sideways. As long as those spots are not very numerous, the tool may still perform relatively well for uses that do not require a *really* keen edge.

Of course, many common tools continue being used in such a condition. In most households, it would be very easy to find a kitchen knife with an edge that readily reflects light along its entire length; a condition that, technically, puts it into the 'decidedly dull' category. Though no self-respecting chef would be caught with such a knife in hand, scores of homemakers may be content to saw or hack their way through stuff for a long time before re-sharpening (or discarding) the semi-useless tool. So it is with weekend campers and their hatchets, mechanics and their pocketknives, and so on. In our "Age of Machines", a complete list of dull tools at work would be very long indeed.

However, the purpose of this guide is to inspire higher standards. One of the first steps in that direction is learning to recognize a dull edge, initially by staring at it. Elsewhere in these

guidelines we offer tips on how to *feel* dullness in action, but that approach, though ultimately most accurate, is also more subjective. Described below is one of the methods to very quickly assess the edge at least on the elemental level, and it applies to many other tools besides scythes.

With the blade still *off the snath*, as it would be immediately after peening, the need for *some* post-peening-treatment can be recognized at a glance by examining it as follows: position the blade's edge towards a source of good light and move it slightly back and forth until an angle is found from where the light reflection on the apex of the edge can be best observed. If this is done following *jig* peening, *most* of its length will likely show various intensities of reflection. *At no time during use should the edge reflect more light than can be seen following peening with the jig!*

Clearly, some follow-up treatment is necessary. As mentioned earlier, a fine-cut file is sometimes used, and may indeed be more expedient as the *initial* 'whetting' tool for those using the peening jig. We shall not expand here on the art of filing, but instead focus on the use of stones, because abrasive stones of various kinds are the ultimate means towards more refined edges.

Some general principles for those completely new to sharpening edge tools:

Regarding the *direction* in which sharpening stones (of all sorts, but excluding files) are moved across a tool's edge in order to remove material, there are three basic approaches (see Figure 22)

1. Straight –
   a) From the tool's back towards the edge OR
   b) From edge towards the tool's back, in both cases moving somewhat along the edge so that the straight line is on a slight diagonal.

2. Back and forth – incorporating simultaneously both movement directions referred to in '1' above.

3. Circular – where the stone is moved in a 'looping' pattern, starting on one end of the blade and progressing toward the other.

Please note that *any* of these approaches can effectively remove the superfluous bits of steel from a tool's edge. They each have ardent supporters, and are sometimes presented as "the" way to do it. The fact is, any of these cultural variations can work satisfactorily. If one tool sharpened with a certain pattern of strokes functions better than another sharpened according to a different pattern, the disparity is probably due to the differences in skill and understanding of the person who guided the stone rather than result of a particular pattern employed.

A few additional pointers (refer to Figure 22, below):

1. If the stone is used only in the straight pattern, but as in variation ‘A’ (from back towards the edge), more “burr” will be produced, and will later need to be, for the most part, removed. Of all directional approaches this straight pattern may be more demanding of a person's skill to perform a flat stroke with the stone. As discussed more at length in Chapter 6, the common natural tendency is to *increase* the stone-to-blade angle at the end of the whetting stroke, thus unintentionally rounding off the edge.

Moving the stone as in variation ‘B’, from edge towards the blade’s rib/back, will leave the least amount of burr of any directional method and be slightly less prone to round off the edge, but causes greatest wear on the stone.

2. The back and forth movement (‘C’ in Figure 22) represents an approach somewhere between the two straight patterns above, in all respects. By “back and forth”, in this case, we mean “to and fro”, *on one side of the tool at a time*. (Within the scythe circle’s jargon, the term “back and forth”, with regard to honing, usually refers to individual strokes of the stone being applied *alternately* on each side of the blade, as commonly done while working in the field.)

‘1’ and ‘2’ can (and usually do) both involve a certain amount of sideways movement, which, if combined with the primary perpendicular direction of the stroke, results in a diagonal line between the back and the edge. A bird's eye view of the stone's movement (assuming the blade is held as we recommend for pre- and post-peening treatment) would show a “zig-zag” pattern, moving from the heel of a scythe blade towards its point.

3. The circular pattern of a stone's movement (‘D’ in Figure 22), more popular in Scandinavia than mainland Europe, may be considered a good compromise in all respects discussed above.

More on Pre- and Post-Peening Edge Treatment
(Applicable whenever honing a blade while it is off the snath.)

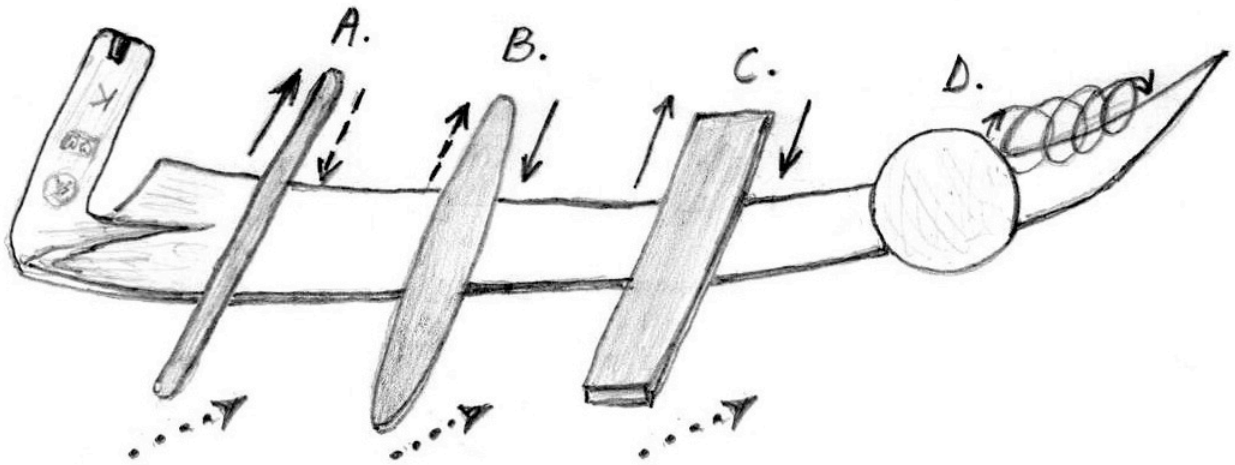
Illustrated in Figure 22 is a blade as if positioned across one’s lap – our favoured way to do this. The left hand holds the tang, while the edge is facing *away from* the person's body (i.e. we are looking at the topside of the blade).

Besides showing alternative directions of movement, A, B, C and D represent different shapes of stones, *all* of which are fit for the job.

A - a typical ‘boat shaped’ scythe whetstone, used on its edge.
B - the same as in ‘A’, used on its broad side.
C – a common bench stone.
D – a circular Scandinavian “ax stone”.

Arrows indicate directions of movement:
The solid arrow represents a stroke (one half of the to-and-from movement) contacting the edge.
The broken arrow represents a return stroke, not contacting the edge. (This is the stone's ‘empty’ return to starting position).
Dotted arrows indicate that the stones are moving along the edge lengthwise, *simultaneously with* the back-to-edge and edge-to-back strokes.

Figure 22.



Preferably, individual strokes are as long as the length of the stone comfortably and/or safely allows.
All non-circular stones illustrated here *can* be used for any of the patterns, but the circular stone is not well suited for the straight strokes indicated in A, B or C.
While performing the zig-zag pattern shown in ‘C’, each pull stroke finishes farther along the blade than where the preceding push stroke began.

For honing a scythe blade at frequent intervals during mowing, the “straight” (but always from the back towards the edge and somewhat diagonal) stroke is the most expedient, and for that reason also the most common.

Apart from the stone's direction, the other important consideration is the angle at which the stone should be moved across the edge. The ‘rules’ vary, but as with all aspects of

sharpening, they are subject to the laws of physics. In the case of edge tools, the lower the bevel's angle the easier will be the resulting edge's penetration, but the greater its vulnerability whenever tough material is encountered. It can certainly aid the process of sharpening if due thought is given to this concept. The topic of honing angles is further addressed in Chapter 6.

Figure 23. Attaching a blade to a snath (assuming the snath's knob hole was not pre-drilled)

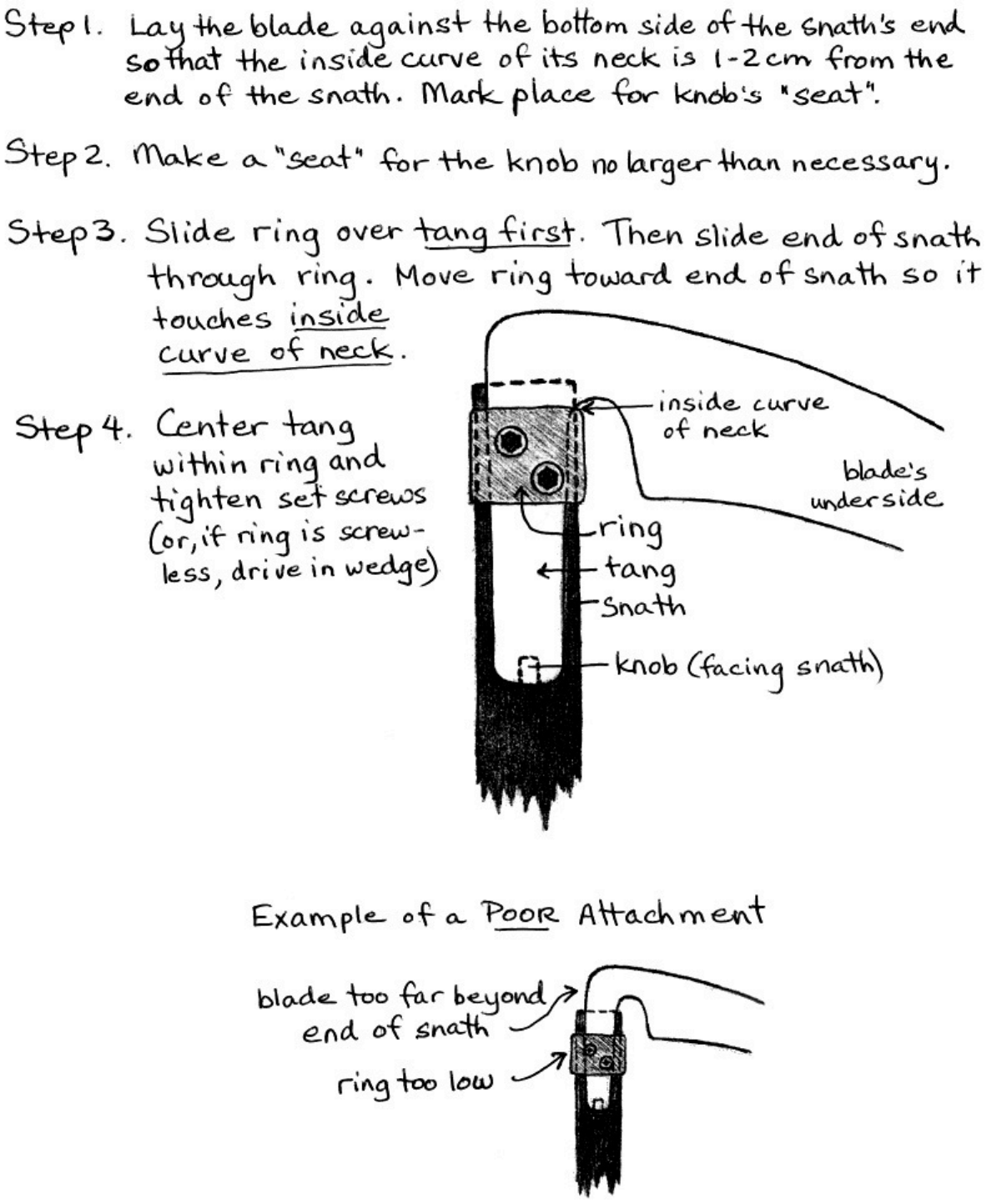


Figure 23 illustrates the basic steps of attaching a blade to a snath. The process outlined is

adequate for some blade and snath *combinations* – that is, those more or less *already* a good match for each other, for the mower, *and* the situations in which they will be used.[15]

After Steps 1 to 4 are completed, it can be assumed that the blade is *securely attached* to the snath. Please note that *securely attached* and *well-fitted* are *not necessarily synonymous.* If the process outlined in Figure 23 is to also result in a well-fitted scythe, the desired angle relationships (discussed below) need to be confirmed, and, if necessary, corrected.

While 'harmonizing' a scythe, one needs to take into consideration the fact that scythe blades are not all made the same. Numerous characteristics influence a blade's function (such as the body's thickness or its overall curvature), but here we specifically focus on the unique, three-dimensional position of each blade's tang, in relation to the rest of the blade's body. Once a blade is attached to a snath, each of these angles (between the tang and the body of the blade) affects the 'behavior' of the scythe at work.

The Challenges of a Good Fit

Historically, scythes usually did not leave their respective places of origin quite ready to use[16] (and despite labels to that effect, for the most part they still don't). Apart from first needing to have their edge prepared for work – either by the new owner, or a skilled man in the village – simply attaching the blade to a snath of local design and handing it to any prospective mower was not a good practice. A truly good fit was achieved when all the nuances, such as an individual mowers' height, the nature of the forage in that particular geographical niche, and the topography, (level terrain versus slopes) were taken into consideration, and necessary

[15] In Figure 23 it is assumed that the snath was bought *without* a pre-drilled seat for the tang's knob. That is not always the case; many models of wooden snaths sold nowadays have the knob holes already pre-drilled. Though this may sometimes be convenient, it can also prove to be a nuisance. For one thing, some of the holes are made unnecessarily large in order to accommodate the (likewise needlessly large) knobs of certain blades. In our view, the blades made in Italy have had, for more than three decades, the most snath-friendly knobs. The rest have been all over the map, with most of them being too large. Secondly, the lengths of tangs do vary. If, for instance, a snath's bottom end was pre-drilled for a blade which was made in Austria, that hole will be a bit too close to the end of the snath to accommodate an Italian or Turkish-made blade *very well*. The latter two have somewhat longer tangs, therefore the seats for their respective knobs should be drilled slightly *farther away* from the end of the snath). "Bush" and "grass" blade models of the *same* maker (the Schröckenfux factory of Austria as one example) sometimes have tangs of different lengths, with the "bush" being slightly longer. In that case, if such a pair of blades is to be used on the same snath, *the hole for the knob should be made to accommodate the blade with the longer tang (i.e. the "bush" blade)*. Doing so would assure *both* blades' secure attachment. Frequently, this is not what happens…
As can be seen from numerous photos of scythes in recent years, on the Internet and elsewhere, plenty of folks seem to pay no heed to this detail. Although a scythe can still function with the blade's neck protruding beyond its ideal place, we would not refer to it as securely attached. Figure 23 shows where the hole is to be placed *in relation to* that particular blade's tang.

[16] The snath was often made locally and did not feature the seat for the knob already in place. The blades usually came from afar, but were purchased from a local store, not pre-sharpened. It probably was not much before the 1950s when the concept of "mahfertig" ("ready to use") was embraced by some companies in Austria and Germany, with the level of precision and completeness regarding factory-peening taking a great leap forward.

adjustments made. Sometimes that included the help of a village blacksmith who heated the tang and then set it “right”.

During the centuries when the scythe featured as one of the most essential agricultural tools in Europe, the principles of snath and blade fitting were likely understood by countless of its users. Unfortunately, those principles were very rarely explained in print. And of those few printed attempts we know of in English or German, none have communicated *clearly* what in the past many a country boy would learn, gradually, as he worked alongside his experienced father. (If readers from other cultures are aware of such material we would much appreciate being enlightened.)

As did the mowers of old, we think that care ought to be taken with the nuances, preferably right from the start, before discouragement and/or bad mowing habits creep in. Yet with the times of scythe mechanics in every village now over, this is not an easy task. Randomly purchased scythes might (adjustment-wise) be more or less functional without additional attention, or they might not be. Considering global services as a whole, the chances are relatively low.

Among the mail order scythe sources (where in some cases more attention is paid to the fine-tuning concept than in common shops) the probability of a really harmonious fit is somewhat better, but still far from ideal. In recent years considerable thought and writing on the topic by individuals from several countries, as well as actual technical service at the industry level (primarily in the case of the Schröckenfux company in Austria) has gone into helping the mail order merchants do a better job of it all, but commercial availability of a “perfectly matched” snath/blade combination – one suitable for everyone’s needs – is still wishful thinking, and will likely remain so. For instance, the blades with relatively wide hafting angles suitable for mowing conditions on Alpine meadows matched with either of the currently popular models of snaths may prove a poor choice for someone in a region of lush, dense growth and/or extra tough grasses. Unfortunately, ‘details’ such as this are often shoved under the rug…

The variety of snath designs and blade models available beyond the mail order sources further compound the complexity of it all. In addition, new mowers often do not even recognize that anything is amiss. If the scythe does not meet their expectations in performance they don’t know what exactly may be causing the trouble, or what to do about it.

In view of the above, and the fact that in many places knowledgeable scythe friends are rare, the individual’s ability to understand a good fit is next in importance to the ability to maintain a good edge. Occasionally, it may actually be on par with sharpening, because even an adequately sharp blade (but one otherwise seriously out of tune) can behave somewhat like an untamed animal…

Fine-tuning the blade, snath, user *and* mowing task.

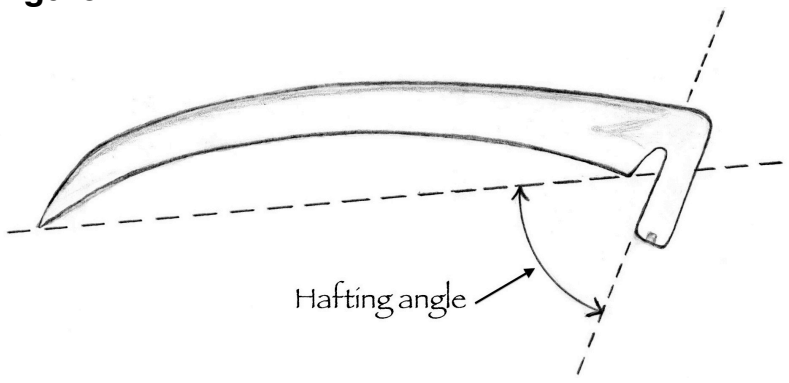
Sharpness of the blade aside, three angle-related principles play a key role in the satisfactory performance of a scythe. The proper adjustment of those three angles is affected (and can be hindered!) by how the blade's tang was initially hot-set in the factory *in relation to* the other specific characteristics of each model (such as all of the blade body's overall curvatures, the width/flare of its beard and, up to a point, also the blade's length). The fine-tuning of these angles is a serious issue confronting the new generation of enthusiasts, but has not been *adequately* addressed in any of the "how-to" scythe literature to date.

To begin with, as long as a particular blade is not yet attached to a snath, it would be foolish to declare its tang angles either "wrong" or "right". Their actual suitability (or lack thereof) *only* comes into being once the blade is attached to its handle, and the height of the mower who is to use the unit is also considered. Further perspective (and possibly challenge) is gained when a given terrain and nature of the material to be cut with that particular scythe enter the equation as well. In any case, we hope that our attempt at clarifying the underlying concepts will help.

Loosely translated from the Austrian scythe industry's terminology, those three critical characteristics of a blade model are its "Haft", "Lay", and "Tilt". We define them below in terms of the particular two-dimensional angles they describe. Put together, they form a complete picture of the three-dimensional position of a blade's tang. We refer to the orientation of these angles when the blade is lying on any flat surface, or the ground as it would during mowing.

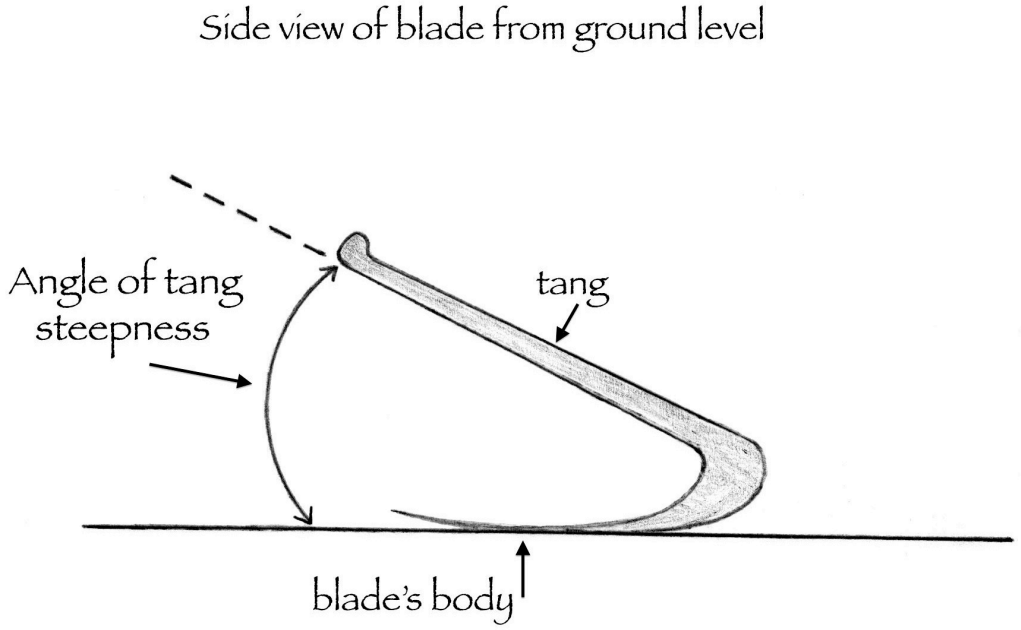
1. **The Haft** ("Einschlag", in German) – is determined by the angle formed at the intersection of a line from the blade's point to the point of its beard with another line along the length of the tang. (See Figure 24, further below) Extended farther, the line of the tang essentially becomes the shaft of the snath, to which it runs more or less parallel. *Once the blade is attached to the snath*, the relationship between these two lines determines what the English-speaking scythe users refer to as the "Hafting Angle".

Figure 24.



2. **The Steepness** ("Aufschlag") – is determined by the angle the tang of a still unattached blade makes with the ground or other flat surface. (See Figure 25.) While in actual use, this angle affects what, in English, we've come to refer to as the blade's "Lay".

Figure 25.



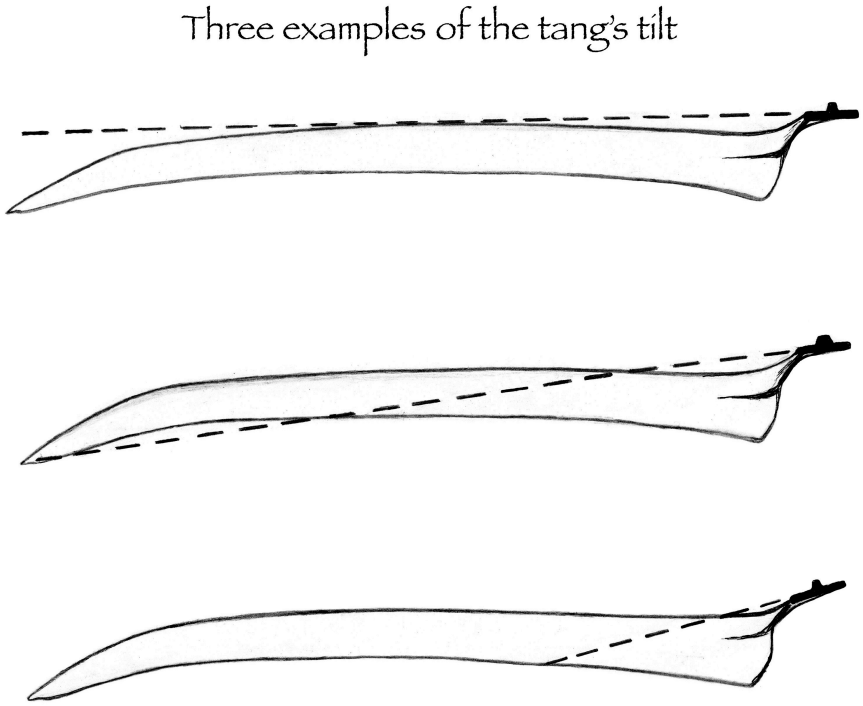
3. **The Tilt** ("Neigung") – is determined by the angle at which the plane of the top surface of the tang was set in the factory. An imaginary line extension of that plane can either intersect some spot along the blade's body or be aimed over the blade's point. Figure 25 illustrates *some of* the variations between different models. They commonly range from almost parallel with the blade's body (as in 'a') to tilting 'inwards' to various degrees (as in 'b' and ''c'). The tang's tilt affects the scythe's "Horizontal Balance" (but again, comes into play *only once a blade is attached to its snath*).

Although seasoned mowers could – once a blade was attached to a snath and put to use – recognize the actual in-field effect of the three angles outlined above, they have traditionally not been discussed in terms of specific numbers of degrees.[17]

[17] Based on our learning to date, it seems that the vast majority of scythe users, both past and present, would hardly know how to guess a new blades' overall function on a snath of certain design (unless it was *obviously* different from what they were used to seeing) *before* they actually attached it and took a few trial strokes. Up to a point, guessing the likely in-field effect of the tang's *steepness* may come easily to some novices. It usually requires a more trained eye to anticipate how the blade, still unattached, will haft just by looking at the way the tang was positioned by its maker *in relation to the rest of blade's body.* The last of the three primary features – the 'sideways tilt' of the tang (and the Horizontal Balance it affects) is even more elusive. For one thing, both of the pertinent terms are seldom mentioned, and among the few who (at least partially) address these concepts, there is a lack of consistent terminology. It is thus not surprising that most users never even consider

For practical purposes, however, the effect of those angles can be determined in various ways – the subject of the material below.

Figure 26 a, b, c (from top to bottom)



1. The Hafting Angle

Basic Concept:
Watching a competent person at work with a scythe, it appears as though the blade is *strictly slicing*, rather than chopping (sometimes referred to as "hacking") the grass. It is actually a bit more complicated; Slicing and chopping represent the two ends of a spectrum, and scythe blades functioning at their best do also engage in *some* "chopping".

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the 'sideways tilt' prior to attaching a newly purchased blade. If subsequently the blade has the tendency to dig its point into the earth, or conversely, strains the mower's wrist while cutting tall and heavy grass, the blade may declared to be "no good", without the person's understanding *why exactly* it misbehaves… Those who work with a lot of blades of different models, are interested in details *and* pay attention will eventually acquire an eye for perceiving the subtleties. And there **are** differences in all three of those angles – not only between blades of different models, but sometimes also of the same model of the same batch made on the same day – a fact simply 'shoved under the rug', because to conduct business that way is easier… But those differences can, occasionally in not so subtle a manner, negatively affect the scythe's function. As mentioned elsewhere, to notice the subtleties AND take them into account while matching blades to snaths and to their future users, was traditionally the role of the 'scythe mechanics'. Regretfully, the duties of those once plentiful helpers regarding fitting challenges, can nowhere near be substituted by the numerous mail order scythe sellers…

To determine what *personal* ratio of slicing and chopping may be most desirable in respective field conditions, a mower ought to understand that:

- The more slicing action there is, the less resistance each stroke encounters, but the number of stems severed will be smaller
- The more chopping action there is, the larger is the area (and number of stems) the blade can *potentially* cover and cut at a stroke, but the work will require more effort

It should furthermore be clear that the ratio between these two modes of action is affected by a *combination of:*

• The (hafting) angle at which the blade is attached to its snath
• The exact pattern in which it is guided while at work.

Of course, a scythe blade should *mostly* slice. In other words, its Hafting Angle (*along with* how exactly the blade is guided) should be closer in effect to a 'pure slice' than to a 'pure chop'.

Now, while a particular combination of blade and snath has an inherently limited adjustability, the mower can further (either momentarily or in a sustained manner) affect the slice to chop ratio by how exactly he/she guides the blade through its stroke. In unexpected situations – for instance, while coming upon a particularly thick and/or tangled patch (for which the current hafting adjustment may not be well-suited) – it is the instinctive reaction of every seasoned mower to narrow the width of their stroke and/or reduce the advance and/or aim the blade's edge at what essentially will be a more acute hafting angle.

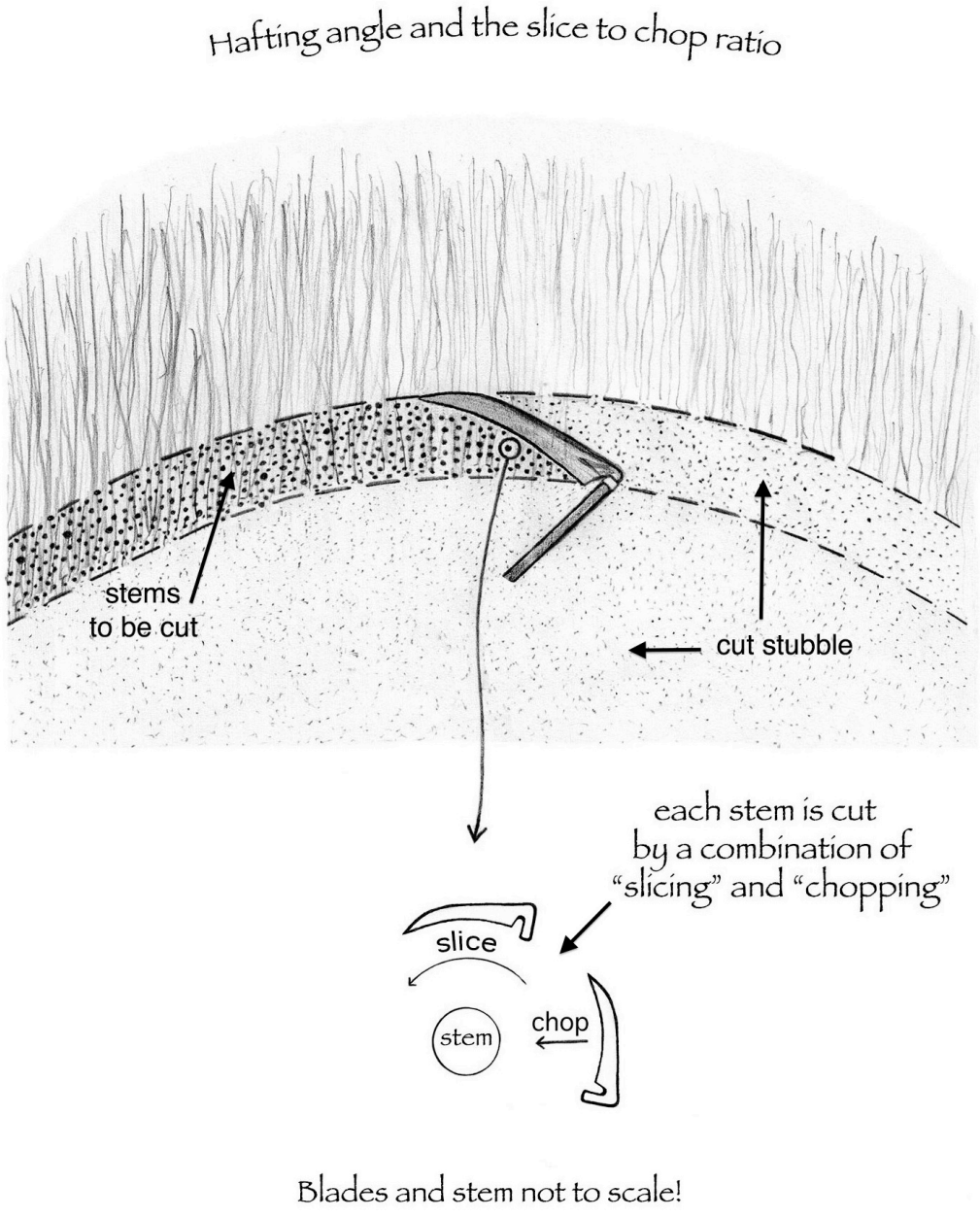
Conversely, there are situations when a quick "chop" or two is most appropriate (keeping in mind that we are not talking about a *purely chopping* stroke). Narrowing or widening one's stance (which typically affects the width of the stroke) is another strategy often employed in field conditions where the growth or terrain varies. At its best, such on-the-spot compensation is what the most skilled mowers have always done, routinely.

However, the need for *continuous* compensation is undesirable; it will unnecessarily tax the mower's body and thereby reduce efficient performance. And, the most direct way to reduce the compensating is to pay due attention to the fitting issues.

To sum up: Hafting a scythe "correctly" refers to finding a **favourable compromise between the two simultaneous modes of action – slicing and chopping –** ***so that most stems are cut with the least overall effort*** **during a sustained spell of mowing.**

Keep in mind that the drawing below is merely a *simplistic representation* of the concept discussed here.

Figure 27.



While referring to hafting angles in the common vocabulary of English-speaking scythe users, we typically, and often interchangeably, use the terms “open” and “closed”, or “wide” and “narrow”, both being synonymous with larger hafting angles and smaller ones, respectively.

Figure 28 a is essentially a duplicate of Figure 23, with the snath added in order to help clarify the concept. The Hafting Angle of a scythe is often “measured” or described by the

difference (or lack thereof) between the length of lines AB and AC in Figure 28 b & c. If AB equals AC the blade is hafted “in circle”.

The “in circle” setting is the most open hafting angle generally used. It is *not applicable universally*, but common in regions where the grass does not grow extremely thick and/or where the traditional stroke pattern is more circular (and usually also narrower) than we recommend in the guidelines on mowing techniques below. The blade models made specifically for those regions have their tangs set in the factory with this adjustment in mind, and thus with some of them it is not possible (without some alterations) to achieve a significantly more closed hafting angle.

The usefulness of a relatively open hafting angle (such as the “in circle” adjustment provides) *increases in proportion to a person’s mowing experience and ability to adequately sharpen* the blade. We suggest that beginners initially use such a setting only with short blades and/or in relatively sparse stands. In places with dense or tangled growth, it would be better to reduce (‘close’) the hafting angle to a setting where AB is *shorter* than AC by about 4 to 5 cm for a 65cm blade (less for a shorter blade, more for a longer one) as in Figure 28 c.

Figure 28 a

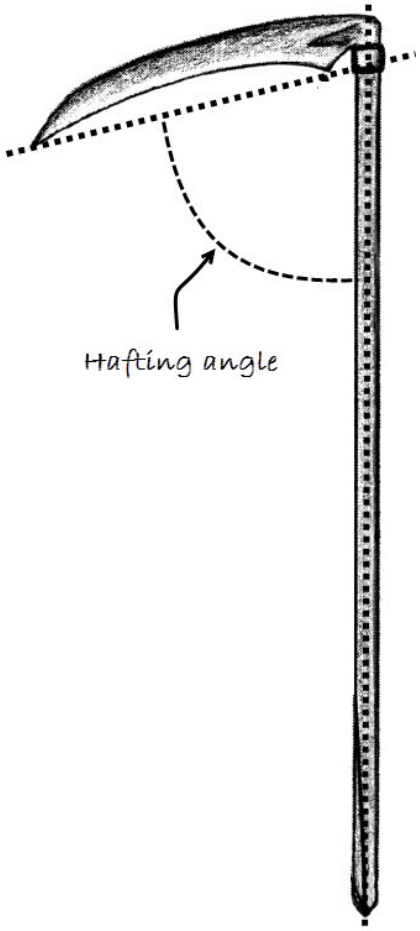
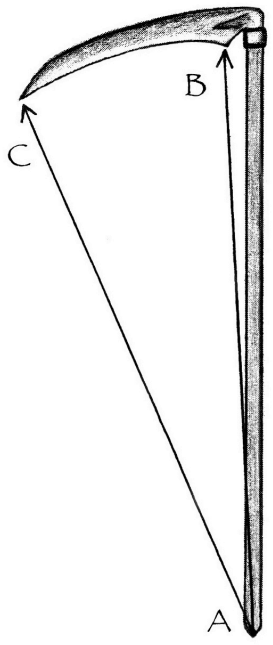
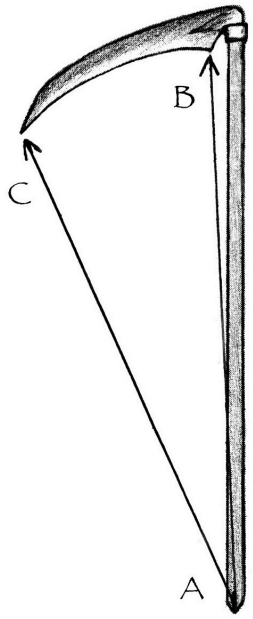


Figure 28 b and c



The blade's hafting angle affects the degree of slicing in relation to chopping.

Blade is hafted "in circle" when AB = AC. This adjustment works well for thin, young, or otherwise relatively easy to cut plant material.



For average purposes it is better if AC is smaller than AB
by 2 cm for a 50 cm blade
5 cm for a 70 cm blade
10 cm for a 90 cm blade

This is an approximate guide only; experiment with various settings and pay attention to the differences.

The difference between AB and AC can be determined with a measuring tape, a light wooden pole, or a piece of string long enough to reach from the upper end of the snath (or even just the base of the lower grip) to the beard of the blade. Whether AB and AC are measured from the end of the snath, the upper grip, or the lower (only) grip doesn't really matter. In all cases the difference between AB and AC can be used as the reference to begin

with. Then the initial setting should be tried in the field and subsequently refined so the blade's action suits the user's personal stroke pattern as well as the nature of the stand to be cut.

One common method for measuring AB and AC is as follows:

1. Set the upper end of the snath on the ground against a tree or wall of a building. If the snath has an upper grip extending across the top, some means of elevated support – a rock, a block of wood, ones own foot, etc. – is needed to prevent the end *of the grip* hitting the ground before adequate blade rotation is reached, which would distort the measurement.

2. Using the corner of the blade's beard as a marker, scratch a small horizontal line onto the wood.

3. Keeping the snath's end in exactly the same position, rotate the scythe to the right until the blade's point is vertically aligned with the reference mark, and note the vertical difference.

In the field, the mower's knee or foot can be used as a pivot point around which to rotate the scythe and any reference point (a distinctive blade of grass, a clover blossom, etc.) as the marker with which to visually align – first the corner of the beard and then, after rotation to the right – the point of the blade. Because walls or trees are not available everywhere, we recommend that people learn this, or other regional variations of aid-independent methods of measuring this difference.

What if – by simply moving the blade all the way forward (or back) within the confines of the ring – the desired angle is not readily achievable? Well, as with other fine-tuning issues, there are numerous options. This poses another question: how many of them can be dealt with in this text?[18] For our purposes, if the job does not require an electric welder, an acetylene torch, skill at a forge or the making of better-fitting snath, we consider it "simple" and cover it later in this chapter. The rest will be addressed in Part 2.

Hafting adjustment-related warning:

During work, the strain of cutting sometimes causes the blade to shift backward within the attachment ring, provided, of course, there is space available. This effectively opens the

[18]As writers/editors of tool-using guidelines, we are confronted with an ongoing dilemma: How much information is too much? Is it fair to leave out some useful hints just because the combined material may overwhelm the average reader? We do not know the answer; our attempt is merely to act with integrity while also pushing the bar a bit higher…
In any case, after much deliberation we concluded that it may be more reader-friendly to keep the relatively simple alterations – those possibly implementable by most of the new scythe-using folks – separate from those which require more capabilities and willingness to work with wood and/or steel than may be the average today. Still, the line between the simple and the more complex alterations remains arbitrary.

hafting angle, and thereby increases the resistance to each stroke. It does not take much of a backward shift at the blade's neck to move the point upwards several centimeters! Experienced mowers quickly notice the additional force required to propel the blade; beginners often don't. The blade then provides a lengthy lever, (with the spot where the tang meets the ring as the fulcrum) prying against the side of the knob's seat, possibly splintering it apart. In extreme cases, breakage may also occur at the blade's neck. Unfortunately, many blades and snaths have been damaged precisely *because the blade slipped within the ring* – and the energetic but unaware mower continued swinging it as before.

To avoid the above scenario:

a) Every time *before* mowing check the Hafting Angle and verify that the setscrews of the ring are tight. ("Tight" needn't be overdone; "nicely snug" will do.)

b) Occasionally re-check the angle during work in the field.

These precautions are especially pertinent with a new wooden snath, the bottom end of which has not yet been compressed by exposure to the alternating effect of getting wet and drying out again, and the repeated tightening of the ring. The wood structure, which is porous, naturally expands when moisture enters it, but in this case it encounters the unyielding confines of the steel ring. Consequently, the outermost wood fibers are crushed. Once the bottom of the snath dries again, its dimensions will be *slightly* smaller. If the slack is subsequently not taken up (by tightening the ring) the blade is less securely held and prone to move backwards – thereby increasing (opening) the Hafting Angle – and we arrive at the potentially destructive scenario described above.

2. The Lay

The Lay of the blade relative to the ground surface affects the angle at which the edge meets the stems. Figure 29 illustrates the Lay as it pertains to some of the various cutting situations.

The initial test of the blade's lay should, preferably, be conducted on a terrain approximating the expected gradient (sloped or level) where the scythe is to be primarily used.

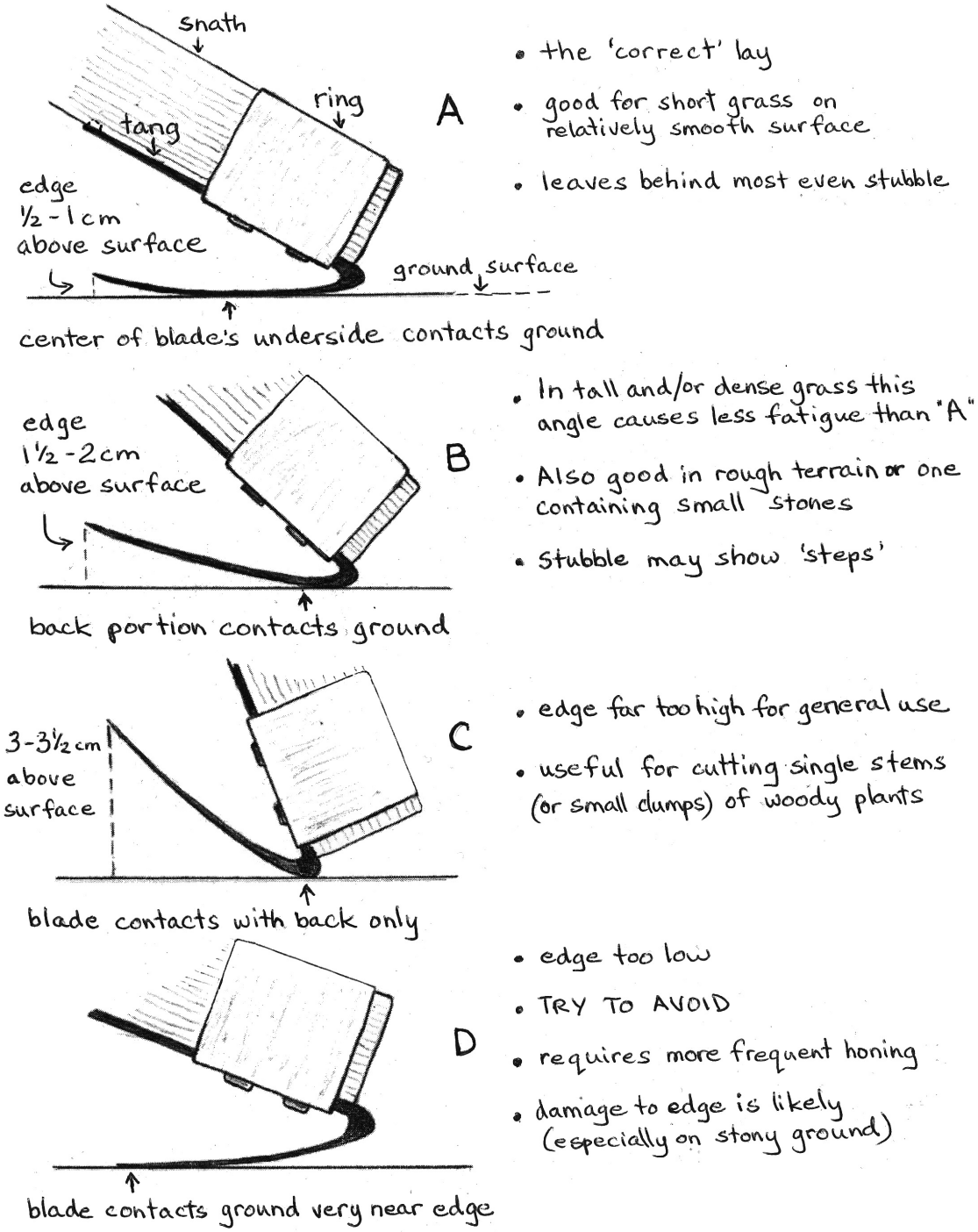
With the hafting angle already set (at least in an approximate manner) hold the scythe in the working position. Using Figure 29 as a guide, note if the edge to ground relationship is more or less correct for the respective mowing situation.

The edge is often found to be "too low" (29 d) in the following instances:

a) When very short people purchase *some* version of the "Austrian" scythe.

b) *Some* of the available “bush” blade models (which typically have very steep tangs) are used with many of the common versions of two-grip snaths.
c) For the mowing of ditches.
d) A scythe functioning well in fairly level terrain is used for mowing steep slopes.

Figure 29.



Horizontal Balance

Among the three blade/snath adjustments discussed herein, the final touch is the achieving of 'Horizontal Balance'. The basic concept can be expressed as follows: **A horizontally well-balanced scythe has its blade attached to the snath in a user-friendly manner.** Because this balance is not strictly essential to mowing, it is more easily missed (or ignored) than a skewed Hafting Angle or inappropriate Lay, and thus poorly balanced scythes abound.

Traditionally, when an experienced mower referred to a scythe as "well-balanced", it would be one which, when merely held by its grips in mowing position, *felt* as though it would be nice to use. Admittedly, "nice" is a subjective way to express a state of harmony without being more specific. Yet such terminology was often sufficient for members of a culture steeped in tool use. "Balanced" may be equally vague, but it too required no further explanation, back then.

Today the situation is vastly different and more words are needed while discussing certain scythe-related concepts, Horizontal Balance definitely among them. Adding the prefix "horizontal" to contemporary scythe jargon was our attempt, a number of years ago, to help clarify the issue (without much success to date). Though the concept is centuries old, the term was, so far as we know, not previously used.

Now, to extrapolate, "scythe balance" has always referred to a state of adjustment in which the blade easily, nearly automatically,[19] positions itself with its beard and its point more or less equidistant to the ground. In other words, it would be *horizontally* aligned. This tendency ought to readily manifest either with the blade *slightly above* the ground surface and not yet engaged in grass, or while mowing an easy-to-cut stand. Of course, re-positioning the balance of any blade that does not meet the theoretical specifications outlined thus far, and then confirming improvement in the field, is recommended.

There is more to be said on this topic, but first we want to slightly alter our definition of Horizontal Balance expressed earlier: **A horizontally balanced scythe has its blade attached to the snath in a <u>wrist-friendly</u> manner**. With other words, when held so that **the hands/wrists are in their most <u>comfortable</u> position**, the blade's point has no tendency to drop towards the ground below the horizontal, nor is it 'floating' significantly above the level

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[19] Of course, blades do not position themselves 'automatically', and remain that way. Rather, it is the mower's *way of holding the grips* that determines the blade's position and maintains it as desired. And while there are other design features that contribute to the overall balance of any given scythe, the *blade/grip relationship* is a major one.
If, for instance, the blade's point hangs too low while the unit is held as expected, no seasoned mower would call the scythe "well-balanced". In fact, it is generally preferred that the point floats *somewhat above* the horizontal, because this makes not only the point, but also the whole blade, *feel* lighter. Such an arrangement also goes a long way toward reducing the blade's tendency to 'nose dive' (the point being driven into the ground) – something frequently experienced by novices, especially if they are using long blades. The floating effect can be overdone, however, and often enough it has been...

of its beard.

Our additions of “wrist-friendly” and (to a lesser degree) “comfortable” confront some generations-long traditions. As already mentioned, we surmise that in the past many working men readily disregarded ergonomic principles of tool design; in this case, they were strong enough to wield a light tool like the scythe with relative ease, thus a ‘wrist-*unfriendly’* scythe was little cause for concern, or so it seems.

In any case, the concept of “wrist comfort” has been (consciously or not) disregarded in a whole slew of snath designs, both old and new. Consequently, there were (and still are) plenty of scythes in use today where the generally desired ‘light point’ of the blade comes at some cost to the wrist.[20]

In general, certain traditions and habits temper innovation. Sometimes that is a good thing, of course. On the pragmatic level, with regard to the topic at hand, the traditions mentioned earlier present a challenge during the process of helping certain individuals to fine-tune the Horizontal Balance of their scythe. For instance, a common response – especially if someone’s personal scythe (one lacking ergonomic grips) is perceived to be criticized – might go like this: “Oh, some people like it one way and some another way; for me this is just right”. Well, the physiology of the human body is only so different between one person and another. There are particular ways that joints have evolved to move, and postures in which they are designed to be part of – even if our modern lifestyles lead us into a variety of pathological postural and movement habits.[21]

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[20] To this group belong the *majority* of those snath models that (relative to the blade’s cutting direction) have the grips facing the mower. They come in two variants – those with the grips attached directly to the snath shaft, and those that have a stem to which the lower grip itself is attached. Of those with the grips attached directly to the snath, the most widespread, globally, is the s-curve metal snath with grips that can be placed so as to face either forward or back, plus slide up and down the shaft (therefore *somewhat* adjustable). Invented more than half a century ago, it has been produced (most frequently of steel, but also of aluminum and fiberglass) in many countries and in many slight variations of the shaft’s curvature. It probably owes its popularity *primarily* to the low cost of production and secondarily because it gives the impression of grace and of offering a very personal fit. It certainly is cheap. On the wholesale market some versions can be purchased for a mere $5 or less, ring included. As for adjustability, it is an example of a still-masked part-deceit…
To the latter variant (those with a stem to which the lower grip is attached) belong all those 2-grip wooden snath models with grips attached at 90 degrees to the shaft or to the stem. On this continent, one version is the Green River Tools snath designed by David Tresemer (later copied by Smith & Hawken), long out of production but still scattered around the American countryside. The other two examples, known by the online scythe shopping clientele, are ALL snaths made by the Marugg and Scythe Supply companies. Europe is also full of similar designs, whether made in Austria, Germany, Switzerland, or elsewhere. Our hints on refining the horizontal balance will be of only so much value to anyone using one of these snaths, because we consider a <u>less than</u> 90-degree angle of the grip-to stem attachment a rather essential feature of an ergonomic scythe.
On the other hand, most of the models with the (usually slightly curved) grips pointing upwards and forward can more easily escape the grip-affected ‘horizontal balance’ pitfalls.

[21] As an unrelated example of the same phenomenon, consider how a large segment of modern people typically walk with their feet somewhat splayed (i.e., with toes pointing outwards) often one more than the other. When bringing up this physiologically unfriendly manner of locomotion, one might be met with a claim that “it feels comfortable”. It may indeed, but

When a scythe is merely held in ones' hands, not yet engaged in grass, a wider range of positions will feel comfortable on the wrists than is the case while actually mowing (especially *certain* mowing actions). In other words, while idle, the wrists can be held at a variety of angles that may "feel fine." Yet, some resistance to the stroke is inevitable, and thus while mowing, the margins of what still feels comfortable are narrowed, sometimes significantly so.

Two kinds of resistance come into play: One is caused by the friction between the blade and the stems it cuts, generally equal throughout the entire stroke. The sharper the edge, the less of this resistance is experienced. The other is the actual weight of forage that is moved sideways into the windrow, which increases as the stroke progresses from right to left.

The most direct, and often eye-opening, way to experience the effect of this resistance on the range of wrist positions is to find a stand of tall, dense forage and give the tool a try. For good measure, conduct this experiment just after a heavy rain; added moisture increases the weight to be moved and speeds up the learning process. It is especially during such scenarios that a significant portion of the so-called "ergonomic" scythes may rather quickly reveal themselves as tools not so easily wielded. If *then*, a really well designed scythe was put into the hands of the same person following the initial spell of mowing, and the trial continued, no more words would be necessary. Of course, this is not a broadly implementable solution because truly ergonomic scythes are not readily available, and most individuals are unlikely to be treated to a similarly comparative test.

We are not suggesting that snath design is the only cause for the possibly notable contrast in mowing experiences. Many other factors (chiefly the condition of edge, the blade's adjustment and how well the actual mowing movement is performed) affect the experience. Those factors aside, however, the next thing perceptive mowers may notice is how the strain on their wrist is reducing both enjoyment and efficiency when using this tool. Stronger than average individuals may well last longer swinging such a scythe than the majority, but most people's joints eventually yield to abuse.

Two features of common snath designs are often responsible for possible strain on the wrist:

a) The *length* of the 'stem' of the lower grip, on snath models *in which the grips point towards* the user.

b) The *angle* at which the grip (the portion that is actually held in hand) is attached to its 'stem' (also referred to as the "grip's extension").

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only because *it has become a habit* to walk in a way that sooner or later will give rise to ankle, knee or hip problems – with the medical establishment kept busy replacing joints...
It is similar with mowers and their personal scythe's specific design; they've grown accustomed to (or are selling) a certain snath model and subsequently claim to like it very well (or that it is "the best to be had", or nowadays, that it is "ergonomic").

The influence of the stem length itself upon the mowing experience is somewhat out of the context of the discussion of Horizontal Balance (and, again, will be covered in Part 2). The grip angles, on the other hand, are a different story.

Earlier we stated that the blade's horizontal position is affected by the **sideways tilt** of its tang – one of the three *model-specific* features (see Figure 26). Now, we add that the '**tilt of the grip**' also plays a role in how the blade is carried through its stroke, or rather, how comfortably ones' hand can keep it in the horizontally-desired position. And, even without fully understanding how it comes into play, there are ways for a novice to determine if the scythe they just purchased could use some horizontal balance tweaking, or a snath they purchased or self-made for a specific blade could use a different grip...

For those who do not yet understand by experience what exact wrist position allows for the most force to be exerted without punishment to one's joints, here is a suggestion:

Without a blade mounted, secure a weight to the bottom end of the snath – a weight that a person doing the test *can* move sideways, but with some difficulty. It could be a block of wood or a rock, a small car tire, etc., tied to the end of the snath. (It will not be lifted, only pushed sideways.) Imitate the grass-cutting stroke, and compare how the wrist feels in different positions, making sure to move the weight *all the way to the left* (where the cutting stroke would actually end while mowing in the field). It should not take long before the person performing such a test should be able to tell at exactly what wrist angle the weight can be moved most easily. Well, THAT is the very angle to fix in one's mind/body, before moving on to the next stage of the trial:

Now, with the blade firmly attached to the snath, hold the scythe in what was observed (remembered from the weight pushing trial) to be its *most comfortable wrist position,* and then mimic the complete motion of mowing, barely touching the ground surface with the blade's belly. It is not really necessary to actually be cutting grass yet; doing so will be the point at which all the pieces come together.

As during the weight trial, the importance of mimicking the *entire* cutting stroke lies in the fact that *the wrist position can, and most often does, change throughout the stroke*. How much it changes depends on the style of the snath (the placement and shape of its grips, to be more specific) and whether the blade is relatively flat (lengthwise) or has a more highly elevated point. The change is *most notable near the end of the cutting stroke*, and is most pronounced in the case of the snaths with grips facing the person and/or with the typical alpine models of the "Austrian" blades.[22]

[22] The "typical Alpine models" are those traditionally (and still today) used in much of Austria, Switzerland, Northern Italy, Southern Germany and, to a lesser extent, elsewhere. Many of those models have their points elevated higher than is characteristic of blades in other parts of Europe, Scandinavia or the Near/Middle East. The so-called "Austrian" blades – a

While moving the scythe as outlined above, if the blade's point shows a tendency to aim downward, the scythe is what we refer to as 'nose (or point) heavy'. Countless mowers have learned how to more or less successfully use scythes exhibiting this flaw; it merely requires paying extra attention to keeping the point always just slightly above the ground surface. Until the body is trained to comply with the needs of such an arrangement, each stroke will require a certain amount of concentration, because *our joints instinctively tend to position themselves towards their respective comfort zones*. Mowing with a 'nose-heavy' set up, the top of the wrist would rather be slightly more extended – but if allowed to do so, the point may dig into the ground…

On the other end of the spectrum, the point can be 'too light' or 'float' too much (to use our terminology). The challenge is similar; extra attention will be needed to keep it down enough to make sure that the stubble's length does not increase towards the extreme left portion of the stroke (a typical signature of novice mowers). In this case, especially, the mower will learn to extend the top of their wrist beyond what is physiologically good for it, out of necessity. The wrist extension increases gradually throughout the stroke and will be most pronounced near the end, exactly when most weight has to be pushed and the force required to do so is at its peak.

In both instances outlined above we are talking of the difference between ergonomic principles applied to tool design and the option of compensating when operating a certain 'un-ergonomic' tool. A person agreeing, however unconsciously, to adjust to the tool (rather than fine-tune/adjust the tool to their body) typically puts up with some discomfort and trains their wrist to work in the required position. Some people learn how to do so very quickly because their attitude to work in general overrides the need for bodily comfort. Others take a long time, meanwhile blaming the "bad" blade and/or snath. The majority of the new generation of users of the so-called "Austrian" scythe, it seems, do not even think about any of this, because it has been – as stated earlier – one of the issues generally shoved under the rug…

Correcting some of the most common snath/blade 'mis-fits'

1. Altering the Hafting Angle.
Without resorting to heat to change the angle of the tang, the hafting angle of a scythe can be affected in several ways (or a combination of them):

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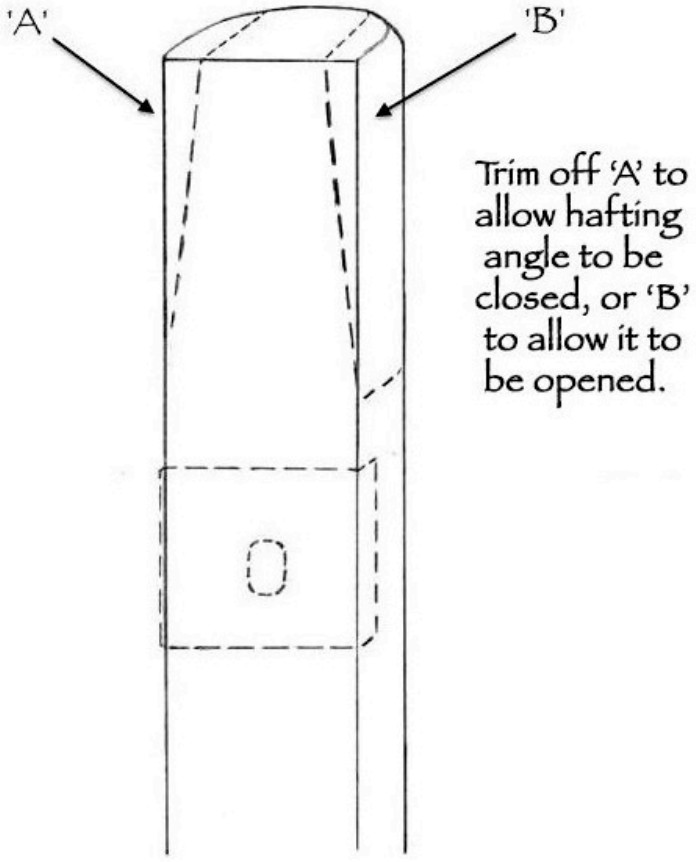
moniker attached, somewhat erroneously, by the English-speaking scythe crowd to blades *other than* the "American" or "English" blades – were often made in this manner. In recent years someone began to refer to them as blades "with a rocker", and the term is now used by others in the 'scythe circles'. However, we have long referred to them as "blades with highly elevated points". Those very models, as a rule, also have more concave bodies between the rib and the edge than was (and is) the *average* for "European" scythe blades.

- Obtaining a wider ring
  This may be the simplest solution but is applicable only in instances where the present ring (the one which does not allow for the blade's desired position) is relatively narrow, say 32-35mm, *and* a 40 mm wide ring is readily available. Anything wider than 40mm is rare on the commercial scene, by the way. Of course, a ring of the desired size *can* be self-made.

- Trimming up to 4mm of wood off either side of the snath's lower end. (See Figure 30.) Trim the back (opposite the direction in which the blade points, indicated as 'a') if the hafting angle needs to be *decreased*, OR from the other side (indicated as 'b') if the desired effect is to *increase* the hafting angle.

Figure 30.

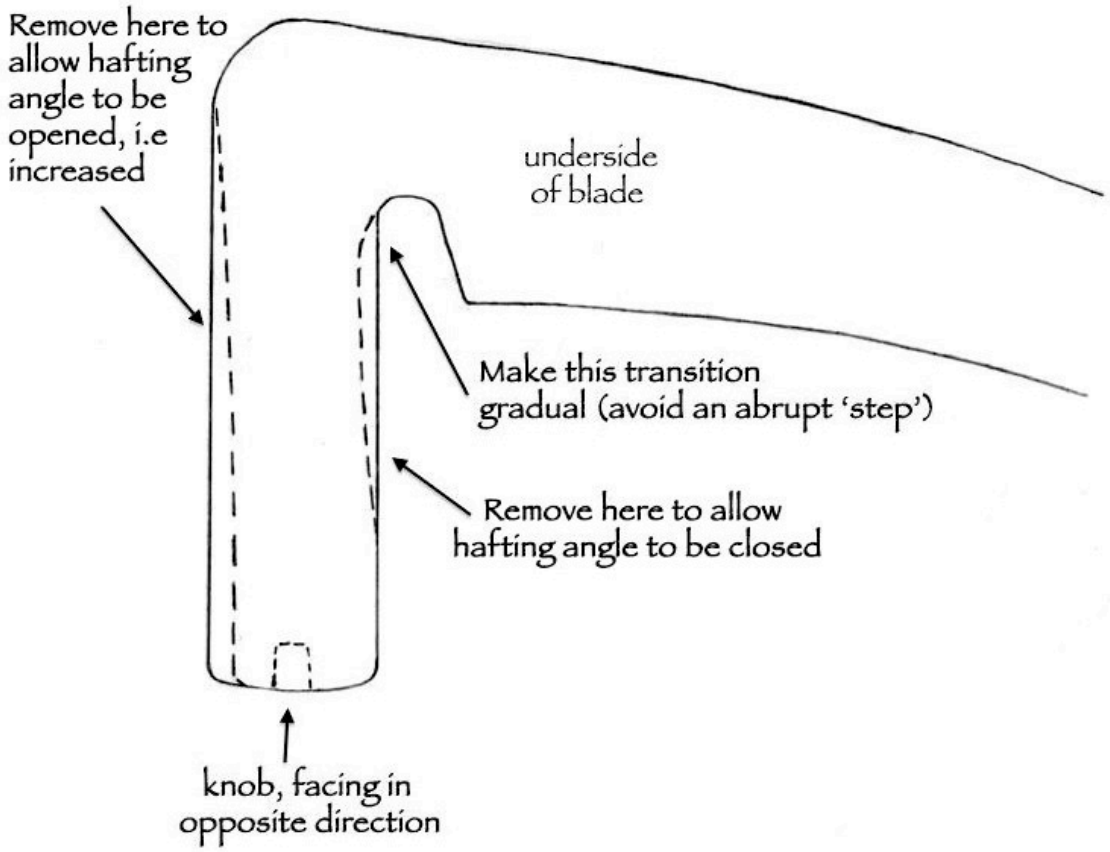


- Filing a small amount (*up to* 2mm) off either side of the tang in a gradual taper so that within the confines of the ring the blade can be moved farther toward the desired side (backwards to increase the hafting angle, forward to reduce it. (As in Figure 31.) Doing so will, of course, weaken the tang, but if reasonable care is exercised during

subsequent use, the reduction of strength may be acceptable in some cases. In addition to the three options discussed above, the removal of material from one side of the tang's knob is also an option if a *more open* hafting angle is desire – this time by filing away *the half closer to the blade's point*. More on this below.

- Altering the placement of the seat for the tang's knob This option is applicable to cases where the hafting angle needs to be *decreased*. Moving the 'seat' for the knob farther back will drop the blade's point, thereby decreasing (closing) the hafting angle.

Figure 31.



Progress of steps to take (refer to Figure 32):

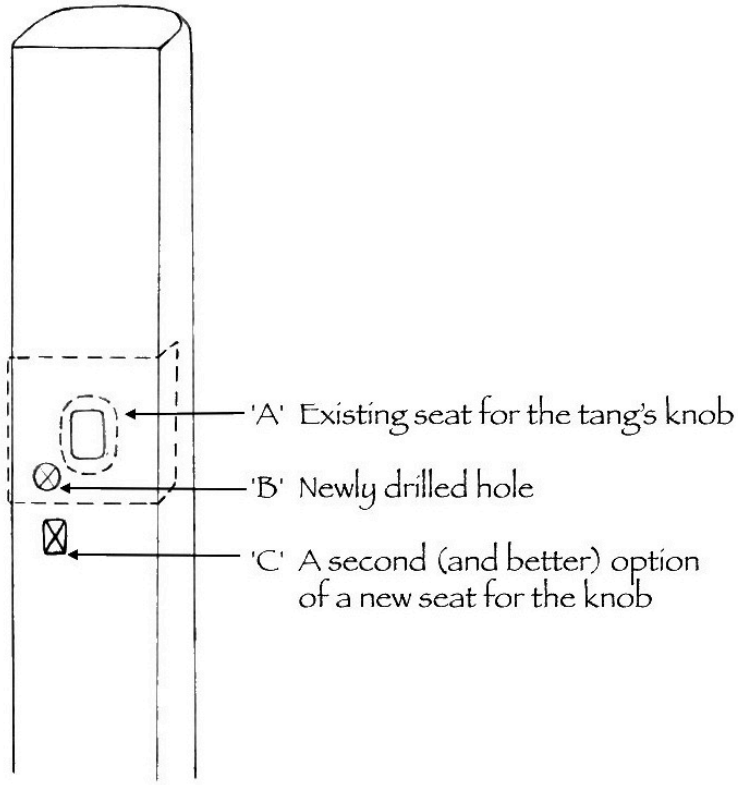
If one's present snath features a small reinforcing accessory called a "snath saver" a shortcut can be taken by

1. Ignoring the existence of the initial seat (indicated as 'a')
2. Drilling a 4-5 mm hole (indicated as 'b')
3. Reducing the blade's knob (with a file or an electric grinder) to a size to fit that hole. Sometimes this alone is an adequate solution.

A more complete job consists of:

1. Removing the “snath saver” (by pulling out the four little nails or filling off their heads and later pulling out the remnants with nail pulling pliers).
2. Then whittling a piece of wood that fits *snugly* into the present hole (indicated as ‘a’) and gluing it in.
3. Making another small rectangular seat *farther back* from the blade’s travel direction. *In addition,* it may be worth sacrificing 2-3 cm of the snath’s functional length and placing the new seat – ‘c’ in the illustration – *farther away from the snath’s end* than the previous one. Please note that new knob seats *do not need to be as large as they often are made*. Instead of making the hole likewise so large that it unnecessarily threatens the integrity of the snath, a better course is to file away a portion of the knob, so that it is much smaller (especially *narrower)* than the knobs on numerous makes of blades as they come from the factory. In addition, material can be removed from one side only, in which case it should be where it will further affect a shift in the desired direction (i.e. from the side closer to the point in order to *increase* the hafting angle; from the opposite side to *decrease* it.)

Figure 32.

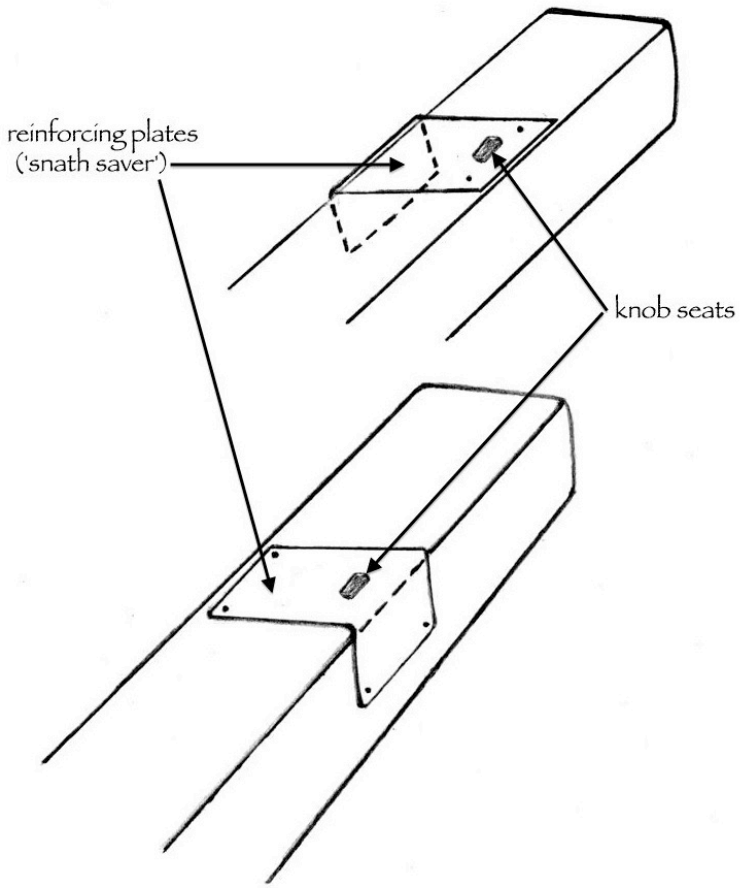


A knob 4mm by 4mm, or even less wide, is strong enough to keep a blade in place; as such, it will alleviate the need for an extra large hole to be made in the wood, weakening the snath.

We trust that attentive readers by now understand that option four (altering the placement of the seat for the tang's knob) is **not** one to pursue if the hafting angle is already too small, because moving the 'seat' farther forward (as it would need to be in order to open/widen the hafting angle) would jeopardize the snath's strength *at that critical place*.

However, a self-made "snath saver" of at least 2mm thick steel, is strong enough in itself to resist *normal* pressure against the knob without requiring the support of the wood. This approach offers another layer of possible alterations, because the knob's seat can, if needed, be placed closer to the side to which the blade points than it could be if only wood or the common "snath savers" were to provide the necessary support. And, a reinforcing plate of this sort does not need to have three accurately fitting sides; two are enough. For North Americans, one example of commonly available material is a piece of 1/8'' thick 1x1'' angle iron (Figure 33.) (Making holes in a piece of steel of that thickness requires somewhat more skill with tools than most of the suggestions in this chapter.)

Figure 33.



While any one of the options presented thus far may take care of only a small portion of a certain hafting challenge, a *combination* of some (or all of them) can add up.

To be more specific; with options one to three, approximately 2 cm of an up or down re-location *at the blade's point* is easily obtainable, with 5 cm the limit. That may not seem like much, but the difference can certainly be felt in the blade's action. Option four can produce more significant results. For instance, re-positioning the center of the knob 8mm backwards can drop the point of 75 cm blade approximately 10 cm. Combining the suggested approaches can lead to a significant change in how satisfactorily a blade is hafted on a particular snath.

While any of these methods, or even all of them together may not completely solve the possible hafting angle dilemma in any one case, considering the relative simplicity in implementing them, they are worth trying.

2. Altering the Lay:

In cases where the edge is too low (Figure 29 d), *adding* a tapered wedge of an appropriate size into the space between the tang and the bottom side of the snath's end (See Figure 34 a) can effectively lift the edge off the ground surface by up to about 10-12 degrees. Brief experimentation with a scythe that was previously considered adequate often reveals that it is *even better* (i.e. cuts easier / with less resistance) with a wedge of appropriate size inserted and the edge thereby lifted. The difference this adjustment can make is particularly noticeable in a dense and tall stand of forage.

We therefore recommend that wooden wedges of 5 and 10 mm at the thicker end, tapering to 1 mm or less over the length of 6-7 cm, become part of everyone's scythe maintenance accessories. A selection of 4, 6, 8, 10 and 12 mm (in thickness) would be even better.

If the edge is too high (Figure 29 c), and the snath is made of wood, remove a wedge-shaped piece from its bottom end as in Figure 39 b. After a line is first drawn on each side of the snath, the wood can be carefully sawn off with a fine-toothed saw. For most people, exactly how much should be taken off will be initially a matter of guesswork. A safer approach involves gradual experimentation, that is, increasing the taper in stages (by means of a rasp, drawknife or a hatchet) and testing the results by re-attaching the blade and mowing with it for a spell *before* deciding whether to remove more wood.

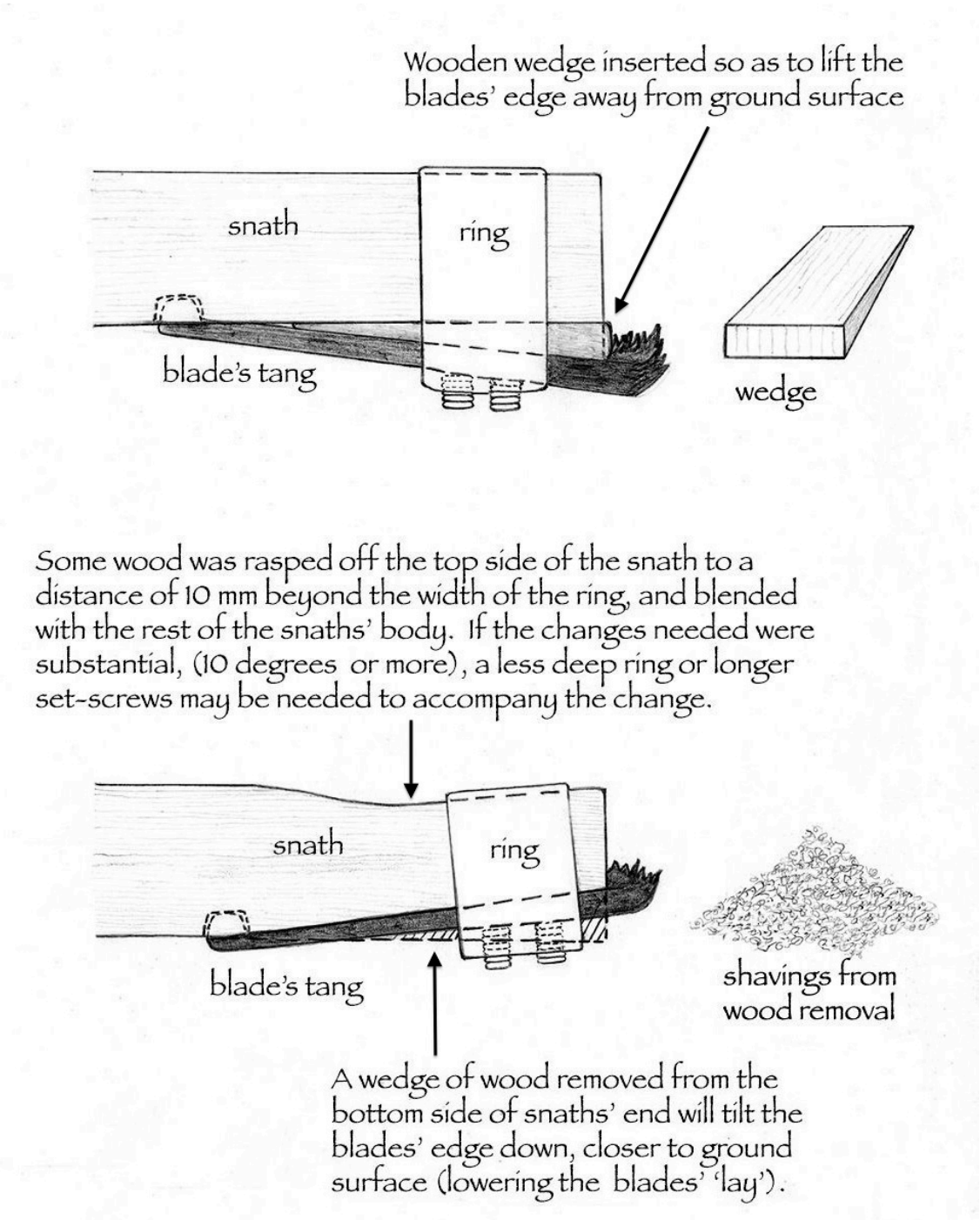
If the wood removal is to be substantial, here are some hints:

- At least 2 cm thickness of wood should be left at the very end of the snath.
- Re-shaping of the topside of the snath in the area of the ring's 'seat' may be necessary

to prevent the ring from slipping forward as it is being tightened. A rasp is the most convenient tool for this step, but it can be done with a good jackknife.

- A shorter ring or longer set screws may be needed to securely hold the blade against what now will be a piece of wood of smaller dimension.

Figure 34.



Keep in mind that while working on undulating terrain where the "ideal" lay of the blade is continually challenged, the edge-to-surface relationship can be additionally fine-tuned by appropriate lifting or dropping of the hands/elbows/arms/shoulders. This is another example of on the spot improvisation, often necessary and *always* wise to consider. [23]

3. Correcting the Horizontal Balance

It is rather straightforward to shift the blade's point either up or down. The three options are:

1. Use of sideways-tapered wedges. This is the simplest option (also possible with metal snaths) and is recommended as the first step in all cases, in order to ascertain the exact degree of change desired, should one choose to follow with either option two or three.

2. Tapering the snath's bottom end *sideways*. (Of course, this approach is only possible with wooden snaths.)

3. Altering the tilt of the blade's tang. This can be accomplished either in the cold state (*albeit only with some blades and only to a certain degree*) or by application of adequate heat. (Both to be discussed in Part 2.)

Figure 35 illustrates option 1 – the inserting of wedges of suitable size. From there, it can be deduced how option 2 is to be implemented. That is, if – *after* settling the desired balance of the blade by temporary aid of the wedge – one decides to dispense with the wedge, then removing the appropriate amount of wood (roughly equivalent to the size / shape of the wedge) from the snath's bottom end is the next step to take. However, there is something else to keep in mind: rasping off more than a small amount of the material will involve covering the area including the seat for the tang's knob. This can sometimes have an effect on the hafting angle, because the seat may end up being shifted *sideways*. If the shift is significant it will be equivalent to the strategy employed in Figure 32. That can turn out to be desirable, or not…

To communicate *all* the details potentially involved in the fine-tuning of scythes is beyond the scope of these guidelines. Further alterations that may possibly be necessary to alleviate *sustained* bodily adjustments on the part of the mower, beyond what can be accomplished by means of wedges, will be discussed more extensively in Part 2.

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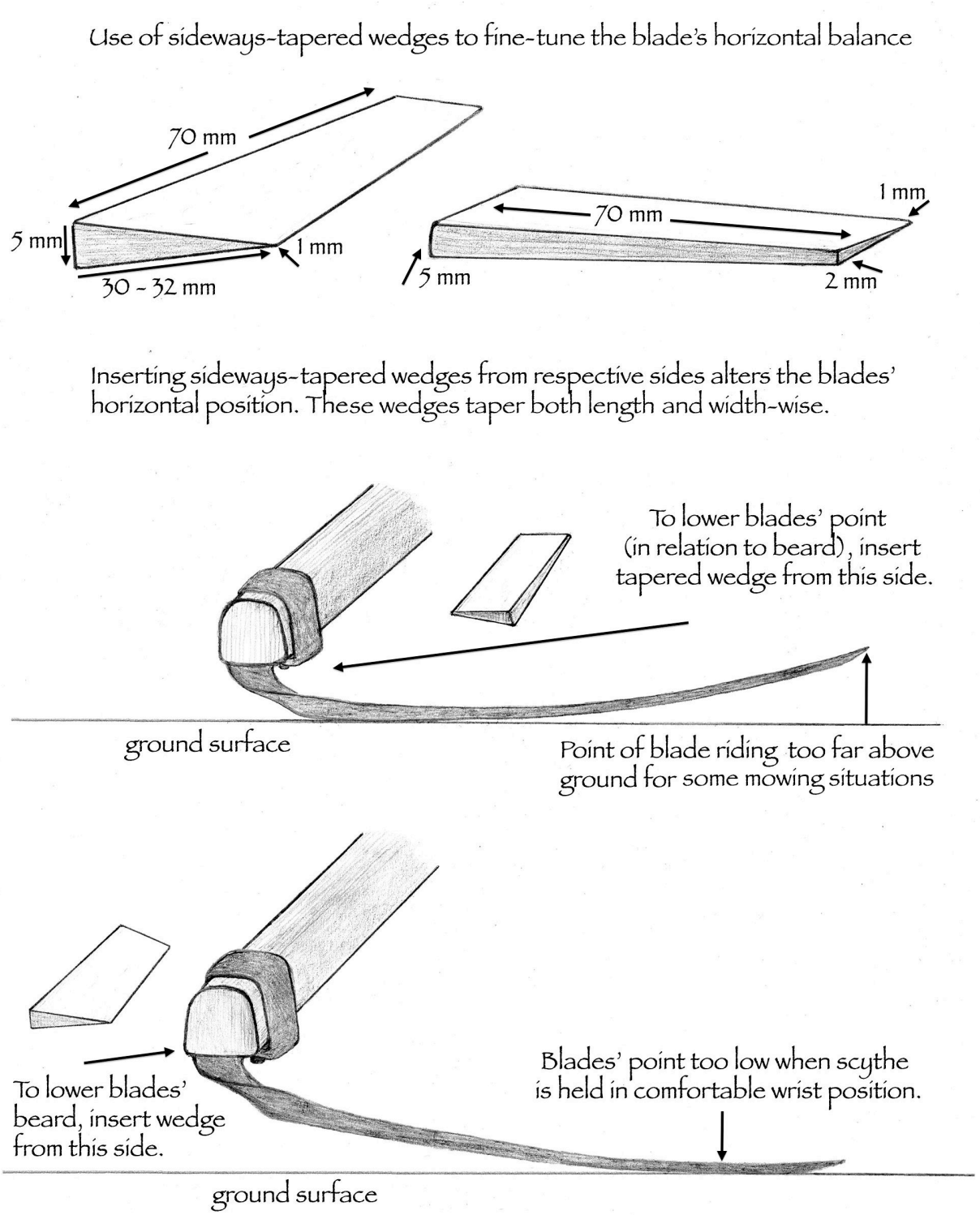
[23] In view of this fact alone (never mind the rest of the potential difficulties with the lay) a 'perfectly adjusted' scythe, as some retailers claim to provide – *without specifying* whether it is for a flat lawn, a steep mountain meadow, or anything in between – is an ignorant claim at best.

Figure 35.


Use of sideways-tapered wedges to fine-tune the blade's horizontal balance
70 mm
5 mm
1 mm
30 - 32 mm
70 mm
1 mm
5 mm
2 mm
Inserting sideways-tapered wedges from respective sides alters the blades' horizontal position. These wedges taper both length and width-wise.
To lower blades' point (in relation to beard), insert tapered wedge from this side.
ground surface
Point of blade riding too far above ground for some mowing situations
To lower blades' beard, insert wedge from this side.
Blades' point too low when scythe is held in comfortable wrist position.
ground surface

Chapter 6. Honing in the field

The basics

As the diversity of techniques among old agrarian cultures attests, scythes can be honed in a multitude of ways, and with a wide variety of whetstones. What matters is that after going through the motions, the cutting edge *is* adequately restored, which is to say that *the improvement in sharpness after each whetting session in the field should be immediately felt upon taking the very next stroke*.

Our intent in the following discussion is not to identify whether the effect of honing is long lasting or not, and why that may be so (as was already addressed in Chapter 4). Here the objective is to help determine which honing techniques assure that there is a difference. If not, it may be that the particular stone's abrasiveness is inadequate *for that particular edge condition*, or that (relative to its abrasiveness) the stone is not applied with enough pressure against the edge, and/or that the stone is moved too slowly. All of these factors could be responsible in any one case of unsatisfactory results, or it may be just one of them. We encourage individuals to experiment under their specific circumstances (the combination of available equipment and the particular mowing task), while keeping the following in mind:

1. The finest grit stones are, for the most part, only suitable for edges that were first adequately *shaped* (by peening or otherwise) and are therefore often not the best as the *only* whetstone for beginners.
2. Only relatively coarse whetstones can be applied with a very light touch and still adequately restore the blade's edge.
3. Applying firm, or even *very* firm, pressure with a fine to mid-grit stone can make a notable difference in many situations of edge and field conditions.
4. The speed of the honing stroke *does* contribute to abrasion (though should not come at the cost of compromised stone-to-edge angles).

What remains to be considered is at exactly what angle the stone should be held in relation to the blade's bevel. Our position on the matter can be summed up as follows:

The whetstone's angle – from both sides of the blade – should be as **low as possible, *as long as* the stone still touches the edge at *the outermost end of the bevel***.

But is this enough of a guideline, without putting an actual number of degrees to that angle? Possibly not, though speculating on the topic further does get complicated.

The challenge of keeping stone-to-edge angles within an acceptable range

It has often been said that "*the scythe blade is a single-beveled tool"* – an assertion generally made in reference to all scythe blades. Without further qualification, we consider that statement somewhat of an unhelpful popular myth. Why unhelpful? Because it doesn't take into account the fact that practically all scythe blades, once in use, feature along their edges more than one bevel. Tempering that statement by adding that "beveled" refers to the *primary* bevel, would take it out of deep water and leave room for the fact that there is more to the issue of bevels than meets the casual eye. But for now let's take a little detour into a related subject.

Some tools, such as many chisels, plane blades, drawknives, side axes, scissors, etc., can more accurately be referred to as single-beveled, because it is relatively easy to maintain their one (primary) bevel at exactly the chosen angle, while the opposite side is maintained completely flat. Even then, many individual specimens from among the tool groups mentioned are – by some of their users – *intentionally* made double-beveled (with one primary and one secondary bevel, both from one side). Additionally, yet another secondary bevel of a very low angle is sometimes, intentionally or otherwise, created on the bottom side. Of course, all of the resulting variations in edge geometry affect the functionality of the tool. One difference between those characteristically single-beveled tools and scythe blades is that the former are typically honed (or can be) in a more accuracy-friendly set-up and, if desired, with the aid of various jigs. Provided the owner understands the related concepts and is careful enough in implementing them, some of those tools can readily be maintained with three bevels (even four would be possible!), and each with whatever angle degree desired. This is *not* so with scythe blades, especially once they are attached to their snaths and taken to the field where they require frequent re-honing.

For a relatively short period of time, a newly re-shaped (whether by hammer or grinder) blade can perhaps be described as "single beveled" and *begin* the workday as such. As the day and the whetting sessions progress, the whetstone begins to create tiny *secondary* bevels along the edge. Although typically unacknowledged they nevertheless affect the blade's cutting action, sometimes a little, sometimes a lot. Ignoring them does not reduce their effects.

The "American" blades deserve special mention here because they are usually referred to as "flat" (and sometimes with the degrading surname "stamped"). Well, most of them are *not* stamped, nor are any of them flat in the sense that a whetstone can be moved against their underside fully contacting the cross-section of the body. The reinforcing rib, seen as a sort of 'trough' from the top but protruding downwards, will effectively prevent any such attempt, unless only about 3 cm of the blade's body's width is considered an adequate angle guide and surface to slide the stone against. That, of course, is not how the men of previous generations whetted their American blades. Instead, as the result of the angle they held their

whetstones (and suppose it was the lowest possible) they began to slowly create two secondary bevels on their blade's edges starting from the time of the first re-honing in the field, and those secondary bevels were inevitably steeper than whatever primary bevel the mower initially ground onto his blade.

A partial exception to both of the above cases are the Scandinavian blade models because they are truly flat on the underside, and it is possible to maintain *that* side without a bevel, at least for a much longer time. *Theoretically*, that time can be extended into infinity, especially if they are field-honed in the manner often used in the Nordic countries with the round "Scandinavian" stone – one side at a time. So if it was indeed necessary to bevel-categorize, these blades could rightly be referred to as "single-beveled". However, if a switch is made from the (usually circular) honing of one side at a time to the back-and-forth strokes of an elongated stone, even the flat underside eventually acquires a shallow *secondary* bevel; in the case of the "single-beveled" tool group, it is referred to as a "back bevel".

These guidelines, however, focus on the "Continental" blades, of which *very* few are truly flat in their body's cross-section, and shaping their bevels – be it with the hammer or later with the stone in the field – evades any neat, defining terminology. That may be one reason why across the European landscape it is uncommon to hear someone calling a scythe blade "single-beveled". In fact, the bevel concept is rarely mentioned. Rather, the scythe blade has an edge, the outermost portion of which is regularly peened to various widths and thicknesses by different individuals and for different purposes, using a variety of techniques. In some languages the peened zone itself has a name of its own, but implies nothing concerning bevels. Beyond that, there is a multitude of ways to keep the cutting edge satisfactorily sharp without discussing bevels per se.

In addition, we hope to spare someone the headache of trying to figure out how to whet their "Austrian" blade from the *bottom* side so that 6 mm of its body will be "brightened up with the whetting" (as advised by Tresemer) – while *still keeping their stone contacting the outermost portion of the bevel* while honing…

To reiterate: during use and whetting, most scythe blades eventually end up with two additional secondary bevels – one from each side. Depending on the applied angle of the whetstone that created them, they can be variously wide (i.e. shallow) or pronounced (steep). In a way, they are temporary and each new peening or grinding session eliminates them (or intends to). How thoroughly they are removed, depends on how well each respective person performs the peening/grinding. In most cases a small portion of the secondary bevels remains, a portion so very small that it often goes unnoticed. (Look through a good loupe to see if the hammer prints on your freshly peened blade reach *all the way* to the last fraction of a mm to the apex.) Not that it matters much; the peening hopefully lowered the 'shoulders' (i.e. evened out the transition zone between the secondary bevel and the rest of the primary bevel) thereby making the edge more penetrating. But then from the very next strokes of the

whetstone on, those secondary bevels are, however imperceptibly, once again being formed.

The flip side of all this is that it also does not really matter whether the scythe blade is referred to as single, double or triple-beveled. As it has for centuries, it will continue to function relative to how well its user can sharpen it. The issue is addressed here for two reasons: Firstly, because it has been touched upon by others, most notably in the oldest-still-in-print English standby text (1981) on the use of the "Austrian" scythe. Secondly, because we believe that there *is* value in trying to understand what is happening down there at the zone of micro-bevels.

Presently the most frequent recommendation regarding the "correct" stone-to-edge angle across the *topside* of the blade is along the (imaginary) line connecting the edge and the top of the blade's back. While not universally applicable, that is more or less a good *approximate* guide. Still, it refers to the 'easy' side.

Regarding the angles from the *underside*, far less is specified in print, in spite of the fact that everyone writing on the subject surely knows that this is where novice mowers are more likely to flounder. Here the one reference point (which the blade's back provides from the topside) is missing altogether. So while the whetstone may *begin* its pass with its lower (hand-held) end touching the edge, the upper end is in mid-air with plenty of room for deviations as it moves along. The question then is: at what angle should the stone be moved? At this point we suggest reading Note 24 [24] – a summary of guidelines regarding

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[24] Surprising to beginners as it may be, this 'correct honing angles' is another of those hazy how-to topics on which too little clarity exists. In addition, the use of technical terms varies enough with the respective authors to compound the existing discrepancies and resulting confusion. At least if *we* were novices searching for dependable information, and compared all that is presently offered on the theme, it certainly would have us confused!

Here is the summary of pertinent excerpts from those five previously referred-to texts:

1. Tresemer, (1981) offers the following:
From the topside: "*Here the stone is guided by the rib which stands out along the back of the blade*"
From the underside: "*Hold the stone against the blade so that across the back side of the blade the angle of stone to blade is zero degrees. You should see the first ¼ inch of the edge brighten up with the whetting*".

2. Lehnart 2000, 2005, 2008,
"To hone, hold the whetstone parallel to the edge. If you instead move the whetstone on an angle to the edge you will hone-off the Dangel". 'Dangel', in German, refers to the peened portion of the bevel. (2000)
"During honing the mowing-created deformation of the edge should not be honed-off, but instead only re-sharpened and lined up. This is possible by guiding the stone 'flatly' (parallel) along the edge under firm pressure, in short curved strokes, alternately from upper and underside of the blade. The most frequent mistake of whetting is the moving of the stone on too steep an angle to the edge – the result of which is all too quick honing-off of the "Dangel". (2005)
"Hold the whetstone always so that it is parallel to the edge". (2008)

Though the blade's sides (with possible differences as to the stone's angles) are not specified in any of the three books, the advice is presumably referring to both of them. Or is it? One thing that stands out is that angles as such are 'undesirable' and that "flatness" ("parallel-ness") of the stone is what one is to strive for.

honing angles published to date.

The principle "rule" regarding honing angles we stated earlier ("… as low as possible *as long as* the stone still touches the edge at *the outermost end of the bevel*") does not really contradict the essence of the combined advice offered in Note 24, it merely adds what we consider an important detail. Nevertheless, although there is probably a general consensus among the voices contributing to discussions on this very topic, all actual advice, including our version of a honing angle "rule", still covers only the theoretical side of the concern. In practice, those "as low as possible" angles can vary substantially – from both sides. Apart from the mower's skill to perform the honing as intended, any or all of the following three variables may contribute to the actual in-field disparities.

a) The degree of concavity and the width of the respective blade model's body.
b) The degree of concavity each person incorporates into the bevel while peening it.
c) The degree of 'edge rounding' taking place during honing sessions.

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3. Anderson (2008):
(Following peening): "Final honing: *Hold the blade by the tang, and place the tip in a stump. Brace the hand holding the tang against your body, with the cutting edge facing away from you. Hone from beard to tip, with a wet whetstone. If you are a beginner start with a soft stone, then follow with the Rozsutec or Doppelbock stone. Remove the burr only with the Rozsutec or Doppelbock. Use the shape of the whetstone to feel for the correct angle that you need to hone the edge. Too steep, and you will dull the edge; too shallow and you will not be doing much of anything. Use a fairly light touch, and let the stone do the work. Experienced peeners can skip this step, and just quickly hone the blade like they do in the field."*

4. Tomlin (2016)
From the topside: "*On this side you'll use the rib to set the angle of the whetstone which makes it fairly easy to get right*".
From the bottom side (which Tomlin calls the "bottom face"): "*[The purpose of honing from underside] is just to straighten out the burr [created from the opposite side]*" … *On this face… you will be looking to see the angle where the stone just touches the very edge of the blade. Place the narrow face of the stone on the blade … Keep in mind the idea of straightening the burr right at the edge which will help you visualize the action"... "…you will be relying on having learned to find the correct contact between edge and stone while using the kneeling method."* (Described earlier in the text.)

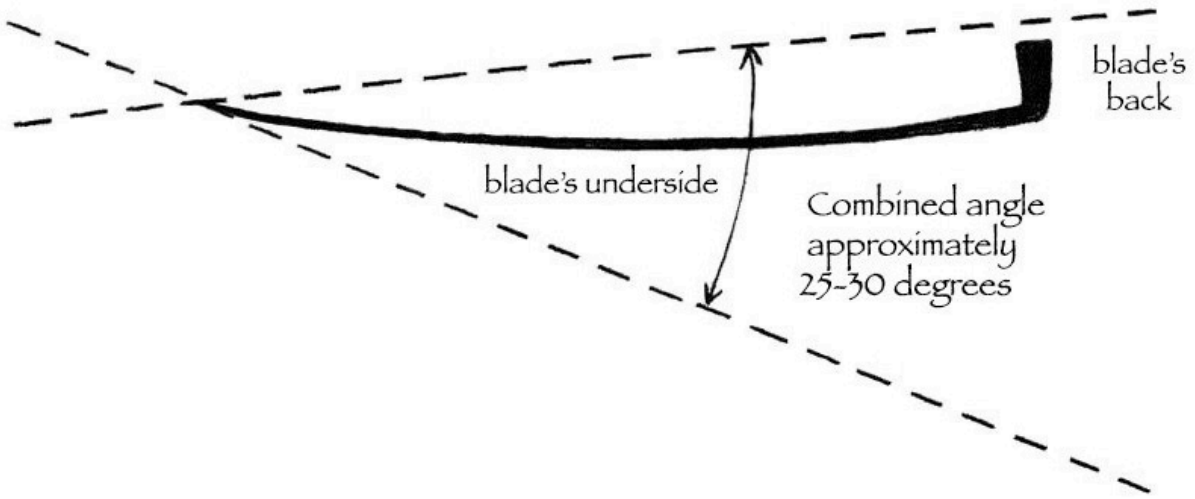
5. Miller (2016):
"It is crucial that you hold the whetstone at an angle that approximates the shape of the edge. The blade is single beveled, so the whetstone should be parallel to the blade along the underside and at a slight angle (the angle of the bevel) along the topside". "If the top of the whetstone is touching the chine of the blade (here, going by the accompanying drawing, he is referring to the topside), *you are starting too high… and a whetstone will not be lying at an appropriate angle". "Pay close attention to the angle of the whetstone at the point, since the blade is so narrow there that it can be difficult to approximate the angle of the bevel."*

All these bits of instructions may well represent certain *portions of* a good theory, but (even if they were comprehensively explained) implementing some of them in practice is another matter…
Here Tomlin comes closest to offering a concrete hint regarding how to settle on the stone's ideal angle (and subsequently its movement) from the *underside*. Wisely, without specifying number of degrees, he nevertheless tells the readers how they can obtain at least a visual image of the angle they should attempt to maintain as the stone is in the process of doing its job. It may have been helpful to add that the exact angle will vary in *each individual case* of blade model/user, but he did provide more useful information in this regard than the other authors all put together. What both Lehnard and Miller bring onto the table contradicts the standard topside's "rib/back-to-edge" recommendation. That does not make it "wrong", of course. And although the vast majority of European mowers do not use that technique, the recommendation has merit, in cases of *some* blade models. (Briefly addressed further below.)

In Chapter 4 (Figure 11) we suggested the angle to be 25-30 degrees (a common one on many other edge tools). Below we use that same diagram again as Figure 36, and, to avoid confusion, with only the field-honing angle indicated.

While drawing that diagram, we hoped everyone would notice the included "*approximate*". As it is – in view of the combined advice now summarized in Note 24 – that number may seem too high to some. Keep in mind that 25-30 degrees refers to a *combined* angle, not one from either side individually, and that each of the single sides' angle is not necessarily arrived at by dividing the combined angle by two. Of course, even if not very conveniently or accurately, they can be individually measured. But a visual image taken in one's head to the field may be more useful than numbers arrived at by means of some kitchen table measurements, and such an image is not difficult to obtain. Tomlin briefly explains how to do that, and in addition his book features at least two photographs that in this case become "a picture worth a thousand words". We second his suggestion, except that rather than obtaining that image in the field with a blade attached to its snath, we prefer a table or bench as a support, initially. [25]

Figure 36.



[25] The blade can be rested upside down on a table, which puts its working underside facing upwards and more or less horizontal with the plane of the tabletop. Then, while one hand steadies it by the tang, the other hand positions a whetstone across the middle of the blade's back. On most average Alpine blade models, the stone will look to be making 'full' contact with the blade body's center over a distance of approximately 4-5 mm, no more. Begin to slowly tilt the stone toward the blade's primary bevel, and observe how wide a portion of the bevel the stone is actually contacting at any one moment; it will not be more than 2-3mm in the majority of cases. Then tilt the stone still further, until the stone *just* contacts the outermost end of bevel.
"Just contacts" means that the tiny space between the apex and the stone closes *completely*. A source of light from the opposite direction assists in seeing when exactly the stone has been tilted just far enough to close that very small space. At this point, as it just contacts the outermost point of the bevel (which is the lowest angle to use) the stones' outer end may be significantly farther from the blade's back than one might initially guess it ought to be when trying to keep their stone at a "low angle" while honing in the field.

However, either approach can provide adequate visual perspective on how “low” the stone’s angle can actually be in order to sufficiently contact the apex. In both cases it would be found that the stones’ outer end may be significantly further from the blade’s back than one might initially expect while attempting the low angle recommendation.

In any case, fixing that distance in mind and asking a scythe-friendly friend to do the same, may be the next best step. He/she can then, while field honing takes place, face perpendicularly to the mower’s stance, and make periodic ‘voice corrections’ as needed. Those who hone their blades in the field with blade’s point in a post, tree or the ground (see “Positioning the scythe during honing”, below), do not need such a helper. But during the actual honing the angle can at best be adhered to only approximately because no normal person would take the time needed to actually watch when exactly the stone touches the outermost end of the bevel while executing each stroke. Relying on the visual memory of the stone’s top end from the blade’s back is about as close as we can get to that angle in any practical way.

With practice and attentiveness it eventually becomes a matter of simply *feeling* for the outermost end of the bevel ‘through’ the stone; as soon as that point of contact is felt, one strives to keep the stone *at that angle* throughout the entire honing stroke. This is true regardless of the honing method employed.

In view of the now widely promoted instructional guidelines that (rather simplistically) state: “…the whetstone should be held flat against the back of the blade”, we add a bit more food for thought regarding how the shape of the bevel can influence the actual stone to apex angles.

If technical accuracy mattered, *truly flat* bevels on the ‘Continental’ blades are rare. Those that come closest are initially made in the scythe factories, and even that is not the norm. On such bevels the stone could contact a larger portion of their width from the underside, though usually not quite all of it. (And we are taking into account that far fewer than half of the bevels of blades made by the various factories are 5-6 mm wide these days.) As for the stone contacting the *bevel* from the topside “flatly”, and then using that contact to determine the overall angle/direction of the stone? That may be something to merely illustrate by way of diagrams drawn onto the pages of a book, but not realistically implementable in the field.

Once hand peening begins, and is repeated, the bevel is prone to take on all manner of shapes, many of them with at least a slight but sometimes quite pronounced hollow. (We are not talking of ‘pronounced’ anywhere near that illustrated in Lehnart’s books under the term “Hohldangel”, nor Miller’s nearly identical “curved edge” on page 64 of The Scything Handbook.) That in turn changes the possible number of millimeters of the bevel the stone can actually contact from either side, and on exactly what angle it is best tilted in order to *still contact the apex*.

As for the advice that the bevel should be maintained 'flat', there is another perspective on the matter…[26]

Certainly the sort of bevel described in Note 26 absolutely does not allow the whetstone to be laid against it 'flatly', from either side. Its 'hollowness' also increases/steepens the angle at which the outermost end of the bevel is touched by the stone – something that (in the excerpts quoted in Note 24) Lehnart, Miller and to lesser extent Anderson tell us is a bad thing because it will all too quickly remove the desired "dangle"…

A *partial* way out of this predicament could be by following Lehnart's and Miller's suggestion and (on the blade's *topside*) begin the stone's downward honing pass below the back/rib. That does slightly lower the actual honing angle, and could also somewhat compensate for the compounded effect of the model-specific 'hollowness' or concavity of certain blades' bodies, *plus* the owner-made hollow along the bevel. However, it is not something most mowers using the average narrow (50mm) blades are prone to do, mainly because it is a bit awkward to execute and slower overall because the stone's stroke will (unless pulled significantly more sideways) be inevitably shortened. Still, there are occasions where it can be, and traditionally has been, applied to advantage. [27]

We stated that 18 years ago while writing The Scythe Must Dance, and in Figure 9 of *that* manuscript drew a representation of the Lehnart/Miller-advocated whetstone position (at least from the topside of the blade). However, we later came to realize that our seemingly straightforward diagram was actually flawed. Namely, the descriptions accompanying its sub-figures 'a' and 'b' called for questioning, and subsequent correction. In line with the popular notions of the day, the one for the sub-figure 'a' claimed the stone angle as drawn to be one for "general purpose" mowing. Well, popular notions sometimes represent no more than theories, and this is one example. How useful are purely theoretical bits of advice in a supposedly practical guide? Slightly refined, that diagram is now included here as Figure 37.

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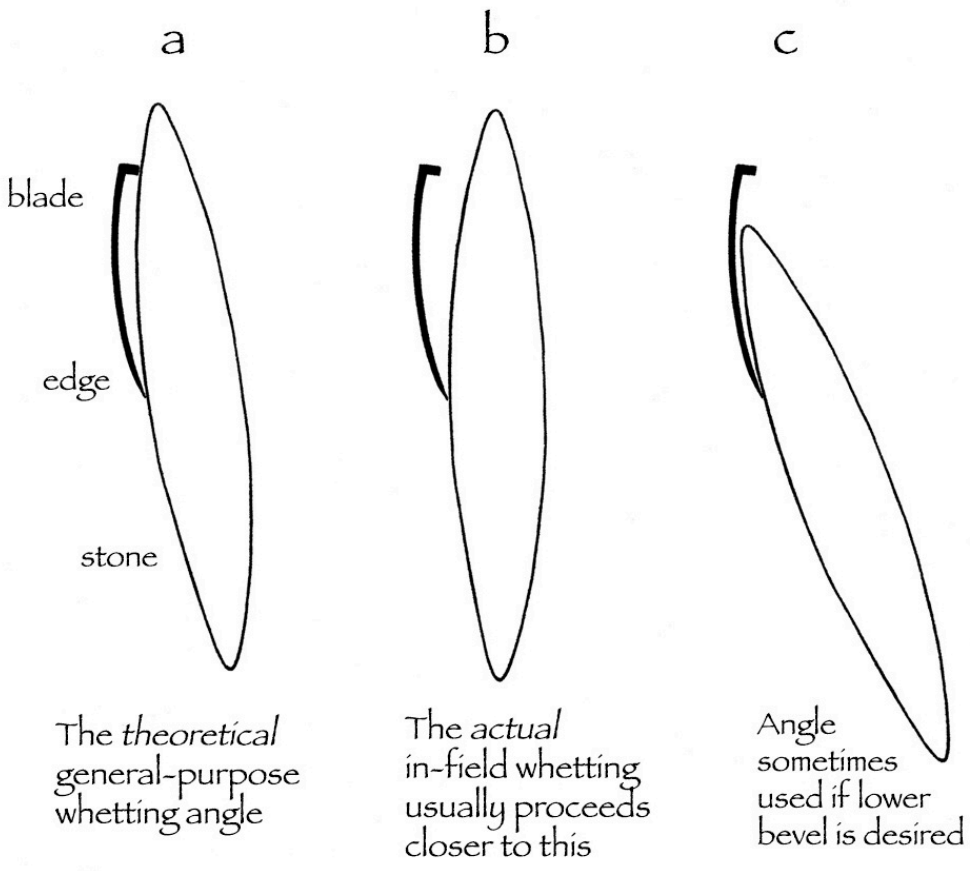
[26] For instance, an old Austrian standard of the ideal bevel *shape* states that on a really well peened blade one should be able to put a drop of water (or a bit of spit) at the point of its beard, and then by slightly tipping the blade towards its point that water should roll along the bevel all the way to the point without spilling over the edge. That is not a joke; we know by experience that it does work. But a bevel functioning somewhat like a trough for that droplet to travel in obviously cannot really be 'flat'. Instead, it actually *needs* to have more of a hollow than one is likely to find on an average hand-peened blade these days. The peened zone also needs to be somewhat wider than is common, say 3mm or more. The Alpine competitions' participants like it at least twice that wide, and the trough-like shape is desired by many of them. The fact is that it would be exceedingly difficult to *hand-peen* a bevel 6 mm wide, do it to the desired thickness overall, avoid up-and-down deflection (waves) and not have it at the same time end up with a variously hollow profile. If any of the 'flat-beveled' folks actually try it and come to a different conclusion, please let us know. Given enough evidence / consensus on certain details, a correction of this text can always be made.

[27] The few examples of blade models that, in our view, may benefit by being honed with the stone beginning its path *below* the blade's back/rib are those that are extra wide and/or have more concavity in their bodies cross-section. Of such blades there are practically none still being produced. A few variations of the 'typically Basque' model, favoured by them also in competitions, may be the exception, and of course, the leftover blades of old production are still in circulation, mostly in countries like Portugal, Spain, France and to a lesser extent elsewhere.

During the whetstone's movement across the blade's topside, most seasoned mowers do not *actually touch* its back/rib back with their stone. At this point we want to extrapolate a little. We do not know why those old mowers would, to various degrees, disobey that most frequently stated golden rule of a whetting angle ("from the blade's back to its edge") but they do. We are quite certain that if someone wandered throughout the European countryside during hay-making season and took photographs of "mowers whetting their blades" (albeit from the angle where the lines of the moving stone in relationship to the blade's back can be clearly seen) and later analyze the collection, he/she would confirm this. With other words, notwithstanding the sometimes large variations, cross-culturally the most frequent whetting angle approximates the one shown in Figure 37 'b' closer than the one in 37 'a'.

Therefore – given lack of substantial evidence to the contrary – we declare that representation to be more or less one of the "norm" (while keeping in mind the all important qualifying little word "approximate"). Consequently, the original captions in that figure needed to be altered…and that is what we did.

Figure 37.



Now, we realize that so far the only decidedly optimistic hint was this brief statement: “With practice and attentiveness it eventually becomes a matter of simply *feeling* for the outermost end of the bevel ‘through’ the stone…” With other words, the whole discussion above has provided nothing like dummy-proof formulae to field whetting. If anything, it may have spun many readers’ heads. Well, they have our sympathies, and we hope to make up for it with the condensed version of this book.

For now, we continue with the last subtopic, and it may be one more straightforward and immanently useful. The following section emphasizes the importance of keeping the stone’s path as straight as possible during honing, both from the top and underside. What bears emphasizing is that during honing – from *both* top and underside – the movement of the stone should be as straight as possible.

As many readers already know, making perfectly straight lines does not come naturally to the human hand. Freehand tool sharpening, whether with stones or files, often suffers in quality for this reason alone. Honing a scythe blade in the field is a prime example. *Unintentionally* moving the whetstone in slight curves – even though the person guiding it perceives the movement of the stone between the points of reference to be “straight” – happens *even* while honing the topside of the blade, where, at least theoretically, there *are two definite points* of reference.[28]

Like it or not, in both cases (of topside and underside) the stone often begins to leave that theoretically straight line as soon as a portion of it moves past the apex. As pointed out in Chapter 4, this unintentional ‘rolling’ of the stone is really, really common, and not only with beginners. How ‘detrimental’/undesirable that may be depends on the degree of the roll, and for what sort of cutting that very blade is intended to be used. Though it may not be common to find someone who *intentionally* steepens the honing angle in this manner, for blades used in rough terrain (as many are) a mild rounding of the apex gives the edge more damage resistance. Of course, this sort of edge ‘toughness’ comes at the cost of ease of penetration; thus blades used for lawn mowing, competitions or just plain haymaking in stone-free meadows would certainly be better without it. The key question here is *how much* rounding is one willing to accept as “inevitable”, and is that choice being made consciously?

[28] We say “theoretically” because very few seasoned mowers, though their stone comes close, would actually have it contact the blades’ back while honing in the field. Secondly, the backs of all blades are not equally high and are really not calculated to be a certain height *in order to* provide the “correct” stone to edge angle. With a few former exceptions – such as the North German “high back” models – each factory makes the backs in their own standard edition on all models other than the heavy bona-fide bush blades. The differences between respective makes may only be a couple of millimeters (representing 20% or so of the total) but – along with differences in the width of the blade’s body – the actual stone-to-edge angle can be altered by them. So, even though ‘rib-to-edge’ may be the most frequent recommendation as to the “correct” angle, it should, again, be considered only an approximate guide.

Figure 38 [29] (on the following page) is our attempt at a visual representation of what actually happens right there near the apex – a *gradual change* through repeated honing sessions. It addresses an aspect of scythe blade sharpening which has not been adequately discussed, yet one that could substantially contribute to learning how to better sharpen most edge tools, scythes included.

While considering the details of that drawing, please keep the following qualifications in mind:

If viewed at a *significantly* magnified level, the very apex (of any 'sharp' tool) is never *that* pointed. But because tool users often *think* that it is, we drew it according to the established image. ☺

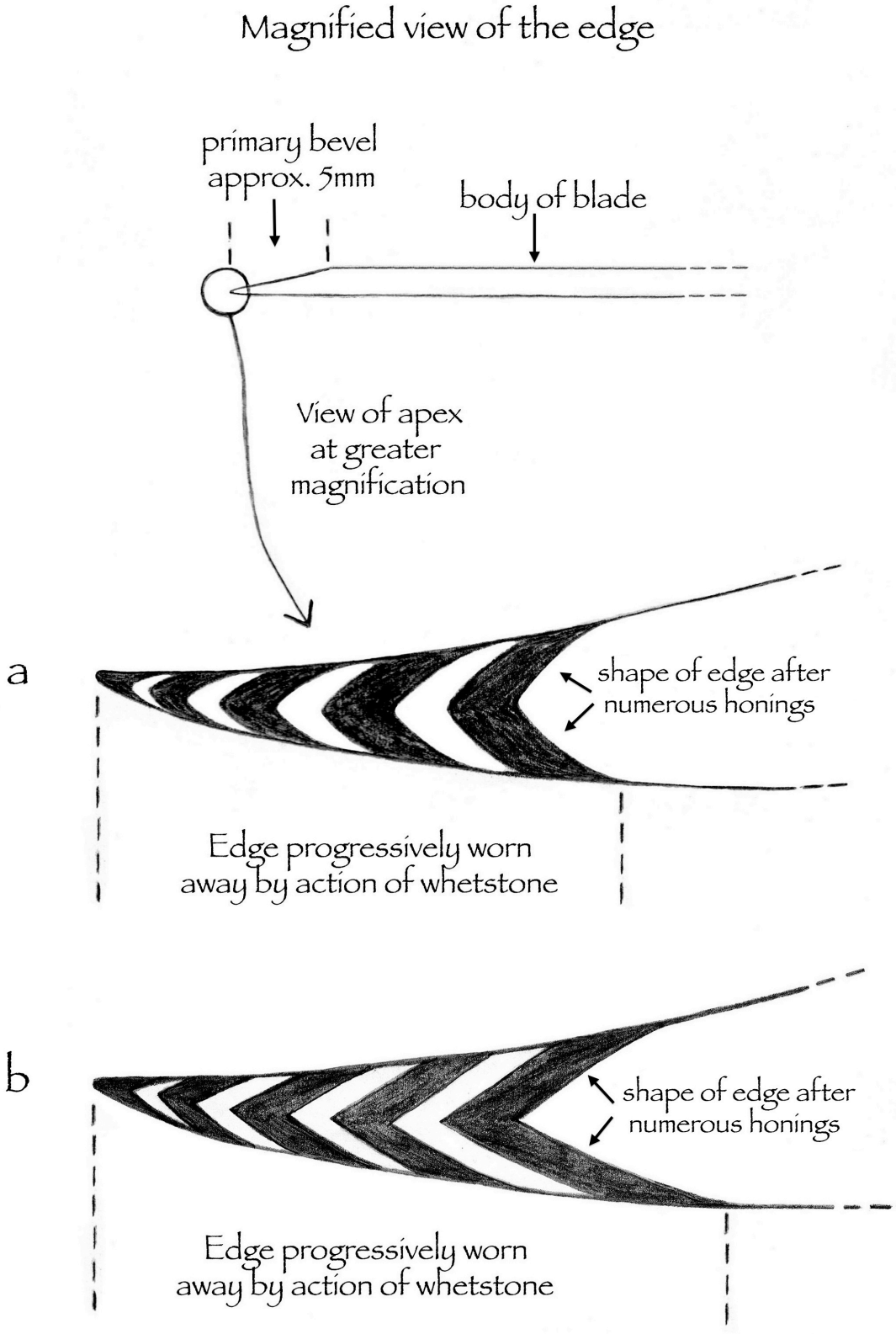
What you see here is again, a simplistic representation of but one of many, many variations of what the owner-made *secondary bevels* of a scythe blade actually may look like and how it progressively changes. The differences between them are more the result of how straight a person can move the stone, rather than differences between this or that angle-related sharpening guidelines followed.

Figure 38b shows one variation which is likely to take place with blades of those who can indeed move the stone in a straighter line than most; these are also the folks whose periodic honing sessions are more effective. Their blades also need less frequent peening and stay "sharper" for longer between honings. With that in mind, it should be plain that it is best to avoid letting the stone 'dip down' as soon as a portion of it has moved past the edge. This hand-rolling tendency is possibly foremost among the reasons for the lack of desired results while whetting in the field, causing more trouble than a deviation one way or another from the theoretical "ideal" honing angle. Given attention and practice, that aimed-for line will become straighter in time.

All in all, we still think that the subtopic of honing angles merits further discussion among individuals interested in subtleties – and those subtleties then further communicated.

[29] We borrowed this one from our 2001 manuscript. Back then we thought it was the single most important diagram we included in it; we still think so, although its effect on the overall understanding of scythe sharpening seems not to have been what we had hoped for. But it seems to fit into this section very well, so we present it again along with its newly sketched little companion.

Figure 38.


Magnified view of the edge
primary bevel
approx. 5mm
body of blade
View of apex
at greater
magnification
a
shape of edge after
numerous honings
Edge progressively worn
away by action of whetstone
b
shape of edge after
numerous honings
Edge progressively worn
away by action of whetstone

Positioning the scythe during honing

Of the various ways of whetting the blade in the field, not all are equally easy to learn.[30] Moreover, none of them can honestly be declared to be "cut-proof".

What makes some more 'learner-friendly' than others is the degree to which they allow the mower to hone in a comfortable position, *and* adequately steady the blade. One of the examples approaching these parameters is the method in which the blade's point is pressed against some solid object such as a tree or a fence post (while the snath's end is resting on the ground and the mower is standing more or less upright). Alternatively, the blade's point is steadied against the ground while the person is either kneeling or bending over. In both of these cases the blade can be steadied without a wobble – certainly a plus. It is also claimed, and rightly so, that the angle at which the stone is applied is most clearly seen and thus easily adjusted because the person can be looking down the length of the blade (perpendicular to the movement of the stone) – another plus. We do not, however, use this approach ourselves nor, for reasons outlined below, consider it highly recommended.

For one thing, we have spent countless hours mowing in places where – in view of the needed frequency of honing – walking the distance to the nearest tree or a fence post every few minutes would seem preposterous. As for steadying the blade with its point in the ground and then either bending over to reach it with the stone, or kneeling down, we have several concerns. One is that bending into the position needed to hone that way is not as comfortable as standing upright. Secondly, much, if not most, of our mowing is done with dew still on the grass, and while both kneeling and ending up with wet pants may not be a big deal, is it necessary? Thirdly, it takes longer; alone by the time a person kneels down and gets up again (never mind the honing itself) someone using the standing position might already be swinging their blade through grass again. But our biggest objection to honing with the blade's point being pushed into the mown stubble (somewhat less so with a tree or a post) is that *the point will inevitably miss its share of the stone*. And though some people claim that the edge section near the point does not need to be very sharp since "it does not do much cutting", we beg to differ. In fact, we typically overlap the honing strokes *more* near the point, *plus* apply a bit more pressure…

For these reasons we advocate another approach to field honing, one that has been practiced in many regions of Europe and the Near East for likely as long as any of the others. It is an approach that in recent years has also become popular with many novice mowers internationally. It involves having the blade positioned in front of oneself, with the *point aimed*

[30] However common across much of Europe is the honing method in which the blade is held up in the air pointing to the left (i.e. its topside facing the person) it is not one among those most easily learned. Nor is the method widespread in Spain (and possibly elsewhere on the Iberian Peninsula) where the blade's edge is facing upwards while the scythe is (seemingly precariously) supported on the person's thigh.

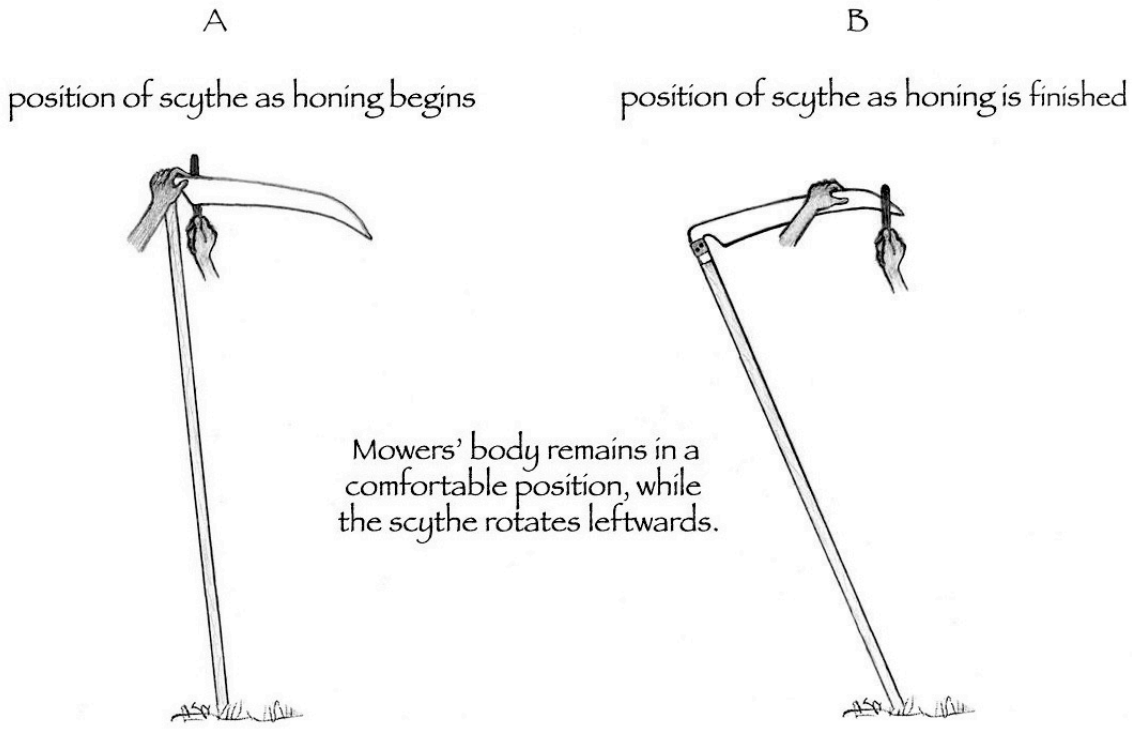
to the right. The person is then looking at the underside of the blade (and the screws holding the attachment ring) as illustrated in Figure 39. The upper end of the snath should be placed on the ground in such a way (in terms of distance from the feet) that the resulting blade angle allows one to carry out the whetting in a wrist-friendly manner, meaning that the wrist does not need to be bent either up or down too far out of its comfort zone. Where exactly that place may be is affected by the style of the snath, the pattern of the blade and the terrain one stands in. (Please note that we do not recommend the practice of "standing on the upper grip" as a way to steady the unit during honing because doing so often compromises the most wrist-friendly angle between the stone and the blade.)

As could be expected, of this basic technique there are regional and individual variations regarding how the blade itself is steadied and honing proceeds. In one such variation the left arm rests across the back rib, where it remains from start to finish. In another (possibly the most common traditionally), the left hand holds the blade, initially by its heel, and during the process moves forward once or twice in order to provide steadier support against the action of the stone. In both of these cases the stone-holding hand moves (in variously wide passes) from left to right as the complete length of the blade is covered.

Nearly 20 years ago we came up with an additional touch to this principle approach. One of its virtues is that the stone-holding hand and arm *remain* in a physiologically comfortable position – directly in front and in line with the shoulder joint, with the elbow relaxed and pointing downwards. Instead of the left hand following the length of the edge, it is the blade that gradually moves (leftwards) as honing progresses and 'presents itself' so to speak to the natural (accuracy-enhancing) position of the stone. At the start, while the beard and the first few centimeters of the edge are honed, the left hand holds the blade firmly at its heel (Figure 39 a). Then, by what may *appear* to be a 'creeping' of the fingers and thumb forward along the rib, *the blade is gradually allowed* to *slide backwards* – while the hand holding the stone remains 'in place', so to speak. Without periodic pauses for re-gripping, the left hand is *always* supporting the blade just slightly behind where the stone is contacting the edge, thereby providing steadying support against the pressure of the stone exactly where it is needed. In this manner, regardless of its length, the blade can't really wobble to and fro, as is often the case with some (though not all) methods of honing.

During honing the snath does not need to begin (nor can it remain) in a vertical position, because for the blade to slide backwards easily (somewhat by its own weight) the snath needs to be leaning at least slightly to the left. In the process the whole scythe pivots gradually leftward. If the blade is, for example, 90 cm long (and especially if the snath is a long one of the 'Eastern' type and/or the mower is standing on a steep slope) the snath may end up tilted as low as 45 degrees, or even less, towards the ground. (Figure 39 b does not show such an extreme tilt because the drawn blade is short, and the invisible person is standing on a flat surface.)

Figure 39.



In most traditions, the direction that the stone travels during each honing stroke could be described as a combination of movement parallel to the edge, and perpendicular to it. Exactly how much of the blade's length is covered with each downward movement of the stone is a matter of personal preference and/or regional tradition. It can vary from a very short forward progression consisting of numerous strokes to covering the whole distance in one movement. The latter variation is common only in areas where relatively long whetstones were used, often equipped with handles as in North America, and in parts of Europe where the even longer "Streichholz" (a wooden stick covered with baked-on synthetic abrasive) is still popular.

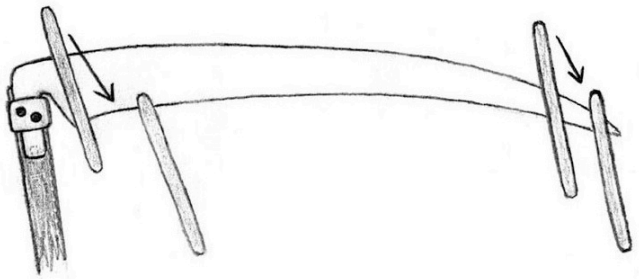
Not all directional patterns of the stone recommended during post-peening treatment (Chapter 4) are well suited for actual work in the field. Once the blade is attached to the snath, the whetstone, as a rule, is moved from the rib *towards* the edge. Of the examples illustrated in Figure 40, we recommend options ‘a’ or ‘b’ (in that order). In the options ‘c’ and ‘d’, the scythe may need to be positioned differently than shown in Figure 39.

Typically, individual stone strokes alternate between the upper and underside of the blade. This classical back-and-forth motion not only has a nice flow, it is also faster than honing one side at a time, and seems to produce a slightly better cutting edge. A case can be made for

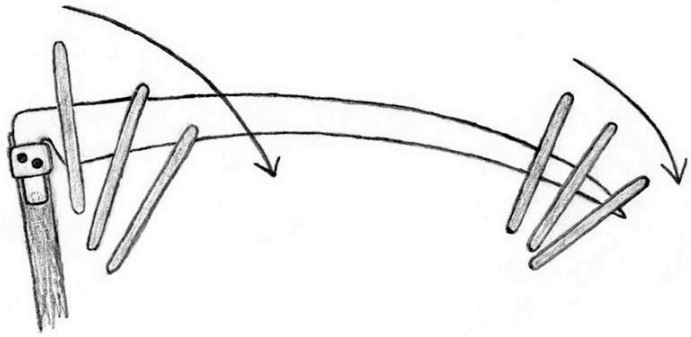
beginners honing one side at a time, because it is easier to focus on the consistency of the angle that way, and it is better to hone the blade ‘accurately’ rather than insist on the traditional switching back and forth. While honing one side at a time it is also easier to apply less pressure against the blade's underside, though that *can* be done while alternating the strokes as well. Beginners may benefit by having a friend standing at their side, turned perpendicular to them, to watch for and help correct the (probable) deviations from the desired angle as the stone progresses from beard to point.

Figure 40. a, b, c, d – Various stroke patterns of a whetstone

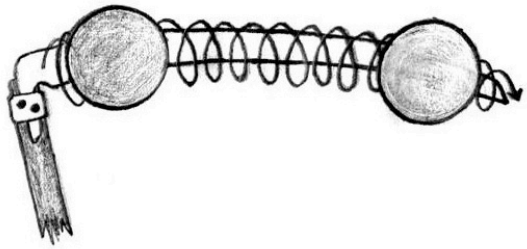
a) Here the whetstone is pulled in a predominately downwards direction, while approximately 5 - 6 cm of the blade's edge is covered with each single stroke. Each stroke partially overlaps the previous one, thus assuring that no part of the edge is missed.



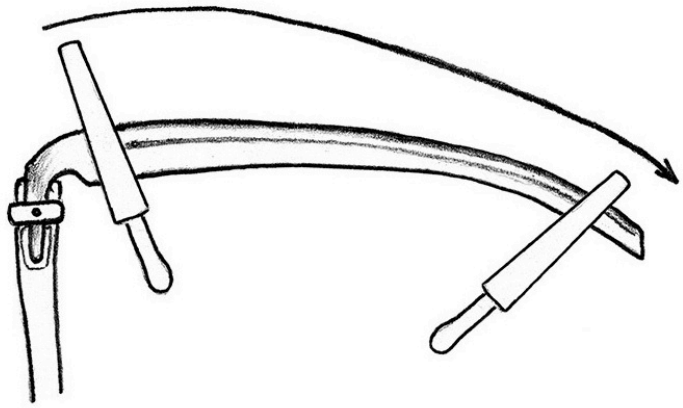
b) In this variation, the whetstone semi-rotates along its path and each stroke covers slightly more of the edge than in variation ‘a’ (10 cm or so). Overlap is still important.



c) In Scandinavia the typically very narrow blades are often honed with a round two-grit stone moving in a looping motion from beard to point, always one side at a time.



d) In the North American tradition, the typically long whetstone (often equipped with a wooden handle) is moved in one long motion all the way from heel to point and alternately from side to side. The strokes are repeated according to individual assessment of the result.



Cleaning the blade before re-honing in the field

Before each honing the blade should be wiped clean of all grass and grit, because such matter tends to be pulled towards the edge as honing proceeds and can inhibit the functioning of the whetstone. Although the cleaning can be done with a bare hand, picking up a large handful of mown grass and using it as a rag is the most common way to do it. Enough is picked up so it can be folded over the back of the blade and squeezed against

both sides of the blade's body. Then, one sweeping motion *along the rib,* from the neck towards the point, is usually enough to wipe off the bulk of the material. A second pass might be necessary, especially while mowing in wet conditions, to ensure that no bits of grass remain. We usually make yet a third pass along the very bevel itself, not so much to clean it even more thoroughly but to check for any damage the edge may have suffered since the last honing session. This has merit especially while mowing in rocky terrain or in places where dry stubs of previously cut saplings may be found in the grass. For this third pass, the abovementioned 'grass rag' would be counterproductive, and any really cut-proof gloves nearly useless.[31] To explain how this *seemingly* 'dangerous' technique is performed: the thumb and either the index or middle finger are placed against opposite sides of the bevel, pressed together lightly and then moved along from beard to point. Should a small dent or a 'schrup' be detected, it can be dealt with, even if partially, right then and there (Chapter 9).

(Again!) The question of "how often?"

"Dawn is still afar, only the stars are growing less distinct… Patches of mist lie on the meadows. The dew on the grass wets the mowers' torn shoes… They put their scythes down, fill their whetstone holders with water, drink, whet their scythes and the farmer marks the border…. Seventeen mowers… start swinging their scythes at the same time… Every twenty steps the scythes have to be whetted."

From Ignac Koprivec's 1939 novel, as quoted in Whetstone Holders by Inja Smerdel; refer to credit in opening to Chapter 4.)

Once at work, the blade needs to be whetted rather frequently. If the level of performance matters, frequently might mean approximately every 5 minutes, *on average.* This is not one of the 'radical' concepts we had already communicated. Rather, it seems to be an uncommon example of consensus among old mowers right across most of Continental Europe and the Near/Middle East. The quote we open this subtopic with – a historical account of one region's tradition with respect to honing frequency – states "every twenty steps". The author was, of course, not writing a scythe use instructional manual. But he was rather accurate here.[32]

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[31] While on the topic of gloves, we want to point out that a scythe held in gloved hands is definitely a modern phenomenon. One would probably have to wear out several pairs of shoes walking the European countryside to find an old mower wearing gloves. And if one were found (who has not been learning about this tool by watching YouTube videos) he could rightly be considered an anomaly.

[32] A 'step' is not what some novices these days think of as the 'shuffle' a person takes along with each stroke. A step usually means about three feet, or 90 cm. So 20 steps equals about 18 meters. Those mowers likely used blades 75+ cm in length, and probably advanced at roughly 15 cm with each swing, possibly more. Their swings (typically narrower than what we suggest in these guidelines for a 'field' stroke) may have taken two and a half seconds each – and all that computes to approximately 5 minutes worth of swinging for each twenty steps. Keep in mind that these estimates are mere guesses. However, they confirm our in-field experience and we trust that they come close.

Even so, adhering to centuries old traditions is not a must, with aspects of it possibly undesirable. Using the account from Slovenia (played out in countless similar scenarios) as an example, it is not difficult to see how a strict protocol inevitably "punishes" a certain portion of the group:

Among those seventeen mowers, some no doubt had their blades peened better than the average, and some less so. The former few could no doubt keep going (especially so early in the morning) for more than twenty steps, while those with least wide/thin bevels may have had to strain beyond their personal preference in order to keep up with the group's given standard.

With the above in mind it may be easy to see why the frequency of honing is another one of those questions that cannot justly be answered in a straightforward manner. We could simplify the dilemma and repeat what has been said elsewhere: "whenever the blade ceases to cut, it is time to re-hone". Or, to be somewhat more explicit, we could add "well" or "easily" after the word "cut", and leave it at that. Another alternative is to state an actual time period, as we had done eighteen years ago.

In The Scythe Must Dance we suggested approximately every 5 minutes, *on average.* Back then (in the aftermath of Tresemer's "*15 minutes*" as the only widely read specifics on the topic in English) it seemed a radical concept, and some new scythe teachers then chose to split the difference by suggesting every 10 minutes. Still, everyone can settle this issue for him/herself; it may require some attention, but really is not difficult. An attentive mower will notice that at some point between when the blade was last honed and several minutes later, the cutting begins to require more effort. While this could possibly be said of nearly every successive stroke following a honing session, we have in mind a *more noticeable change* – one that takes place within a spell of less than a minute. To someone watching from a distance, the change (and the need to re-hone) may be imperceptible, because the grass is still being cut with no apparent misses. What *is* missing, or at least beginning to decline, is a favourable ratio of energy expended to grass cut – and this the person operating the tool can feel in the body.

At this point, one may continue mowing for a while, or pause for a moment to hone the blade. Given practice, someone who pays attention to details will be able to identify that point of rather sudden diminishing of performance within half a dozen strokes. THAT, in our view, is the time to re-hone.

Admittedly, the period of time after honing and before its effect begins to noticeably diminish can vary considerably, hence the seeming discrepancy between estimates made by those who have written on the topic, but failed to qualify the guidelines. Here we attempt to be more specific. The 'ideal' frequency of honing is usually affected by a combination of factors.

Though not necessarily in the order listed, these play the most influential role:

a) The time of day that mowing is performed

b) The species of plants comprising the sward, and their maturity

c) The condition of the edge, as far as its geometry is concerned

d) The skill of the person performing the honing

e) The qualities of the blade, such as the specific steel alloy and tempering process employed by the manufacturer

Among the factors listed above the effects of 'a' can be most easily tested, because the change in conditions over the course of the day and how it influences the need for honing can be observed in a straightforward and dependable manner even by a beginner.

To outline one scenario suitable for a useful learning process:

Select a hayfield already past the early flowering stage, but one not yet so mature or weathered as to challenge a scythe blade unduly. The absence of rocks and other obstacles is highly desirable.

Get up very early, and begin mowing at *daybreak*. If the blade was well peened just prior to these tests you may be able to take 150 strokes or more before a *notable reduction of ease* in mowing, at which point the blade should be re-honed. You can probably keep going at this rate for an hour or more with only a gradually increasing, but not very significant need to re-hone more often than initially. Just before sun-up the interval might decrease to 100-120 strokes. However, soon after the first rays of sun touch the un-mown portion of the field, there will be a *notable difference within a relatively short spell of time*. You may rather quickly get down to honing at 60 stroke intervals, and by mid- morning or so it may be each 40 strokes, or even less (especially if the field contains some silica-rich species of grass).

Admittedly, the *shape of the outermost ½ mm of the edge* has by then changed (see Figure 38) and, being now a bit more rounded at the apex, no longer "takes an edge" as it did first thing in the morning. Yet most of that reduced efficiency cannot be accounted for solely by the fact that at some point between daybreak and 9:00am that blade would have benefited by being *lightly* re-peened. The major reason for the more frequent need to re-hone, in this scenario, is the changing condition of the plant texture, or, to be more specific, its diminishing *internal* moisture content as the day progresses.

From the moment the air temperature begins to rise (which during the summer is usually shortly after daybreak) the plants begin, at first very slowly, their daily water-laden exhalation.

Their cells – which previously were as full of water as the American Empire is full of hot air – begin to shrivel. To use perhaps a less contentious metaphor, they gradually acquire a jacket of a tougher consistency. Imagine a full Spanish-style leather wineskin (or a balloon, if that's easier) and an empty one: which punctures easier? The difference is akin to the difference in ease of cutting (and frequency in honing) for the person who rolls out of bed early and the one who doesn't. The change, you see, is only very gradual initially, but the magic of the sun's rays speeds up the warming in an easily noticeable leap. For that reason, in all cultures where the daily output of a man swinging a scythe really mattered, mowers were at the edge of the meadow when they could barely see enough to follow the contour of the sward to be mown…

However, the oft-repeated country wisdom that "grass cuts easiest when wet" is a semi-myth. Yes, roughly in sync with the easier time for cutting, the outer portion of the plants is usually covered with dew. But *surface wetness* per se makes relatively little difference – a fact that is also fairly easy to confirm. Here is how:

Find a dense lawn or a field that, due to its species' composition, is not easy to cut. Go out there sometime in the *early afternoon* just after a heavy shower has passed, when the grass will be thoroughly wet, *more so than it would be early in the morning with the average dew*. Mow for a long enough period to determine how many strokes it takes until that point of diminishing energy return (and the need to re-hone) arrives. Take a stopwatch or count the strokes. Depending on personal style, one back and forth movement takes 2 to 3 seconds. Then – *without re-peening that blade* – take it to the same place the following morning *at daybreak,* and continue mowing. Again count the strokes, and note the difference... For those still needing to be convinced: there are some mornings when rain is due to fall in a few hours, and no noticeable dew is present on the grass at daybreak. Choose a morning like that for the second phase of the above test. We rest our case.

Similar farm-style (but still somewhat comprehensive) experiments can be conducted regarding the differences in mowing ease due to plant maturity, relative resistance of certain species to a steel edge, or the differences between blade patterns and makes. Considering all of these variables (never mind the geometry of the blade's bevel) we feel that it can be misleading to set the honing frequency "in stone".

A note on whetstones

Our expressed partiality regarding *some* aspects of scythe use notwithstanding, these guidelines do not intend to promote any particular pattern of blades, style of snaths or types of whetstones. In Part 2 we may be more specific, and other individuals can add notes on various preferences, including the when and why of them. Here we take the neutral route and attempt to play the role of referee.

The existence of two camps regarding the theme of natural versus synthetic whetstones probably dates back to when the first of the latter began to be available, and (albeit with less intensity) continues to date. As with many things there are two sides to a story, and it would be hard to realistically dispute that there are times when a synthetic stone has an advantage over a natural one and vise versa.

For instance, because the coarse grit (usually synthetic) stones remove material more quickly they are better for post-peening honing (especially after the jig). For the same reason such stones are, by and large, also preferable for honing neglected edges. And why synthetic stones have taken a decided lead in popularity, worldwide, is because low quality edges *on all sorts of tools* have become far more common than was the case in the past. Additional incentive, of course, is the cost of their production, which, due to increased mechanization of the industry (in relation to the quarry equivalent) has continued to decrease. As well, there is the side effect of globalization and its relentless outsourcing, with China's, India's, Mexico's, etc., multitudes of low-paid labourers producing synthetic whetstones for pennies apiece.

Unfortunately, many of the cheap modern stones contain a considerably higher percentage of filler in relation to the actual abrasive material than was the case in the past, when some so-called "carborundums" were both efficient for steel removal and relatively long lasting. Additionally, synthetic whetstones finer than 100 grit are hard to find these days, with 60 grit being perhaps more common than anything else. (The "Silikar" is one of the exceptions.)

However, learning to function more or less happily with synthetic sharpening stones may – for many people around the globe – already be a rather inescapable part of reality. And, considering how cheaply some of them can be purchased in many local hardware stores, it may be worthwhile to obtain several, of different brands, and experiment with their individual virtues or lack thereof. One will find, for instance, that some wear out twice as fast as others while doing less sharpening in the process. Others wear more quickly when used wet than dry, etc.

On that note, we should mention that *some* synthetic stones function just fine while dry, and for the purposes of preparing a new blade for use and post-peening edge treatment we prefer them to using the water-dependent versions. Why? The slurry created along the edge makes the detection of unevenness and adequate 'raising of the burr' more difficult for those unaccustomed to the sharpening process in general. It is also less messy overall.

The above is by no means intended as a promotion of synthetics over their natural counterparts. Good natural whetstones are certainly to be treasured, especially as we are faced with the fact that economic trends seriously threaten the survival of the few enterprises that still dig in the ground for a source of good natural whetstones. Therefore, we wholeheartedly encourage all new attempts at offsetting the trend of fewer functioning stone

quarries worldwide. Presently we know of only one example of a correction to the trend: what Marshall Roberts of Bladerunners, in Tasmania, has done to create the first class “Tassie Tiger” whetstone. More attempts along similar lines would be really nice to see, if not for present day mowers then possibly on behalf of yet unborn future generations. There are certainly many geographical niches on this planet that do contain deposits of rock with fine abrasive properties. In many of these regions the local populace long knew of the rocks’ sharpening virtues and they either placed a large chunk of it in the central plaza, making it available for the whole village to use as an edge maintenance station, or roughly broke off pieces of the same deposit for their own use.

It must, however, be admitted that among the natural stones there are some that do wear rather quickly and/or unevenly, just as is the case with many synthetic stones. In the case of uneven wear, they benefit by periodic dressing/re-shaping. And though bona fide tools made expressly for that purpose are not expensive, most common folks likely do not own one. In that case, ironically, a coarse synthetic stone comes in very handy as a substitute.

Luckily, internet shoppers can still enjoy the privilege of obtaining some truly excellent natural whetstones that, though seemingly expensive, will outlast the bulk of the factory-made alternatives (including the top of the line, German-made “Silikar”) by a large margin, and are therefore a better buy. The “Rozsutec”, quarried in Slovakia, is one example, the above-mentioned “Tassie Tiger” another. On the blades of those who know what they are doing, whetstones like these can create finer edges and abrade less steel off meticulously prepared bevels.

However, (as pointed out earlier) *the virtues of the finest grit abrasives are lost on edges of tools that are unprepared for them* (by some other means). In the case of scythe blades, if the geometry of the bevel is poorly shaped, or the edge neglected for too long, honing with a very fine stone may lead to frustration. Thus, the various claims such as [a certain stone offered for sale] “gives the best edge” ought to be qualified – especially if presented as ‘advice’ to those new to sharpening... On the same note, just because a stone is “natural” does not mean that it is always adequately effective in all situations and/or “the best” for all aspects of scythe edge maintenance.

Chapter 7. Mowing Techniques

Of the traditional styles of mowing movement that could rightly be referred to as "correct", there are many indeed. What qualifies them as such is that they accomplish the job expected of them satisfactorily by a group of people, usually members of a certain regional culture. Some of these styles outright defy the oft-repeated advice (of the most recent mowers' generation): "Do NOT lift the blade off the ground between strokes".[33]

However, what these various "correct" mowing styles have in common is that during the actual cutting portion of the stroke the blade is aligned with the ground surface horizontally so that the stubble ends up uniform throughout, regardless of the respective region's traditional width, which customarily ranged from 150 cm to 220 cm. It is this uniformity of cut stubble that matters and determines the "correct" designation. Figure 41 is a representation of the blade during the different positions of the forward (cutting) and return strokes. With slight variations (e.g. the Alpine style mowing stroke using blade models with highly elevated points) this illustration of the cutting/forward stroke could be said to more or less represent the universal 'close-to-the-ground' technique shared by experienced mowers. The return stroke as illustrated here represents the path that our blades follow, but (as pointed out in Note 33) is quite different from some other styles.

Several years before having had the opportunity to observe some of the traditional mowing variations, we (quite unintentionally) 'invented' a technique that seemed to make best use of the body's innate potential to propel this tool. After practicing it for a few seasons, we introduced this somewhat radical mowing style to the new generation of mowers, initially in North America, later in Europe and elsewhere.[34]

What is "radical" about it? The primary difference is in the action of the legs. They are employed in helping to propel the blade to a far greater degree than appears to have been practiced anywhere in the scythe's old homes that we are familiar with. By merely bending and straightening them in turn, they affect the *sideways body shift* at each half of the

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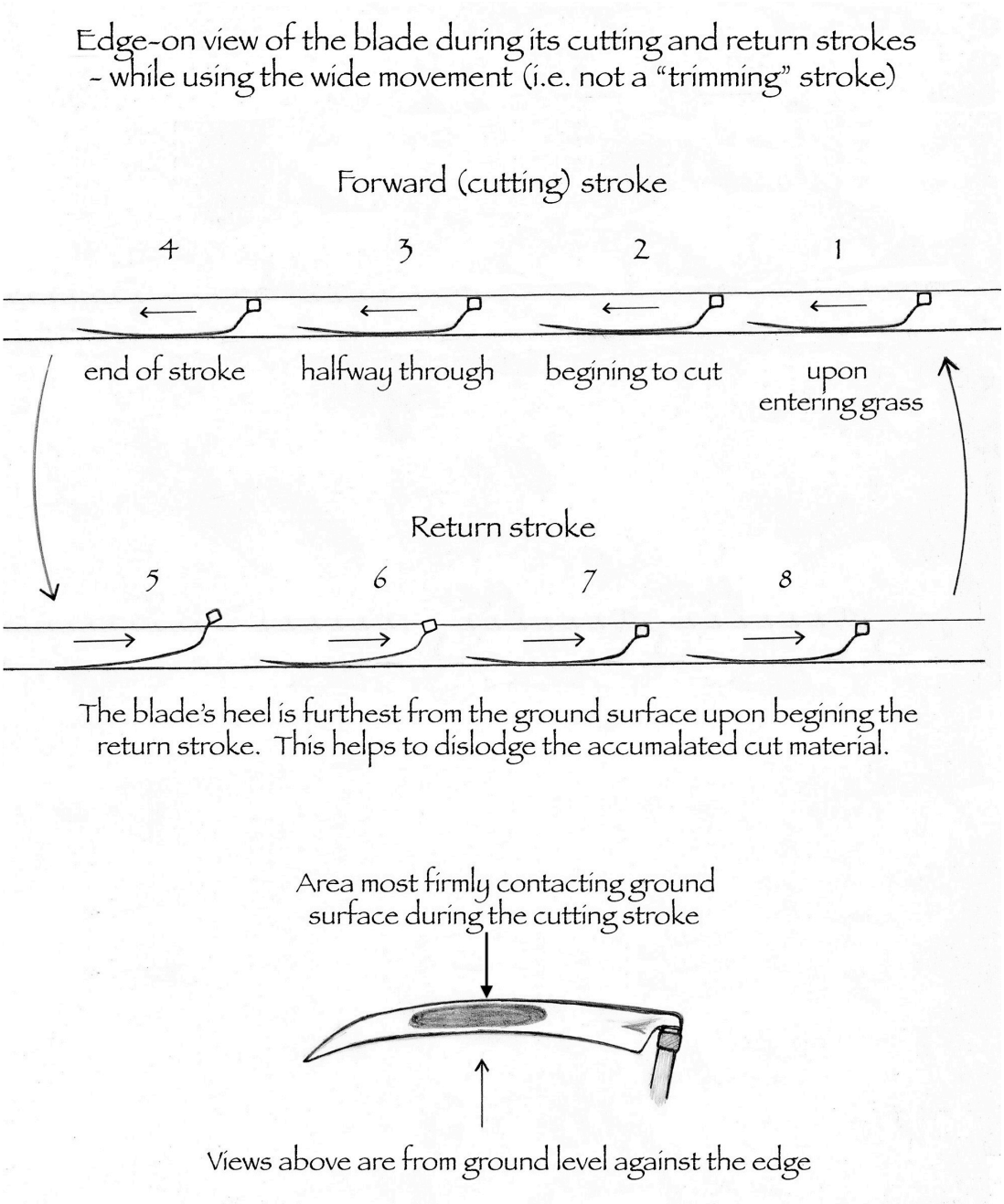
[33] There is, for instance, a region of Austria where the traditional (and obviously efficient) mowing style consists of precisely that 'forbidden' touch; those old farmers have cut a LOT of grass by lifting the blade upwards of 30 cm each time between strokes. We have also observed plenty of blade-lifting in Switzerland (though it is not necessarily the 'Swiss standard) as well as, to various degrees, elsewhere in Europe.

[34] Relatively inexperienced as we were at the time, an 'introduction' per se was *not* our intent, though observing in retrospect, the technique appears to have become somewhat widely embraced. Now it is presented in many videos on YouTube – be they from USA, UK, Australia, Czech Republic, etc. – and sometimes referred to as the "ergonomic" or "Tai chi" mowing style. As to the latter analogy, we wish that such misconstruing of the noble ancient concept of Tai Chi had nothing to do with us; the variations presented are, more often than not, partial distortions, missing some essential ingredients that, from our perspective of both theory and practice, bear little relation to the 'flow' and mental state striven for during the practice of the "inner" styles of oriental martial arts, Tai Chi included.

complete (back and forth) stroke. In this manner the arms (especially the right one) are spared some of the demands typically required of them in most styles of mowing movement. The right arm, along with the “torso twist”, are no longer the obviously predominant two sources of power. We do employ the torso twist as well, but it is helped along by the just-then-straightening leg. The bottom line is that the mowing style we advocate aims to distribute the demands on all the various body parts involved as ‘equally’ as possible *in relation to their innate strength*.

Figure 41.



Before studying the illustration of this wide movement in Figure 42 we suggest the following qualifications be considered:

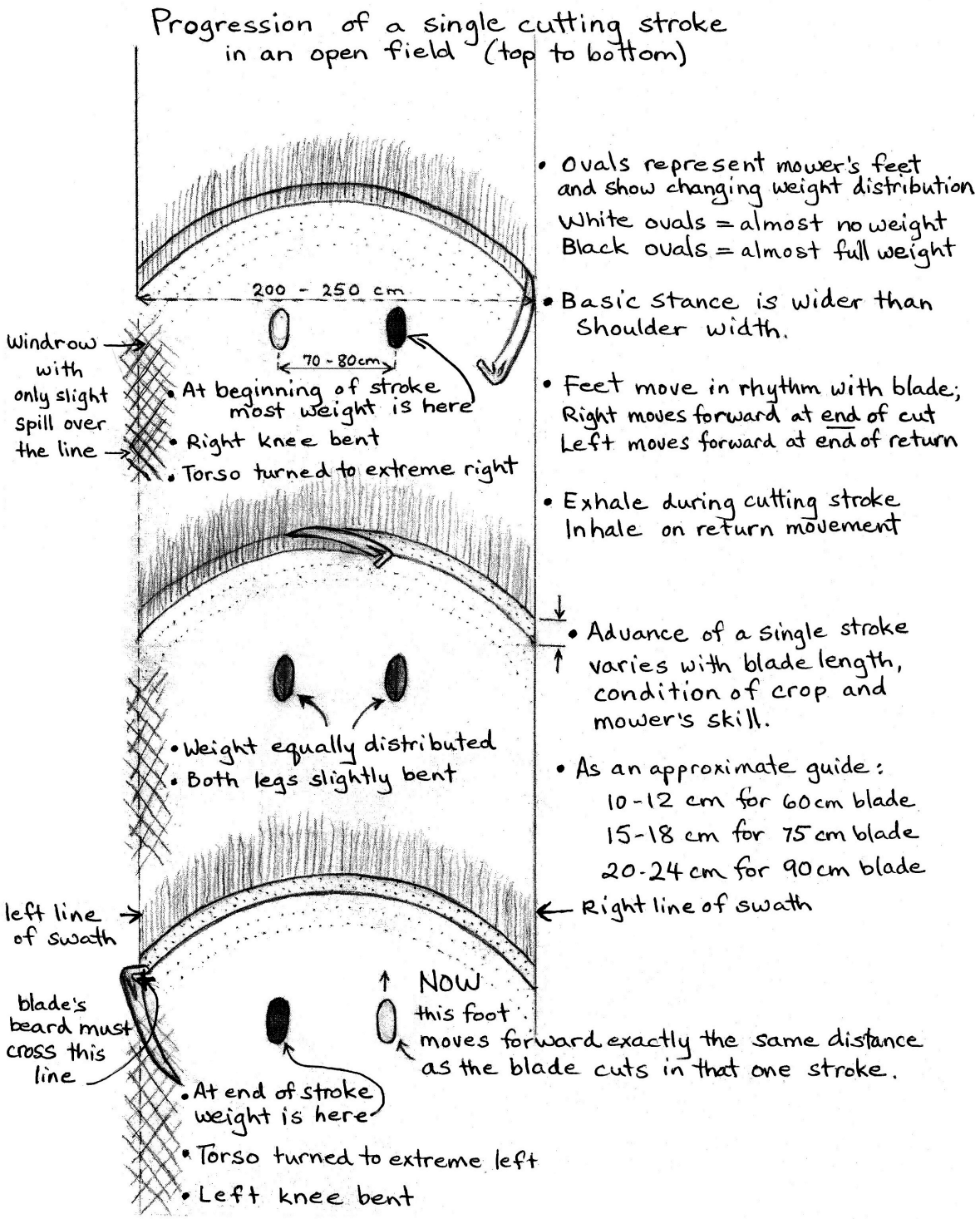
- Although the majority of our mowing entails the use of this particular wide movement we certainly do not intend to present it as a one-size-fits-all standard. Certain variations of it – with swath *width* being the most significant of them, advance at each stroke secondly – can still fall into (from our perspective) the desired category of "cutting the most grass with the least energy expended" (with speed itself considered less important).
- The wide movement as shown here is advantageous for cutting fodder to be made into hay, mulch, or fed green, and for mowing lawns, not harvesting mature cereals.
- In this illustration the blade at the *beginning* of the cutting stroke is NOT drawn fully extended. Depending on individual variations, in real life the stroke mostly begins with the blade farther back, with the point about where the heel of the drawn blade is now. More important, however, is the blade's position where the cutting phase of the stroke ends. There it should continue fully to the left (more or less as drawn) so that the grass is cut cleanly all the way to the line defining the leftward side of the sward. Because it is the portion of the edge along the blades' beard that cuts the very last of the stems within each stroke, the beard itself must cross that line. At that moment most of the blade's length has already moved past it, but because the length of the snath limits its movement further leftward, it is pointing back behind the mower.

Breathing deeply in synchrony with one's strokes has, for the most part, been left out of instructional guidelines of many who now advocate this wide movement, and a correction in this regard would be nice. Still, on the whole, the style does seem to appeal to many novices, including not only the physically fit and flexible; provided they become adequately competent in edge maintenance, many elderly men and women often find it surprisingly undemanding and satisfying to practice. We have also witnessed a few *attentive* 10 year olds picking up this technique almost instantly. In these cases they were provided with adequate hands-on guidance, an easy-to-cut stand of grass on smooth and relatively level terrain, and a well-fitted scythe with a suitably sharp blade. At least two of those children were performing this extra wide stroke so flawlessly within 15 minutes that a seasoned mower watching them might think they had been practicing it for years. Based on such experiences, we are convinced that the transition from this wide movement to a narrow one is easier than the other way around.

It is true that a narrow stroke is more forgiving, in that shortcomings with regard to the blade's adjustment, sharpness, and how exactly it is guided can be more easily ignored. Thus poorly adjusted scythes can be used without it being obvious that they would indeed benefit by fine-tuning. The downside is that various 'bad' habits are often picked up as a consequence. Applying too much force is one of them, possibly the worst, because it can be

destructive to the tool and exhausting to the user. It is partially for this reason that we advocate the initial practice sessions to be ones where flaws *are* more readily noticed, and corrected *before* they become ingrained.

Figure 42.



Technique diversity

While mowing along roadsides and fences, amidst closely spaced trees, around buildings, boulders or other obstacles, and over uneven terrain, there are countless variations of how the blade can be guided with regard to the stroke pattern, its slice/chop ratio, as well as the pressure with which the blade is pressed towards the ground surface. For instance, whenever conditions do not allow for a fully extended stroke, the sward's width can be reduced and is often accompanied by narrowing one's stance. If after a few narrower strokes there is again space for a wider swath, one can easily take advantage of the space and just as quickly switch back to wide strokes. In a tangled or extremely dense stand both the swath's width and the forward advance at a stroke should generally be reduced. Unexpectedly coming upon an area of excessively uneven surface, or one strewn with small rocks, the mower can temporarily but effectively alter the blade's lay (i.e. lift the edge off the ground) by bending their left arm a little more to raise the upper end of the snath and/or ease off on its pressure against the surface (even though its cutting efficiency will thereby be temporarily lessened). Having first learned the basics well, such modifications can be performed in a deliberate and graceful manner; with sufficient practice, these adjustments in technique become nearly instinctive.

Regretfully, in the majority of demos, live (during scythe courses) and in videos, the scythe is presented in what we perceive to be an imagination-limited manner *in relation to* how flexible and multi-tasking a tool it really can be. Greater diversity in mowing conditions would go a long way towards painting a more realistic picture of the potential creativity that can be given freer rein while using this wonderful tool.

It would therefore be far more educational if scythe courses took place on terrains that offer much more variety than a flat meadow or a lawn. Areas which include large embedded rocks, fence lines and patches of cane fruit would better prepare the students for the sort of challenges many of them face while trying to mow the neglected, overgrown and often rough terrain on their diversified small holdings or recently purchased country properties. Novices sometimes take remarkably long (in many cases years) to figure out on their own some very basic trimming strokes and ways to apply them. Some attempts have been made in the aforementioned books by way of drawings and photos, though they are limited in scope in relation to all that actually happens out in the field.

What, for instance, is typically demonstrated as the "correct" approach for trimming orchards is the one in which the mower walks around trees in a complete circle while making a semi wide swath with the windrow accumulating either towards or (more safely for novices) the width of a stroke away from the tree. Yes, that is a good beginners' technique but one that cannot be effectively used if there isn't space enough for the width of the stroke, or complete access for a person to do the 'walkabout'. With some of the techniques we discuss below, trees or fence posts with wire attached to them can be cut around while remaining practically

in one place (on one side of the fence).

There are indeed many 'everyday' trimming techniques that are universally used throughout Europe. The old mowers do not necessarily think of them as "trimming" versus "field" oriented. They are all just various scythe strokes used whenever appropriate, and none of them appear to have formal names; within an old scythe culture it was not needed. But discussing the topic among people miles (and continents) apart, mostly by written word, presents a challenge the old mowers didn't have. Certain commonly understood terms would be helpful. (That was the reason that, 20 years ago, while trying to call attention to the benefits of having distinctly-sized snaths for different purposes, we added the two hitherto non-existent terms "trimming" and "field" mowing to new scythe users' lexicon.)

Now, attempting to present a couple of trimming techniques that are uncommon, but for which we find frequent use, is somewhat awkward without a descriptive name. One of them, here on the homestead, we refer to as the "zigzag" and the other simply as "backstroke". Well, "zigzag" leaves a lot to the imagination, and "backstroke" is also not descriptive enough nor accurate in view of the regular mowing movement's forward and backward strokes discussed here and elsewhere. [35]

The 'zigzag' appears to have been another one of our "accidental" inventions. In certain situations it can be very helpful; it may not even be much of a stretch to say that it can sometimes "save the day". It consists of short back-and-forth movements of the blade that can be more accurately controlled than those of any other mowing technique. It is thereby the most suitable one for situations where a little misjudgment or slip would cut off someone's precious ornamental flower, injure the bark of a young fruit tree or, conversely, damage a section of a meticulously prepared edge (no, not lawn edging; the blades' edge). However, for this technique to function as intended, the blade should be pressed still more tightly against the ground surface than we recommend for the wide field stroke in difficult mowing conditions (see Chapter 8). For that reason alone, using it frequently could help people appreciate the merit of *very close* contact with the ground surface also in other situations, including those where long blades and the wide movement can be indulged in.

We consider the 'zigzag' difficult to beat while trimming under low hanging fences, around

[35] What we *think* of while referring to the 'backstroke' is more along the lines of 'The Slovakian Backwards Stroke' because it was in Slovakia where an old mower first showed it to Peter many years ago, and he had not before or afterwards seen it used in other lands to which he traveled. But then in 2015 when Spanish-born Alfonso Diaz visited us for a snath-making workshop, lo and behold, he was using the same technique in order to sometimes clean up (on the return stroke) a sliver of grass that his forward stroke may have missed. His father apparently used it that way. So much for it being "the Slovakian original"! When Niels Johannsen was here in 2006 we showed him the backstroke, which he subsequently took to a level that would likely spin the heads of mowers who used it elsewhere in some form or another. At that time he also introduced us to his "Danish original" which has the edge of the blade aimed upwards (perpendicular to the ground surface) for very niche-specific purposes. Other than suggesting the watching of Niels' videos, we shall leave it off the table here because if the safety-conscious folks saw us actually using it (with the blade sometimes moving very close to our bare feet) they might report us to the appropriate authorities for spreading "dangerous" ideas… ☺

anthills, in amongst boulders and between very closely spaced small fruit plantings or similar situations where the utmost control of the blade's action is called for. Applying it also makes possible the cleaning up of trampled spots or clumps of certain grasses that sometimes resist other common trimming techniques.

Some characteristics of the 'zigzag' mowing stroke: The blade's movements are from about 20 to 40 cm long. In its basic form only the stroke to the left does the cutting, and usually does not return as far to the right as it started from. With other words, it takes short 'runs' at its target, backing up just enough each time to gather new momentum and prevent (or greatly reduce) any chances of getting 'stuck'. Over such short distances the blade's speed does not need to equal the more regular mowing stroke, hence its increased control and accuracy. That, plus close contact with the ground surface, acts as a breaking system if required. (Especially while trimming in 'touchy' places, the blade kept hugging the ground surface is less likely to slip past the spot it is intended to stop in order to prevent a mishap – like cutting into a fruit sapling one is mowing around.)

The advance of the 'zigzag' at a stroke is not necessarily a 'forward' one as we think of it while performing most of the common mowing patterns. It may be more directly sideways, making a 'swath' only 10-30cm wide (usually while mowing under a fence) or (if the obstacle course to be mown around requires it) it can proceed at various 'diagonal' directions, combining both a forward and sideways advance.

In <u>some</u> situations the zigzag technique can be enhanced by combining it, briefly, with a normal forward stroke or, for the purpose of shorter cuts, with the one that cuts 'on the return stroke' (mentioned in Note 35). The latter slices during the phase when the blade is moving to the right (with its beard leading). This (combination) would then be one of the "non-basic" forms of the zigzag technique. Yet to even semi-accurately describe the resulting *combination* of the two may well be beyond our ability, so we won't even try…

The stroke which does the cutting when a right-handed blade is moving towards the right needs to be *simultaneously* moving not only to the right but also slightly 'inward' (towards the mower's feet). It is not used for the purpose of mowing an area per se, but mostly as a one-time-only stroke to perhaps clean up (on a return stroke) some grass that was missed during the normal cutting stroke. This technique (as opposed to the 'zigzag') is not dependent on any ground contact, and can be applied to a range from very low targets to those above one's head. Thus it is invaluable in any 'jungle' of vegetation, particular patches of old berry bushes where stems of different ages (and toughness!) present themselves on numerous angles, and there is not much space for the blade's common back-and-forth movement. Much as in the case of the 'zigzag', the control of the tool it allows (regarding any left/right miscalculations) is greater than with the common trimming strokes.

“The Path of Least Resistance”, in brief

Not often is a stand of vegetation, be it a small patch or a large field, equally easy to cut from all directions. The relative ease is determined primarily by the **lean of the stems** and secondarily by **topography** (i.e. uphill/downhill, sideways slope etc.). Sometimes the differences are insignificant and can be ignored. However, even then, we highly recommend paying attention to the small variations in the blade’s performance as mowing proceeds either slightly uphill or downhill, or if a patch of grass contains the subtle trail of a fox, a more trampled overnight bed of a deer, or is thoroughly flattened by the latest storm. As is the case with most creative endeavors, the nuances of all this are really difficult to communicate in words on a written page. A person, again, simply needs to get out there and play with both the (vague) theory and (educating) practice of it.

A few general hints:

a) Vegetation is more easily cut when it leans either away from, or to the right of the mower. There are differences between these two; sometimes significant and other times not so. For instance, if the stand has been leaning forward (away from the approaching blade) for a certain period of time, and especially if it contains some creeping plant species (various vetches, Virginia Creeper, etc.) it will have created what may be described as an interwoven mat. This mat (as opposed to old, dead thatch underneath new growth) is not so difficult to cut off at the base, but is sometimes quite troublesome to disconnect so as to allow the cut-off vegetation to be moved over to the windrow in the expected one-stroke portions. Making 2-4 strokes in sequence, but without insisting that they clear the view of the surface, and then hooking onto a piece of that ‘mat’ with the blade, *as a separate movement*, and dragging it over to the left (or in a heap where the windrow usually is) may at times be the best, or even the *only* sensible approach. Alternatively, if instead such a stand can be approached (at times it can’t) so that it leans to the right, disconnecting each stroke would likely be easier.

b) Vegetation is more difficult to cut if it leans towards, or to the left of, the mower.
Here (as in ‘a’) the degree of difficulty (and/or ease) in these two variations depends, beside a few other factors, on the *degree of* the lean. If the lean is only slight it may be somewhat insignificant, and occasionally even advantageous. For instance, if a tall stand is leaning slightly leftwards it may fall into the windrow easier than if it were completely upright, without making the cutting itself more challenging. Beyond a certain degree, however, the lean can become a nuisance. Often what could easily be cut if leaning on the same angle to the right is practically impossible to cut when it is leaning to the left. This is true also for leans *towards* the mower.

On the other hand, nearly all *untangled* leans *away from* the mower are far easier to deal with, and if approached correctly can be cut even if the grass is lying so low as if it had been recently run over by a roller.

c) It is *easier on one's back* to mow uphill, rather than downhill. However, if the vegetation is fairly mature, it will probably be leaning downhill to various degrees, and starting from the top and then mowing downhill may be either helpful or outright necessary. As discussed in Chapters 3 and 11, in such cases it helps if the snath used for that purpose is *longer* between the lower grip and the blade than 'normal'.

Another option to consider on extended slopes is to move *diagonally*. The mowers of very steep mountain meadows often employed the given advantages or disadvantages of either, and did not follow a certain approach 'religiously'. They knew that if one proceeds from the bottom upwards but also diagonally to the left, the grass will probably be more difficult to cut but the cut material will more easily flow into the windrow. Moving diagonally to the right will make the cutting itself easier, but the weight of the cut material has to be pushed against gravity into the windrow. While the latter approach is *always* possible, the former (depending on the degree of vegetation's lean) is not.

The hints communicated above represent only an outline of the various factors to consider. And considered they ought to be, if something of a "path of least resistance" is to be found. That path is always there!

Harvesting Grains

This topic really merits a much more comprehensive coverage than we give it here. However, it is addressed briefly because so many aspiring scythe users of the present (chiefly Western) generation have expressed a desire to harvest the grains for their daily bread with the same tool as they intend to cut their lawn or meadows. They deserve to be cautioned that cutting small grains and other annuals for purposes of edible cereal harvest presents additional challenges regarding how the blade needs to be guided in its path; prior experience in using the scythe for general "grass" cutting is recommended. Also, *the two diagrams presented so far in this chapter do not very well apply to the harvesting of cereal crops.* In addition, an accessory called a "grain cradle" is highly useful to help orient the heads of the stalks in one direction as they are being cut off – something considered crucial if the "sheaves" into which the cut grain is subsequently tied are to be cured in standing formations generally known as "stooks". (We would like to point out that, on a small scale, there are other approaches to handling grains after they are cut than tying them in sheaves and curing in stooks, but that's a topic for another day…)

Cradles have been made in a wide array of designs. The simplest of them consists of merely two pieces of string and a small, freshly cut green sapling, which can literally be made right out in the field. At the other end of the spectrum are the versions used in North America during the pre-industrial era – a difficult to self-make and relatively heavy contraption with multiple steam-bent curved 'fingers', sometimes the length of the blade and extending above

it. Regarding the complexity of design, the majority of cradles fall between these two extremes. A sizable book could indeed be written on the topic of grain cradles with details of their construction and use…

Because cradles are not readily available to most scythe users who perceive a need for one on their own homesteads, we suggest considering a serrated sickle as an alternative, at least initially. Thousands of hectares of grain had in the past been harvested by farmers in Europe and throughout Asia with sickles, and in many "underdeveloped" countries that is still the case, with India being a prime example. For small home kitchen sized plots a sickle is quite sufficient, and operating one does not present the challenge of learning to make, adjust, and then operate the cradle, especially if the crop to be harvested is not standing 'perfectly' upright with no broken stalks and tangled heads. That said, we perhaps ought to be more encouraging regarding the combination of scythes and grain harvesting. After some experimentation with the simple string and sapling grain cradles, we conclude that this very basic design can indeed function satisfactorily. However, it requires due attention (and repeated experimenting) while learning how to adjust it appropriately in a customized manner for varying crop conditions. Some helpful hints on cereal cutting have, as of the past few years, been presented on the Internet. Here are a few more:

- The width of an individual cutting stoke should be *narrower* and the pattern *less circular* than when cutting grass.

- The advance at a stroke can be greater. Exactly how much greater will depend on the particular grain crop, the terrain, the length of blade used, and the condition of the edge. In any case, blades with a more open hafting angle, which may not be well suited for *some* green grass cutting, may function very well for purposes of grain harvest.

- Because cereals usually do not need to be (and/or are not) cut as low to the ground as is typical while harvesting green forages, *the lay of the blade can be aimed further upwards*. That is, if the same snath/blade combination found to work satisfactorily while cutting lawns or hayfields were to be used for a cereal harvest, a wedge can be inserted under the tang (in order to *lift the edge slightly away from the ground surface*); doing so may decrease the amount of force needed to make each stroke, and may also cause less shattering of the grain heads.

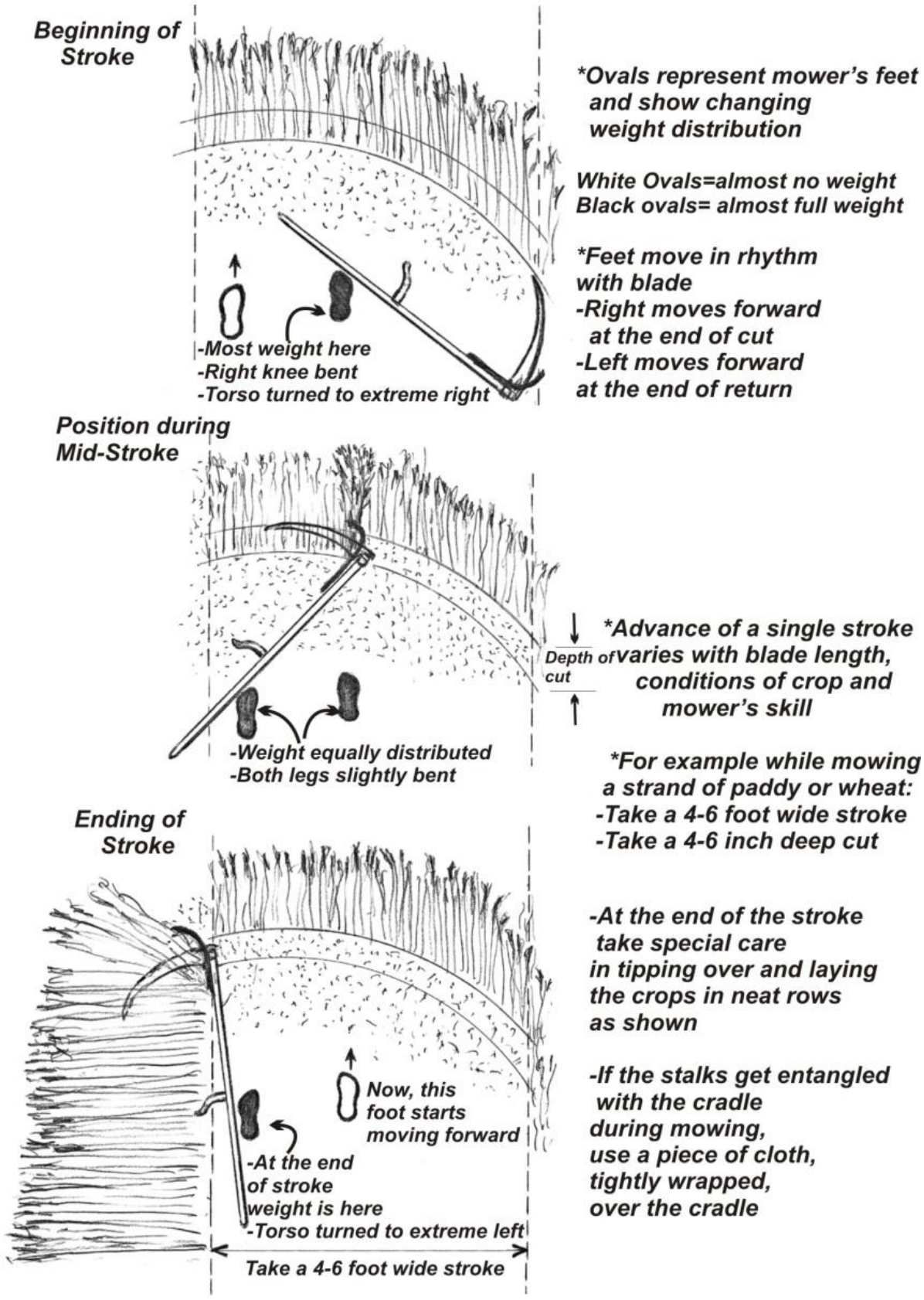
- The actual *cutting* of most grain stalks (flax being one of the exceptions) is less demanding of a keen edge than a dense stand of grass. Also, because the stalks are generally relatively dry, they are easier to 'bite into' if the blade's edge is somewhat serrated than if smooth. For that reason, using a coarser whetstone for the periodic touch-ups in the field is advisable; it does not matter whether the stone is natural or

synthetic (though, of course, coarse versions of the latter are now far easier to find). However, the blade should still be sharp; if it is not, in areas with loose soils where the plants are not so strongly embedded some of them may get pulled out of the ground with their roots, instead of being cut.

- Another issue to consider is the nature of the ground surface. As opposed to an established sod, which often offers a 'carpet' of edge protection for the mower and his/her tool, the relatively loose surface under annuals rarely provides such conditions. The challenge is increased in naturally stony/rocky regions and while the terrain's caretakers may have taken the time to free the surface of loose or slightly embedded 'edge obstacles' from the surface of old hayfields, doing so to the same extent with grain fields is less likely. For that reason the edge of the blade can or should aim possibly still further away from the ground than already mentioned above. Exactly how much further it can be so the blade cuts efficiently yet is positioned maximum distance away from the rocks, needs to be determined on the spot in the field. At least 2-3 wedges of different thickness can be carried to the field and tried in turn to alter the blade's Lay (following guidelines on this theme in Chapter 5).

The illustration on the following page was drawn by Alexander Vido (of Scytheworks) for the purposes of an instructional booklet produced for small farmers in India, and is based on his experiences with wheat and rice harvesting in India and (wheat only) in Nepal. Because he recently spent more time on this theme than anyone else we presently know of, and designed the very cradle that is being successfully used (and reproduced in significant numbers) in India, he (along with others similarly experienced) really are the ones to put together a more complete feature on the topic – to be presented in Part 2.

Figure 43.


Beginning of Stroke
*Ovals represent mower's feet and show changing weight distribution
White Ovals=almost no weight
Black ovals= almost full weight
*Feet move in rhythm with blade
-Right moves forward at the end of cut
-Left moves forward at the end of return
-Most weight here
-Right knee bent
-Torso turned to extreme right
Position during Mid-Stroke
Depth of cut
*Advance of a single stroke varies with blade length, conditions of crop and mower's skill
-Weight equally distributed
-Both legs slightly bent
*For example while mowing a strand of paddy or wheat:
-Take a 4-6 foot wide stroke
-Take a 4-6 inch deep cut
Ending of Stroke
-At the end of the stroke take special care in tipping over and laying the crops in neat rows as shown
Now, this foot starts moving forward
-If the stalks get entangled with the cradle during mowing, use a piece of cloth, tightly wrapped, over the cradle
-At the end of stroke weight is here
-Torso turned to extreme left
Take a 4-6 foot wide stroke

Chapter 8. Identifying and Correcting the Causes of Common Mowing Problems

First, a brief summary of some nearly universal tendencies exhibited by novices:

Prior to mowing:

1. a) Falsely assume that a newly purchased scythe is well-designed and well-matched (size-wise) to them, plus well-suited (with regard to the length and/or weight of its blade) for the work they intend to do with it.

b) Falsely assume the blade's factory edge (as usually sold by retailers) is ready for serious work.

2. a) Fail to grasp the concept of sharpening in general, and/or with regard to scythes specifically.

b) Lack the hand coordination or patience necessary to put their theoretical grasp of sharpening technique into practice.

While cutting:

1. Lift the blade into the air before engaging it in the grass, and lifting it each time between individual strokes – often more than 30 cm. Negative consequences of this habit include:

Predisposition of an overly forceful mowing stroke

Increased likelihood of driving the point of the blade into the earth

Uneven stubble left behind

Often needlessly tiring

A note: Although it is customary in some cultures (whose mowers also maintain a narrower, one-foot-ahead of the other, stance) to lift the blade that high between strokes, those who grew up with that technique know that *just before* the blade engages in the cut it must be properly re-aligned again. This takes additional skill that beginners need not cultivate.

2. Attempt a larger advance/"bite" forward into the grass than a scythe blade *of a given length* is intended to cut. (Refer to Figure 42.) Especially in a thick stand the blade is likely to get overwhelmed partway through, and the swath may end up unnecessarily narrow. This

encourages the use of excessive force, and thus increases the likelihood of damaging the scythe. It is also a silly way of using one's energy.

3. Fail to recognize:

a) The most favourable direction in which to approach the cutting of a given area.

In the proceeding chapter we've referred to this concept as "The Path of Least Resistance"; to repeat, it is determined primarily by the lean of the stems, and secondarily, by given topography, i.e. uphill/downhill, sideways slope, etc.

b) The differences in the relative difficulty of cutting different stands of vegetation.

Some of the more benign-looking areas can be most difficult to cut! These include a short, dense lawn and a sparse stand containing primarily fine-stemmed grasses with high silica content. Both of these are challenging even to the experienced, and certainly best cut BEFORE sunrise.

4. Guide the blade (ever so slightly) *above* the ground surface throughout the stroke, while believing that they have it "on the ground, as it is supposed to be." Barring a rock-strewn surface, the blade performs best when actually *pressed slightly downward at the same time as it is pushed forward*. In certain situations – dry lawn grass being a prime example – possibly 30 per cent of a mower's expended energy should be going into this downward pressure.

Now some actual "troubleshooting":

1. Blade gets "stuck" in grass (not earth) before the stroke is finished

Possible causes:

a. Attempting too much of a forward advance at a stroke

b. Hafting angle too open

c. Blade not sharp enough

d. Blade's movement too slow or too gentle

e. Blade too light and/or too flexible *for that particular stand of grass* (especially if also not sharp enough)

Probable remedies:

a. Refer to mowing technique (Figure 42)

b. If possible, move blade forward within the attachment ring.

c. Hone more often and/or better. If five-minute intervals do not suffice to keep the edge keen, hone *still more often* – or it may be time to re-peen.

d. Increase blade speed to approximately 1–1½ second per each forward (cutting) half of the wide movement.

e. If a substantial portion of the area to be cut is heavy and/or dense, AND time to do so is shorter in supply than the mower's strength, then obtaining a heavier and/or stiffer blade (not necessarily a "ditch" or "bush" model) may be in order. Alternatively, consider taking *less of a bite at each stroke*. Yes, it may take more time to cover the same area, but may also be the wisest approach…

2. Blade's point digging into the ground

Possible Causes:

a. Cutting stroke begins with the blade lifted

b. Blade poorly adjusted with respect to its 'horizontal balance' (Chapter 5)

c. Blade's belly not making *enough* surface contact

Probable remedies:

a. Start the actual cut with most of the blade's body touching the ground.

b. Refer to adjustment of 'horizontal balance' (Chapter 5)

c. Apply downward pressure *simultaneously with* the forward (cutting) motion.

Please note: IF the blade's belly is in constant and *firm* contact with the ground surface, its point is unlikely to "nose-dive", even when the blade is not well balanced *horizontally*.

3. Some stems bend over and remain uncut despite the fact that the edge actually passed over them:

Possible Causes:

a. Blade not sharp enough

b. Blade moving too slowly

c. Lack of firm surface contact

d. The stand is not approached from a favourable direction

Probable remedies:

a. Same as for 1c.

b. Same as for 1d.

c. Particularly in short grass, *increase the downward pressure*.

d. Re-read the section on “Path of Least Resistance” (Chapter 7) and consider the concepts, attentively, as each new and challenging patch to be mown presents itself.

4. The stubble is uneven:

There are four variants of visually obvious unevenness. Identifying their causes is sometimes complicated by the fact that, often enough, more than one of them is exhibited simultaneously.

a. The stubble is higher at the right side (the beginning) of the cut*:*

Cause: Blade is being lifted into the air at the end of the return stroke (which is not *fundamentally* wrong it itself) but *not lowered again soon enough* before the slicing action begins.

Remedy: Similar to 2a, that is, maintain *horizontally even* ground contact with the blade from the moment it is engaged in the cut.

b. High stubble remains to the left end of cut*:*

Cause: Not completing the stroke, that is, lifting the blade off the ground surface too soon or (unconsciously) not compensating for the naturally elevated points of many Alpine style blade patterns. These require a gradual (though slight) ‘rotating’ of the wrist (leftward) so as to gently press down the point of the blade as it moves along its path. Beginners, though they may be using blades with more elevated points, often fail to employ this technique.

Remedy: Complete the movement by what may initially seem like an exaggerated rotation (at

the waist) to the left, *and/or* rotate the wrist forward in order to keep blade's point low enough during the last quarter or so of the cutting phase.

c. & d. are cases when the stubble shows obvious 'steps' (either the outside or inside rim of the swath is higher than the central portion):

c. If the stubble is higher at the *outside* of the arc of the swath, the point of the blade is traveling notably higher than the rest of the edge. As in 4 b), this is a natural side effect of the Alpine blade patterns, sometimes easier to accept than to correct…

d. If the stubble is higher at the *inside* of the arc of the swath, the point is carried lower than the beard/heel of the blade. Also, the honing of the last few centimeters of the beard is often neglected in that it receives less overlap of the stone's action, while at the same time the beard is intended to cut the unsupported strip (bordering the already cut stubble). This can be corrected by keeping the heel adequately low (i.e. pressed to the ground whenever terrain surface allows) and/or paying more attention while honing the beard.

5: Blade is not cutting noticeably better after using the peening jig

Possible causes and remedies:

However poorly the peening itself is performed (short of ruining the tension and producing up and down waves) some improvement in edge geometry and thereby also blade's performance is to be expected.

If the blade is not cutting *noticeably* easier following a peening (and subsequent honing!) session, the cause may be the omitting of the edge-finishing step as an immediate follow-up to jig peening *or not doing it well*. This may well be the number one reason for many dissatisfied peening jig owners.

We are not referring to the typical honing of the blade after it was re-attached to the snath. Instead, we mean the step of "removing the light reflection" (Chapter 4), which we consider to be of paramount importance – especially for novices who usually press the edge against the guiding pin harder than necessary. With repeated practice and growing competence, one is more relaxed and the unavoidable dulling of the edge is less severe. Consequently, the step between peening and final honing requires less effort, though it will *always* be worthwhile.

6: Disappointing results from peening

Several other easily identifiable oversights affect the results from both jig and freehand methods of peening:

a) The base (and/or how the jig is mounted into it) is not firm enough. If the base does not solidly support the jig (and/or the jig itself is loose within the hole made for it), the force of the hammer will be partially dispersed as vibration of base (and/or the jig/anvil).

b) The hammer may be too light *for that very blade's condition* (i.e. a bush blade with a thick edge or a very neglected blade of any sort). In such cases a hammer with a head weighing 600 to 800 grams (roughly 1 ¼ to 1 ¾ pounds) is preferable to the 500 gram versions commonly sold as peening hammers.

c) The strikes may not be vigorous enough.

Points a, b, and c are related. That is, a solid base will allow getting by with a lighter hammer, and a heavier hammer requires less pounding in order to have the same effect.

d) Moving the blade along too quickly (often the habit of those who also tap very quickly but apply the hammer too lightly).

In the case of freehand peening, strikes may not be well placed. The intent might be correct, but the accuracy may be lacking, or the "peener" may not even have a precise idea of where he or she intends to place each strike.

One last note: There are occasional flaws with the jig itself (either by poor design or as a result of sloppy or imprecise workmanship) about which the user can only do so much. In particular we are referring to the *shape of the bottom ends of the caps*. Certain individuals are both attentive and capable enough to correct these potential issues, but most are not. The possible corrections are not straightforward, but will be outlined in Part 2.

7: Disappointing results from honing

If the blade is whetted in a timely manner, a "once over" (one sequence of honing strokes on both sides of the edge from beard to point) should *notably* increase the ease with which it cuts. If one waits too long before honing, the subsequent honing may require more time, extra pressure applied, and/or a coarser stone. What exactly is "too long" has been covered at some length in Chapter 6. To briefly repeat what was suggested there, five minutes is a good *average* period between honing spells. Making this habitual is likely to prevent some frustration and/or unnecessary energy expenditure.

If a *noticeable* improvement does not follow after a honing session, however frequent, any of the following may be happening:

a. Honing on too low an angle – so that the passing stone actually misses the very apex of the edge. This is more likely to happen from the underside, and also while working with an

already somewhat rounded edge (if not consciously compensating for that fact).

b. Not applying enough pressure.

c. Moving the stone too slowly. Although excessive speed is not necessary, the speed of the moving stone *does* have a bearing on its sharpening action.

c. Using a stone of too fine grit *in relation to* how hard it is pressed against the edge and/or how rounded the edge is. In the latter case, it may be time to reshape the bevel, by peening, or otherwise.

Chapter 9. Repairing Minor Edge Damage

As a result of confrontation with tougher material than that for which its edge has been prepared, and/or a flawed mowing technique, scythe blades sustain a range of damage, which can be roughly classified as 'minor' or 'major'. What we consider minor damage happens to nearly everyone; major damage, for the most part, is the side effect of carelessness. Examples of major damage are the loss of tension over more than a small part of the body, significant buckling (usually 10 cm or so back from the point), outright breakage (either at the neck or somewhere along the blade's length) and deep tears that call for treatment outside the range of a file. Repairing most of these may be beyond the average mower's ability; however, the topic will eventually be addressed in Part 2. [36]

Here we cover primarily the minor category, typically occurring within the blade's bevel zone. We differentiate between four sorts of them, three of which are **dents**, **cracks** and **small tears**. The fourth is less easily named and any single term assigned to it is a compromise. Until someone comes up with a more suitable name to describe it, we shall in these guidelines simply refer to it by its nickname within our family, which is "schrupped up edge". Schrupped, you ask? [37]

The repair of minor damage is relatively simple and ought to become a routine part of

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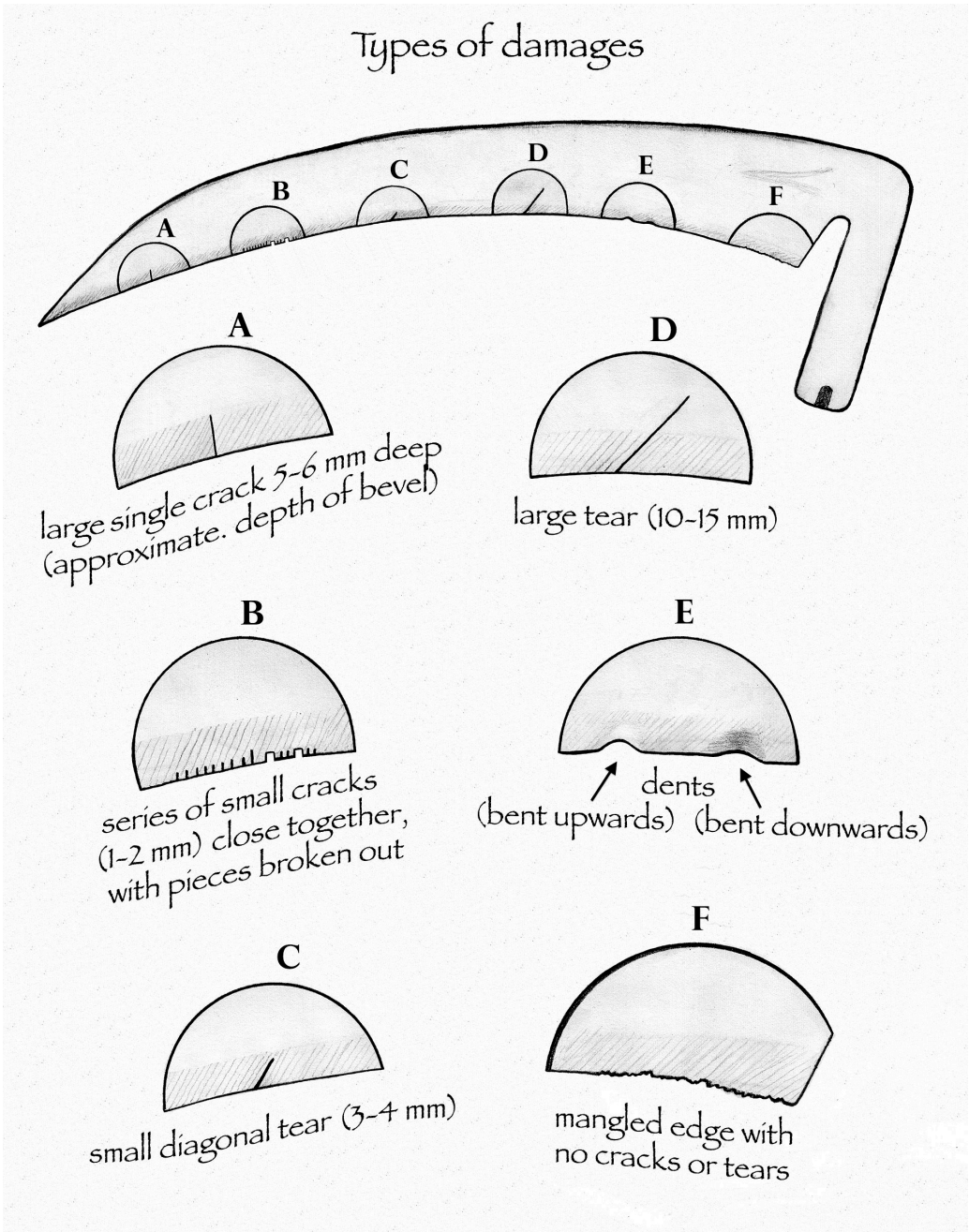
[36] We dare state that a scythe blade is nearly indestructible; whatever damage it might suffer during uses for which it is designed, somebody, somewhere, could restore it to a state of either full or relative functionality. Yes, those somebodies may not be easy to find these days, but they still exist. Thus we suggest that diagnoses along the lines of "damaged beyond repair" (offered in some scythe-using guidelines) not be taken too seriously, and the blade in question not relegated to the scrap heap. More information on how to heal these severely wounded but still valuable blades will be presented in due time.

[37] Well, we reason that having a name that does not imply anything specific may be better than one that does, but is not accurately descriptive. The other three kinds of common damage which we discuss have obvious characteristics and we suggest specific approaches while repairing them. 'Schrupped edges', on the other hand, can appear in countless variations. Some of them contain small cracks and missing pieces, some are slightly dented (with or without cracks) while others may involve only a seriously dulled apex with no other cracks or dents. What also differentiates them from the former three is that they can vary from 3 mm to several centimeters in length. Similarly to a series of small cracks, a 'schrupped up edge' can happen all at once, or be a cumulative effect of several mishaps while unnoticed or ignored in the interim. What all the variations of schrupped edge share within the context of these guidelines is the repair treatment.
Still, we are open to changing that odd name to something else. Simply "nick" – an old established term from edge tool users' lexicon – may seem to be an easy substitute. We have used that term for years in reference to axes, chisels or knives, before ever picking up a scythe. So, here on the homestead, we may say "I nicked my ax; need to fix it [before continuing the job]". The nicks that usually happen to edges of those tools are the result of a thinly shaped bevel meeting a hard knot, or from running the edge against an unsuspected nail or a staple in an old piece of lumber or fence post. However, although these nicks happen for principally similar reasons, they are often not the same as a scythe blade's "schrupped up" edge. A 'nick' on the face of an ax may only be a millimeter or two (widthwise) of a compressed apex – something that could be ignored, and the job continued, or (preferably) fixed promptly. Sometimes there will be a piece of the edge missing, and it may be very small, or (in the case of axes and subzero temperatures) alarmingly large – whereupon we might regretfully report "I took a chunk out of my ax".
The same kinds of damage can happen also to a scythe blade, but "schrupped" edge includes the aforementioned additional variations of them, so alone "nick" just doesn't seem to cut it. An "extended nick" would be closer. At times something like "mangled" edge would actually be fitting…

everyone's maintenance repertoire – whether by using these guidelines, or someone else's. What can be done with cracks or tears long enough to reach beyond the depth of the bevel and into the blades' body itself is beyond the scope of this guide (Part 1); the hints on that topic added below are meant as a temporary measure.

Figure 44. Various types of edge damage. (Please note that the sequence of the examples in the diagram is arbitrary; any of the damage can take place anywhere along the length of the edge.)



If a scythe is used frequently, and especially in diverse terrain, minor damage is practically unavoidable; everyone will sooner or later face an edge that calls for some repair. The extent of the damage can vary considerably, and will be directly proportional to:

a) The thinness of the primary bevel, and
b) The force behind the mowing stroke.

Considering ‘a’ it ought to be clear that excessive thinning of the bevel will increase both the incidence of minor damage, and its extent, whenever it happens.

A reader may now ask: “What exactly is ‘excessive’?” That *is* a pertinent question, but not an easy one to answer. We briefly addressed this topic in Chapter 4, and provided several examples of appropriate bevel thickness for different in-field situations. However, as stated there, those are *approximate* guidelines; only extensive experience in mowing *and* repairing damaged edges will lead to sufficient understanding of the basic concepts involved.

We recommend that before very thinly beveled blades are swung with abandon, some practice with sturdier edges take place. In addition, learning about the relative toughness of different plants and how they change over the course of the season can help to avoid a lot of edge-related troubles. It would also help if one becomes familiar with the terrain *before* the actual mowing season. Systematically removing potentially damaging obstacles, such as rocks and the dry stubs of previously cut saplings (using loppers, not scythe blades) significantly improves the efficiency and the enjoyment of the subsequent mowing.

Concerning ‘b’ (the force behind the mowing stroke) it would be difficult to overemphasize the value of learning to mow gently, using the minimum force necessary. That, of course, requires a keen edge, a well-adjusted blade, and due attention to mowing technique. An appropriately thin *bevel* (across its whole depth, not only the narrower zone frequently peened) also has a significant effect on how much force is necessary for an easy cut. And so we are faced with a seeming contradiction: Thinner bevels are more prone to damage, but they also allow for gentler mowing, which in turn decreases the incidence and extent of damage.

The bottom line, however, is that if scythe blades were always maintained adequately sharp, the person using them would be more likely to learn to apply only a convivial amount of force, adequate for general application. That level of force should not be enough to cause breakage of snaths or blades, not even if the devil himself were to sneakily plant an iron rod at the mid-point of someone's stroke.[38] By virtue of experience, one can arrive at a point where, for

[38] We share the opinion of our Danish friend Niels Johansson who is fond of saying that a scythe in action can be held so lightly that if the blade hits a solid obstacle, the tool will "just fly out of your hands". Well, that is Niels' version of extremely light touch. Exact wording aside, we agree. What his take on the matter implies (though does not spell out) is that besides learning to hold the scythe lightly and not to swing it in a wild and careless manner, the ancient Eastern concept of “mindful

instance, if a hard stump or a rock simply stops the blade cold, the force behind the stroke can be withdrawn in a split second, with the blade suffering only easily repairable edge damage. This is a matter of the body gaining a sort of instinctual sensitivity rather than a conscious reaction. Indeed, the body can sometimes learn faster than the mind, and developing it does not necessarily call for years of experience.

Edge repair tool kit

1. A flat 15-20 cm (preferably fine/single cut) file. A half-round version would be even better, but is usually more expensive per length/size, and not necessary.

2. A whetstone or two (coarse and fine grit).

3. A hammer, preferably with one "flat" (i.e. generally *slightly* convex) face.

4. A solid chunk of steel with a relatively flat surface of at least a few square cm in size.

A possible addition to the basic list above is the "straightener" – a tool hardly mentioned in contemporary references (at least in English) but one intended specifically for *temporary edge aligning in the field*.[39] Its virtues notwithstanding, this tool is useless in *actually removing* cracks and tears. For that job, a file is the tool of choice.

So if someone's new "complete outfit" does not include a file (and the household is devoid of one) one ought to be acquired; for edge repairs we consider it nearly indispensable. Although a coarse synthetic stone can remove steel just as well, a good file is considerably faster – *provided* that file is not too worn and is suitably hard for the edge of the blade it is to be used upon. Experience tells us that with a stone as the only tool, some folks are likely to run out of

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presence" may well be more valuable as a damage-preventative than perhaps any other single factor (maintaining a thicker bevel, obtaining a stronger blade or snath etc.) An aware mower may notice ahead of time some of the obstacles that are either best avoided or dealt with by a quick adjustment of technique. In addition, whenever damage *is* sustained, that person is more likely to *feel* the difference in blade's performance promptly, and will stop and tend to the repair.

[39] In some rocky regions of Europe, the mowers would carry, as part of their daily working attire, what was essentially a tapered steel rod of 5-10 mm diameter and as long as a whetstone, or slightly longer. It was either hung from the belt or, more often, attached to the stone holder (which in those areas would feature an additional hole or a wire loop). While mowing in rough terrain, a pass over the edge with the straightener would precede honing with the whetstone. The straightener would help realign small dents and nicks and save the whetstone from needless abrasion. Back then, you see, a fine whetstone was a far more precious thing for a man to own than it is now. So, in essence, those old mowers partially 'repaired' the edge *before each whetting*.
Though the traditional straighteners were usually tapered, sometimes they were four-sided or featured a twisted profile; a common butcher's steel or, for that matter, an old rusty 20 cm spike would accomplish a similar purpose. On our homestead we do not carry one along into the field, partially because the majority of our hayfields are – after years of picking rocks – relatively free of them. And when we do mow along the edges of woods, in gullies etc., we proceed with due caution, plus are never too far away from the stationary peening/repair station. However, while mowing in rough terrain a distance from the home base, carrying a straightener is a good idea.

patience before they have removed *enough* steel in order to subsequently proceed with what we consider a 'proper' repair. Hence, a good flat file is a worthy investment, as is learning how to use one. (Files are made to cut on the push stroke only; disregarding this fact – as is not uncommon these days – will *significantly* shorten their useful lifespan).

Barring the absence of the sort of file we recommend above, any other file (smaller, larger, coarser, or finer) is better than postponing the repair. If one's present synthetic stone cuts steel more quickly than some worn-out file on hand, then the stone is the tool to use. A piece of coarse emery cloth wrapped around a stick can also serve the purpose.

The "solid chunk of steel" (in the list above) is for the straightening of dents. Narrow-faced anvils (as we recommend for freehand peening) are not well suited to this task, at least not in the hands of those unaccustomed to shaping metals with a hammer. The "poll" (back end) of a single-bitted ax or "splitting maul", the face of a sledge hammer, or countless other steel surfaces can serve as an anvil for the repair of dents. Even the base of the peening jig can be used, although the guiding shaft in the center is a bit awkward to maneuver around.

The practice of edge repairs [40]

A certain amount of advice contrary to some of the fundamentals communicated in this manuscript regarding edge repairs has already been presented in print (for a brief summary, see Note [41]). Therefore, we feel it fitting to address some of those discrepancies prior to

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[40] Given that this manual keeps emphasizing the merit of applying as little force while mowing as possible (and admonishing others for being rather heavy handed) the reader may rightly ask how is it that we have much to say on the topic of damage repairs when we, supposedly, use scythes with due care. Is the advice here based on actual experience, or are we just plagiarizing some unknown source? That is a reasonable question. The fact is we would not have had the opportunity to repair edges containing the range of damages discussed herein if all we had to go by were mishaps that happened to us. Over the last 15 years or so, we have been fortunate to gradually acquire a respectable collection of variously damaged blades, whether from factories which had them returned by wholesalers, or those returned to Scytheworks or us directly during the few years when we also retailed scythes via mail order. Additionally, we have been privileged to observe how a factory goes about repairing edges of blades brought in by local farmers – a service they typically provide at no charge. Do these references make edge repair "experts" out of us? Not by a long shot! Still, even as we continue to learn more we believe we have a thing or two to share.

[41] The aforementioned German author Bernhard Lehnart has this to say on the topic of edge repairs:
"The damages to the edge, such as "Risse" (cracks/tears) *and "Sharten"* (somewhat equivalent to our "schrupped" edge) *influence the cutting ability and make the easy mowing with the scythe more difficult. Peening is the only way to correct such damages. "Risse" and "Scharten" can be taken care of by peening. "Risse" and "Scharten" that reach 5 mm or more into the blade are, as a rule, not repairable. It is precisely in the small cracks where the stems can become lodged and thus hinder mowing momentum. Not infrequently does this lead to the lengthening of cracks/tears into the blade's body, with consequences of it breaking. In such a case the blade is no longer usable".* (Our translation of the German original.)
One issue we have here is with the use of terms. Lehnart's "Risse" and "Scharten" come from their use by German-speaking scythe users, who in the common daily jargon tend to lump all of the various edge damages into only two kinds, and refer to them by those two terms. Moreover, Lehnart appears to suggest that they both be treated the same. Well, in our view, alone the sub-class of "cracks and tears" exhibits some characteristics that are not the same, consequently calling for different considerations and (sometimes) quite a different approach. Thus we find it fitting to split the German "Risse" into two categories – that is, *cracks* and *tears*. And, what we call schrupped edge (which often is without actual tears or cracks, though

adding more conflicting suggestions.

To begin with, we think that it can be misleading to declare peening as a "way to repair" most of the various kinds of edge damage. In spite of the impression a novice might take from reading such advice, *no amount of cold hammering, however skilled,* can reconnect the broken bonds of steel structure, such as in cases of cracks or tears along the blade's edge. In addition, peening over cracks while "repairing" them is likely to spread/deepen them farther. For that reason we consider it a backwards approach to *first* 'peen' (read: attempt re-shaping with the hammer) a section of an edge containing cracks, tears or missing small pieces (to be imminently repaired), and *only then* file off the excess bits of steel protruding to each side of the damaged spot. There are both technical and traditional facts to support the sequence we suggest instead.

We also do not think of the hammer strikes *during* the various repairs as "peening" per se, and instead reserve that term for the shaping of the bevel in the course of routine sharpening, or recreating a completely new bevel along the whole length (after removing the previous one entirely).

Repairing dents

A "dent" is a small section of steel bent away from the overall line of the edge, but otherwise intact (without an associated crack or tear). See Figure 44 e. Average dents are the least serious type of edge damage, and thus easiest to repair. Some can be dealt with temporarily in the field, without the more convenient repair tools, provided two suitable rocks (both smooth and hard) can be found; one to be used as a hammer and the other as an anvil.

A small dent can be *partially* repaired (bent back) with a straightener or whetstone. To do so, hold the blade as recommended for in-field honing (Figure 39). Place the stone firmly against

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does sometimes start with them present) represents also a category of its own. So do 'dents', which – on their own – appear to not happen to German scythe users, while interestingly, David Tresemer (in The Scythe Book) spoke of edge damages as if they were all *primarily* dents. His entire recipe for fixing edge damage is merely: *"by repeatedly tapping around the edges of a dent, you bring the blade to its original shape".*
Steve Tomlin (in Learn to Scythe) addresses dents and cracks, suggests a different treatment for each, but does not differentiate between cracks and tears. Ian Miller (in The Scything Handbook), uses yet another set of terms and seems to suggest that all edge damage be treated the same way. In his words: *"Striking something that isn't grass with a blade that is sharpened for grass often leads to damages of some sort: bends, cracks, nicks. Some nicks are repairable through peening; some are not. The deeper the nick (length/width is not much of an issue), the less likely it can be repaired, with a depth of 5 mm being the maximum repairable depth. Nicks deeper than 5 mm can render a blade largely unusable, as grass will get stuck in the nicks."*
Miller continues with advice on how to repair the "nicks" (though not the bends or cracks specifically). His recipe is more or less a copy of Mr. Lehnart's, including the phobia of damage more than 5mm deep.
Of the four authors, only Tomlin suggests that a file is employed during edge repairs.
So, again, we wonder how can those novices who engage in a broader search in the pursuit of learning make sense of all this?

the protruding dent while at the same time applying pressure in the opposite direction with the thumb against the stone. Exactly how much the dent can be realigned with the rest of the edge depends on the amount of pressure applied in relation to the thickness of the bevel. Following such an in-field repair, that very section of the edge ought to be ‘intensely re-honed’ (meaning more thoroughly than it would receive during a regular honing).

In any case, it would be foolish to continue mowing without making any attempt to realign an obvious dent, thus abrading a good stone against the out-of-line (and sometimes roughened) edge while honing. Besides the stone-wear issue, a blade with a portion of its edge out of order is more likely to be swung with excessive force, in turn leading to more potential mishaps.

The vast majority of dents are bent upwards, because the edge is (or should be) aimed slightly away from the ground surface while cutting. Thus, an obstacle would most likely impact the edge on its underside, and bend it farther upwards. There are exceptions, of course, such as when one is using a chopping “golf-swing” motion and the edge hits a woody sapling stub on the downward swing. If the edge gets partially ‘stuck’ in a target too tough for it to cut all the way through, the person guiding the blade tends to momentarily lower their hands, in which case the resulting dent may also be accompanied by a crack, or a series of them.

Another example of a downward dent can occur while trimming alongside a woven wire fence, when the point of the blade catches a vertical strand. Such a mishap will result in damage that could be called ‘elongated dent’. It is *usually* not very deep but may extend over a significant portion of the blade's length, with the edge's apex seriously dulled in that section. Depending on the thickness of the bevel and/or the force behind the stroke, this elongated dent can become a “schrupped” edge, featuring cracks or tears. (In any case, consider it an instant awareness gauge at work: the longer such a dent is, the less attentive was the person guiding the blade…)

To properly straighten the most common (upward) dents, the blade is best turned upside down (as we recommend for peening on the narrow anvil) and rested firmly against some relatively smooth and flat surface. If need be, even a dense, dry piece of hardwood can function as an anvil in this case. Then, the dent is lightly tapped, initially by aiming the hammer at the zone between the edge's apex and the innermost extent of the dent (the crease where it begins to follow a different angle than the rest of the edge). Then continue outwards, gently. On the other hand, quite sizable (though *not wide*) dents can be straightened with not much more than one *firm* tap – provided it is placed in the right spot and the amount of force applied is appropriate.

For straightening downward dents the blade is, of course, placed the opposite way – with its underside against the base.

After the actual straightening, a few strokes with a file or a coarse synthetic stone are useful to even out any irregularities along the edge of the former dent zone. If small pieces were broken out and the edge in that area is visibly uneven, then the protrusions should be filed off, as described below. The final touch is a light re-shaping along the width of that dent and/or actual file-affected area, either right then or during the following peening session.

Repairing cracks

“Cracks” are hairline breaks in the steel, *perpendicular* to the edge. They *usually* do not extend past the width of the bevel itself, and can occur either singly, or in a series in close proximity to each other. Single cracks can be as long as the bevel is deep, while those in groups are typically shorter (1/2 - 1 mm).

Cracks can be considerably more troublesome to repair than dents, simply because they call for a treatment beyond a few hammer taps. However, as opposed to dents (which should be straightened right away) the repair of many cracks (both small and large) can be postponed until they actually begin to interfere with honing and/or the blade's cutting action, that is, when the corners of steel on either side of the cracks begin to bend out of line and/or (in the case of a group of small cracks) little square pieces break off between any two of them, and leave behind a gapping ‘tooth’. Once that happens, the edge should be repaired before mowing continues. (Process outlined further below.)

In our experience, single cracks, even as long as 4 to 5 mm, tend to stay in alignment with the rest of the edge longer than a series of small cracks. For this reason, instead of hurrying to “fix” them, we suggest they be left alone, at least initially. Then, while peening in their vicinity, the strength of hammer strikes should be reduced and hitting directly on top of them avoided. Though gentle taps on the outermost 1 mm of the crack are usually okay, novices at peening may be better off shaping the bevel near the crack (2-3 mm *widthwise*) with a file or synthetic stone. Those inclined to prayer or visualization can also imagine the crack sitting there solidly, not causing any trouble; it may indeed do just that… If such cracks don’t actually lengthen (as a result of rough field use, or by incompetent peening) they can very slowly wear away along with the rest of the edge. (By following this approach, we have maintained some long cracks trouble-free for several seasons.) If one’s imaging is not effective and/or the *very same spot* of the edge confronts a rock, then the crack-defining section of steel nearer the tang will likely keep bending out of line each time after it is put back in its place, or break off altogether. *Then* apt repair is in order.

Once the choice is made to actually remove cracks, it is, in principle, a very straightforward affair consisting of:

a) Filing away *all of* the damaged edge deep enough so that no sign of a crack is left visible.

b) Blending the damaged area on a *gradual and smooth line* with the rest of the edge.

We recommend performing both of these steps *simultaneously*, using a flat or half-round file. At this point we should perhaps draw attention to the fact that this is a revision of our advice on edge repairs of long ago.[42] During the intervening years of peening hundreds of blades and repairing many, we now advocate a more courageous steel removal in a *considerably wider zone* on both sides of a crack or a tear. The objective is to create a *very gradual* transition between the center of the damage and the rest of the edge. We can unequivocally state that, following such an approach, the repairing of minor damage has become far less daunting, often more or less "a piece of cake".

Those advocating fundamentally different approaches could object on the grounds that what we suggests involves a lot of filling (which is sometimes true) and/or that a longer section of the edge will subsequently need to be brought back to the desired geometry (which is always the case). What would be difficult to argue, however, is that the resulting gradual contour isn't consequently far easier to blend into the rest with the hammer while re-peening the damaged section, with the potential complications greatly reduced. That alone is a significant consideration regarding the options of approach.

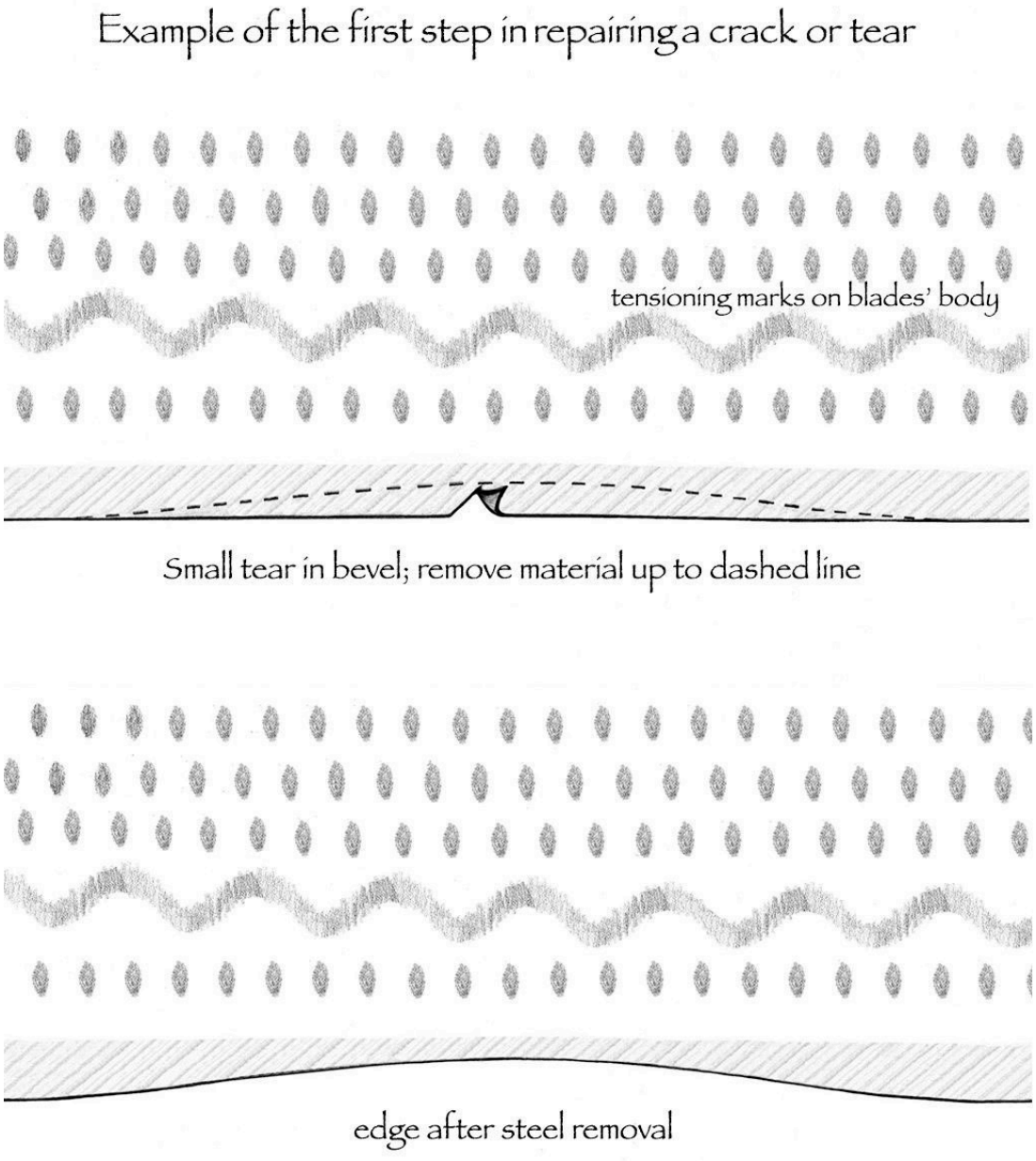
Be it as it may, we surmise that many people following some of the instructions on scythe blade repairs offered in print (ours from 2001 included) typically fail to create what we refer to as a 'gradual line', making it thereby more difficult for themselves to subsequently re-shape the repaired area *without undesirable side effects* (discussed further below).

In any case, our present approach is to file lengthwise along the edge, starting some distance away from the crack, slightly increasing pressure in the vicinity of it, and then relaxing the pressure on the other side. This long file stroke is continued until no sign of the crack remains, all the while blending the damaged area with the rest of the edge on a relatively gradual and smooth line. In order to remove steel more quickly, the file should be applied on a rather steep angle, though not quite straight across. Alternatively filling from both sides works fine, if that is found easier. If considerable filing is expected, it may be better to clamp the blade by its back in a common machinist's vice, with its underside facing up and edge facing away from the filler. Given such a set up, the file can be applied with both

[42] Our initial version of The Scythe Must Dance (first published in 2001, and ever since then re-printed – unfortunately unrevised – as the addendum to The Scythe Book by David Tresemer) featured diagrams of edge repair that we now consider 'The Scrooge Approach', one rooted in the philosophy of "waste not, want not", in this case by not filing away any more steel than seems absolutely necessary. That may have been a fitting approach in the past, when steel was precious, and scythe blades were very expensive. Although it is still practiced by many old men in Europe, by the time we had drawn those diagrams, this approach – from our perspective a year or two later – was *already* out of date, however 'respectful' of the blade it may be, and *not* one to recommend to novices. Regarding the "out of date": for many years now, the global price of steel has been ridiculously below its true (environmental and cultures'-destroying) cost, with scythe-smiths' time also undervalued *with respect to* their specialized skill. Consequently, we've come to consider such conservation of scythe blade's body as an example of 'principles taken too far'. Why we do not recommend the approach to novices is explained in the main text.

hands (as files are indeed meant to be used). Most of the material removal can be done in this manner, and only the burr removed from the other side *after* the blade is again taken from the vice, and while held in one hand (preferably against some firm surface). Figure 45 illustrates the *approximate* zone of filing (in this case illustrating a tear, rather than a crack; the principle is the same).

Figure 45.



The filed zone should extend 10-20 times the depth of the crack, *to each side*. That is, repairing a single crack 2 mm deep will affect 40 to 80 mm of the edge. In the case of a group of cracks close together, with any one of them up to 2 mm deep, the filed zone would

be from 40-80 mm plus the distance between the outermost two cracks in the group. That we consider the minimum; going even farther outwards with the file could make the consequent re-peening easier.

To those who may be concerned that the amount of suggested filling might wear away their blade too quickly, we would point out that there are countless (possibly hundreds of) bevels stored within the width of an average blade's body – a reservoir of potential edges that those who peen rather than grind their blades are unlikely to ever deplete.

We realize, though, that for someone just learning to peen, the re-creating of such a long 'ruined' bevel may seem overwhelming. And while we can appreciate the predicament, it ought to be understood that we are talking of the extra time taken as *measured in minutes*, not hours. Plus, they are minutes of a far easier sort than those spent navigating the more acute curves with a hammer.

All in all, considering the challenges – both at the time of the repair and afterwards while re-peening the edge contour ensuing from the 'scrooge filling approach' (see Note 43) – we are convinced that what we now practice is a favorable trade-off. The other, aforementioned, aspect of all this is that the wide filing significantly reduces the chances of 'waves' – something that most scythe users are likely to encounter sooner or later.

The waves along the scythe blade's edge can be of two sorts: 'in-and-out', and 'up-and-down'. Each of them can vary in intensity and seriousness. The former are the result of inaccurate peening or the natural aftereffect of edge repair. The latter are far more frequently the result of a more seriously flawed peening technique or striking an inadequately supported bevel, than of the blade actually encountering too tough a target while used in the field.

While acute in-and-out waviness of the edge following repair does not in itself impair cutting efficiency, a portion of the subsequent re-peening attempts may lead to '*up-and-down*' waves in the area where the repair took place. *Those* are more challenging to work with, although (contrary to what is sometimes said or written) they do not render the blade "useless". True, honing and peening up-and-down waves is somewhat more difficult, but such a blade can still function passably in certain mowing situations. Besides, any waviness of a scythe blade *can* be corrected. (To be discussed in Part 2.)

After the desired steel removal is completed (Figure 45) the next step can be performed in two ways, plus some combinations of them. [43]

[43]After much deliberation we decided not to provide a visual representation of the post-filing hammer strike patterns, and instead attempt to paint the picture with words alone. For one thing, limiting the representations to only one or two could be misleading if they were passed along further without qualification that it is only *one of* the variations and hence a *partial* picture; that has already happened with some of our material, and is likely to happen again... Secondly, we do not wish to fix those strike patterns in "black and white" because of how much they can vary in real life.

One of the ways is the commonly advised approach to *first* peen / re-shape the damaged area to the point where the repair per se is considered completed. Only afterwards is the whole length of the edge re-peened in the course of a regular session, which might be done immediately following the repair or put off until deemed necessary, with the blade used in the meantime.

The other approach is to combine the 'finishing' of the repair with a follow up peening session. If the crack was only 1-2 mm deep, such an approach is perfectly acceptable (or sometimes even preferable). Whether the damage took place one or five hours after the last peening does not really matter; another peening right after repairing the damage is not going to be a "waste of time". If nothing more is needed otherwise at that time, the peening can, over much of the blades' length, be merely a *light* pass along the outermost ½ to 1 mm of the edge.
As usual, the pass (of this second approach) should begin at the beard and continue towards the blade's point. When the filed/damaged area is approached, the line of hammer strikes makes a slight curve inward (towards the blades' back) following the present bevel's now altered contour. The force of the hammer as well as its 'pull' should *slightly* increase, and progressively more so as the line is reaching the center (most indented) area of the damage. (Note that the blade's position upon the anvil's face *needs to be shifted slightly* in order to provide support just under the hammer's impact!) If more than one pass is needed, the strikes should not land too close to the apex during this first pass. Sometimes, depending on the depth of the initial damage, one such 'once over' – within its now file-corrected contour – can suffice. It may not yet result in what is perceived as the desired geometry at that spot; if that is the case, back up with the hammer once again to the other side of the file-affected zone and repeat the strikes over it, this time a bit closer to the apex. It may take yet another such maneuver, although insisting that that area ends up all the way to the line of the rest of the edge would be foolish. With common blades for everyday use there is no need to hurry in this regard; the evening-out of the bevel thickness can take place over two or three regular peening sessions more gradually and with fewer chances of creating up-and-down waves. In the meantime the repaired section of the edge may not penetrate stems with quite the ease as the rest, but provided its outermost 1 mm zone is somewhat close to how thin it ought to be for the respective task, and is *well honed*, the majority of mowers would hardly notice a difference.

In cases where the bevel removal (depth-wise) was considerable (i.e. if the cracks were deeper than 2 mm) then some *combination* of the two options discussed above may be the approach to take. As an example:

Begin at the left side of the damaged zone, but not quite as far left as the point to where the edge has been filed, loosely following the contour of the curve defining the filed (damaged) zone. (Care should be taken that the blade's body is supported under the hammer strikes as

well as can be managed!) Place the first row of strikes at least 1 mm away from the zone's outermost line. For reasons related to the hardening effect of peening (discussed further below, as well in Chapter 4), these should not be mere taps, and the hammer's diagonal pull ought to be emphasized. When finished, that first row of strikes might end up approximately 2/3 (but no more than ¾) of the complete length of the "repaired" area (i.e. of how far the file had reached left and right of the damage's center). As the next step, place another row below it, overlapping them as suggested earlier, but this time begin a bit further to the left and finish further to the right, so the second line will end up slightly longer than the first. Yet another such (lengthening) line may be called for in some cases. To lessen the chances of a mishap, the repaired portion should not extend too far outwards before the overall peening of the sound edge (begun at the blade's beard) joins it. The intent here is to only take the "repair" to the point where it is perceived that the existing outline of the still-unmarred edge will be relatively easy to blend with the repaired zone. Learning to identify that point is something that comes more through practice rather than reading about it…

The potential trouble-causing spots are the two places where the undamaged edge meets the repaired zone. If, through peening, a portion of metal is made to protrude further out than the rest of the edge, it would be best to remove it with a file or coarse stone before peening continues.

Although the respective patterns of the hammer strikes over the area being repaired may be more or less the same within each optional approach discussed here so far, the number of its actual prints per cm of edge's length and millimeters of bevel's width will inevitably differ, either slightly or significantly. The influencing factors (as mentioned in the Freehand Peening section of Chapter 4) are the force applied, *along with* the intensity of 'directional pull'.

This wide filling approach provides plenty of grace to accommodate personal tendencies – just as is the case while peening a blade's complete edge under normal circumstances. We tend to strike harder and pull the hammer more upon impact than presently seems to be the norm, which automatically equates to fewer strikes per equivalently sized repair. The number of lines needed may also differ; that is, if the more common strength of strikes would require three lines to reshape the filed off edge, harder strikes might only need two. However, it would not be wise to attempt expediting the process by striking harder with the hammer than at an early stage of learning one is confident in implementing.

Finally, it deserves to be pointed out that yet another reason for differences in how easily/quickly a wide section of damaged edge can be restored is related to the blade's hardness. In the section on freehand peening in Chapter 4 we touched on the pertinent concepts; readers may benefit from re-reading that section and applying the information to the topic of edge repair.

Keep in mind that whatever material remains *above* the bevel's already peened zone is *still at the level of the blade's initial factory-tempered hardness*. That makes it 'softer' than the material nearer to the apex. During repairs of mid-to-large damages more than just a minute amount of material obviously needs to be 'pulled down' from that yet un-peened zone closer towards the apex. Its (temporary) softness can, or perhaps even 'ought to', be taken advantage of while the opportunity exists. How? In the section above, while discussing the various patterns of lines of strikes during the repair, we stated that "when the filed area is approached … both the force of the hammer and its 'pull' should slightly increase, and progressively more so as the line is reaching the center (most indented) area of the damage".

As the line of hammer strikes is gradually moving *inward* (toward the blade's body) from the harder to softer bevel zone – *increasing* the hammer's force will expedite the repair. *Provided the blade is well supported*, the still softer steel can handle the 'abuse' *precisely* because it is softer (and secondly because it is thicker, of course). Consequently, the repairer's efforts have more of the desired effect when the strikes are harder. What seems not to be generally understood is how quickly even relatively light peening can begin to harden the bevel. Accordingly, IF – when the line of strikes enters the (still) softer zone of the bevel – those strikes are of the typically gentle sort, the chance to reshape the bevel easier shall promptly diminish.

The challenge in the case of single cracks 4-5 mm long is that considerably more material should be removed, and that, of course, over a greater length of the edge. If such a crack is somewhere in the wider part of the blade then it is just a matter of a lot of filing (or *careful* grinding with some efficient mechanical abrasive). But if it happens to be near the point (where the blade's body is considerably narrower), then the repaired area's shape may be unfavorably altered – which is one reason we suggest that such cracks are left alone, if at all possible.

A final cautionary note on the origin of cracks in general:
As stated earlier, we think that a good portion (probably more than 50%) of cracks are caused or predisposed by the blade owner's hammer rather than the edge's direct confrontation with an obstacle out in the field. To borrow a quote from our previously referred to 2001 guidelines:

"*Overzealous or inaccurate hammering may stress the steel, in one or more spots along the edge, nearly to the point of breaking, until some challenge (perhaps not an obvious one) finishes the job. The challenge may come in the form of more of the same manner of hammering in subsequent sessions. We might cut only young lawn grass in the meantime and not realize what is happening. The cracks may be too tiny at first to be easily noticed by the naked eye, and may not impair the blade's performance. Peen over the tip of them some*

more and they will grow longer and more troublesome; corners of the edge next to them may bend out and start catching grass. At this point we are likely to notice the trouble, but may curse the blade that cracked 'on its own', since we are sure we did not run into anything hard interim."

On the whole, we still consider the above to be a rather accurate 'speculation'…

Tears

We refer to "tears" as damages principally similar to cracks, in that both are clearly defined breaks in the steel. What differentiates them from cracks is that they are *not perpendicular to the edge*, but instead positioned at various diagonal angles towards the blade's beard. Secondly, unlike most cracks, they can also extend past the bevel itself into the blade's body proper, occasionally as far as 20 mm or more. Tears of that length are more likely indicative of abuse rather than a "defective" blade. Thirdly (unlike some cracks) tears *rarely* remain lined up for very long. When they do bend out of line they begin snagging plant material while the blade is used. If the tear is long enough and the bevel rather thin, the point of the tear may almost fold over backwards. Bending it back into place is only a very temporary measure; it won't be long before the 'flap' will break off completely, leaving behind a triangular gap. In the interim it may tear further… For all these reasons, a tear requires prompt attention.

The principles already outlined in repairing cracks apply here as well: In case of relatively short tears, file away an adequate amount of material on either side of the damage (as in Figure 45) and then re-shape the bevel as discussed in the section on cracks. If the tear is very deep we suggest one of the approaches below:

a) Apply the principles already outlined for repairing smaller cracks and tears, while keeping in mind that considerably more material on both sides of the damage has to be removed. Repairing, for instance, a 6 mm deep tear will affect from 60 to 120 mm of the edge. That can mean a lot of filling. Of course, it can be done by more 'modern' means – an electric grinder. In the latter case, instead of the 'economy' version many people may already have at home, one of the so-called "wet grinders" would be preferable. A common dry grinder outfitted with a specialty wheel that does not heat the steel as much (e.g. Norton 38A80) may be the next in the line of suitability.
b) In the era before electric welders, parts of broken blades, including torn tangs, were sometimes re-joined by 'brazing' with brass. Today, folks with access to a TIG welder can try to weld the tear. (Though we have not done this ourselves, we know those who have. According to them, a heavy copper plate should be used underneath the welding area to absorb heat and reduce chances of burning the steel on either side of the tear.) This may or may not prove to be a lasting solution, but in any case there is not much to lose. If it

fails, options a) or c) can still follow.

c) A more foolproof remedy is cutting (not filing or grinding) a whole strip of steel off the blade's body.
   This option is principally the same as a) except here that strip is wider and possibly extends the entire length of the edge. In both cases a significant portion of the bevel has to subsequently be re-created. (Pointers on that further below.)

If the c) approach is taken, the width of the removed strip would be determined by the depth of the tear, where exactly along the length of edge it is located and the pattern of the blade. In most cases, the latter (blade's overall pattern) will be affected. The change can be relatively minor or major, though even a significantly different shape / pattern is not something to be overly concerned with. While learning about the merits of narrow blade patterns, we have intentionally narrowed many blades in the manner described here and have learned that sometimes the new shape of the edge actually functions better than the original (see Note 45, further below).

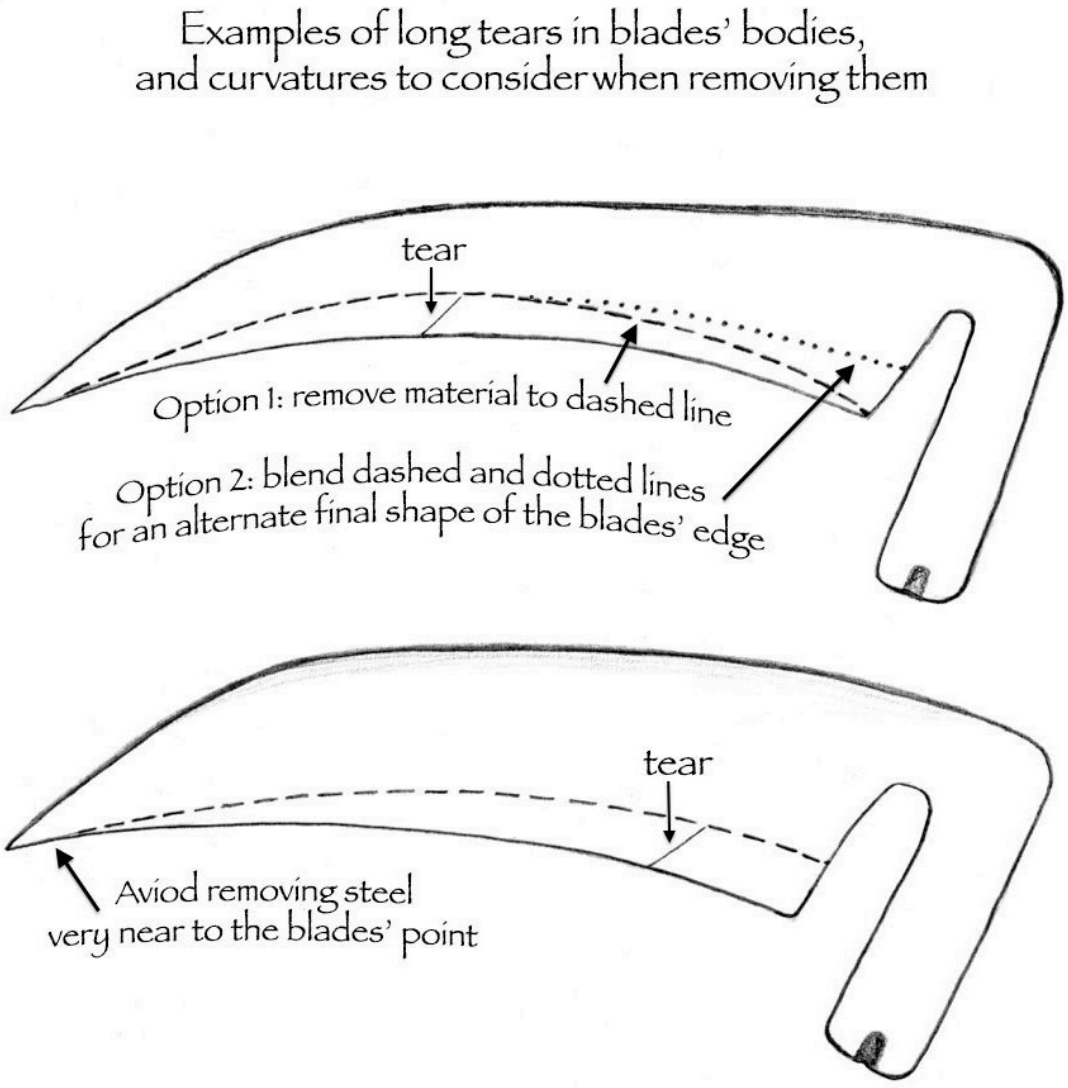
However, it is unadvisable to cut an equivalently wide strip along the whole length of the blade; the last 4-5 cm near the point should definitely remain intact. Thus sculpting a new, functional and shapely edge out of the torn one would be trickier/more difficult if the large tear were near the blade's point. Fortunately, extra large tears generally seem to occur in the back half of the blade, and it is usually not difficult to remove a strip just wide enough to match the depth of the tear and then blend the rest to either side in such a way that the original profile in the 5-10 cm nearest the point is minimally affected.

We suggest first drawing a chalk line that might represent the new edge's pleasing profile. Then consider it carefully and see if, where, and how it can be altered so as not to distort the blade's shape any more than needed or desired. The 'pleasing profile' and thus the final blade's shape is subject to the repairer's choice. Two examples of this approach are illustrated in Figure 46.

There are various ways to cut a strip off the edge. Going by our experience to date, a narrow "cut-off" disc mounted on a so-called "angle grinder" (used by practically every welder, car body repairman, etc. these days) is probably the most expedient method – provided the operator is well familiar with their potentially dangerous quirks. (Our car mechanic friend does it for us, and after some practice specifically with scythe blades it now takes him just a little over half a minute each.) We advise against using a "plasma cutter", as it leaves a very ragged edge that in the process becomes hardened beyond the common file's ability to smooth. Moving down in high-tech options, there are some versions of hand lever-operated shears, although they are not among the tools of the average homeowner, and purchasing one *just* to repair a scythe blade would be preposterous. (We have used the model with revolving blades made by the Grizzly Co., but studying the picture of a version made by

Eastwood we now think the latter would work better for the herein discussed major repairs of scythe blades.) As well, the bodies of most Continental blades can be cut with a simple pair of good sheet metal shears ("tin snips"), and the most elemental low-tech option is the old fashioned "cold" chisel, however slow it may be.

Figure 46. Cutting off a strip of the blade's body in order to repair a tear approximately 20 mm deep.



Of course, after the cutting of a new profile is completed, a whole new bevel needs to be recreated. The process consists of:

1. Smoothing the rough surface left behind by whatever means was used to cut off the strip of steel.

2. Re-shaping the outermost 2-3 mm of the existing edge so as to provide a functional, easily penetrating bevel. Numerous combinations of steps can accomplish the two parts of this process.

Regarding 1: A file or grinder can be used, either individually or in combination. We prefer the file, chiefly because our skill in using it surpasses our ability to do an *accurate* job with one the fast spinning alternatives. For individuals with suitable modern equipment and an understanding of how to avoid burning the edge, a file might seem too slow, though the difference much depends on the respective quality of the two tools. (Good files are faster than inefficient grinders!)

After first removing the leftover roughness of the initial cut, there are two options: Thinning the outermost 3-4 mm of the existing edge OR, leaving it initially as thick as it is, to be shaped to desired geometry solely by means of the peening hammer or a peening jig. We have done it both ways and are certain that most people would find the subsequent peening considerably easier if the edge was first at least partially thinned. The thinning can, of course, be done by either a hand file, or mechanically. However, the outermost 3 mm – from which the new bevel will arise – should end up to be of even thickness, or as even as can be managed. Performing the thinning with an electric grinder may be tempting but a word of caution is due. It requires above average skill with the grinder to perform the pre-shaping very evenly. We are talking of minute differences in resulting thickness, but these – once the pre-made bevel zone-to-be is further peened and thinned – will show up as sections of protruding steel making the edge uneven, sometimes appearing as irregular in-and-out waves. The wavy *appearance* is not much of an issue in itself, but peening a bevel that lacks a certain degree of uniform thickness can present an additional challenge and may lead to the less acceptable up-and-down waves…

Due to its overall geometry, thinning from the topside of the blade is notably more awkward. However, the thinning can be done from *only the underside* of the blade's body. It does not matter that it is supposed to be "the side with no bevel"; the follow-up peening will set the 'bevel relationships' as they ought to be. Clamping the blade by its back between the jaws of a bench vice (and periodically re-clamping it sideways) makes for a solid filing-friendly set up. Once the blade is again removed from the vice the burr resulting from the filing can then be quickly "cut-off" from the opposite (top) side with a few strokes of the file.

The thinned edge should thereafter be made very smooth, and the smoothing is equally important even if the edge was not first thinned. A sequence of file, coarse/medium grit stone and finally a fine stone work well.

If the thinning was skipped, or if performed with only a coarse grinder, a good file is the tool we prefer for the smoothing. Then follow with two stones, the second of a fine enough grit so as to leave behind no visible file-grooves. Those with electric grinders (and skill in their use)

can begin the smoothing that way, or – if also a finer grit wheel than the common 60-100 grit is at their disposal – even complete it.

The re-shaping of the new bevel can be done in several ways. One approach is to thin the area of the new bevel by means of a grinder so that it is nearly to the point of the geometry desired, and then peen only the outermost 2-3 mm of it as it is done on a regular basis. The other three approaches (all of them more 'traditional' than the first) are: completely freehand, completely with the peening jig and a combination of the previous two. The second and third are easier than the first, and the second less satisfactory than the first or third. The third is recommended for those who have access to the jig but are also competent peening freehand.

With regard to approaches one and three (and somewhat less so with two) we want to draw attention to the previous 'strength of hammer strikes' topic. If the strikes are too gentle the hardening of material will nevertheless begin to take place, and overall the task of reducing the 0.9 to 1mm of thickness (typical of many among contemporary blades) to an acceptable bevel shape will seem to take 'forever'. It usually takes Peter about 6-7 passes to shape a new 4-5mm bevel zone, by the way, and he is not all that gentle [with a hammer ☺]. However, the very first row – the transition between the blade's body and the bevel-to-be – is an exception. Its objectives are to mark off the two zones, provide visual guidance for the next line and create a *very small* hollow into which the hammer can subsequently 'bite' with considerably more force. To make this 'pioneer zone' as even as possible, it is advisable to perform this one with less force behind the hammer strikes. Marking (with chalk or a felt pen) a visual line to follow helps assure that the first pass of the hammer will be equal distance from the present apex along the whole length. It is while making the second pass (and, to already slightly diminishing degree, those to follow) that the advantage of the still more malleable material can best be taken advantage of.

The final advice we want to offer is that after 2 or 3 passes the 'smoothing step' discussed above should be repeated, this time with only the finest grit of the previously used stones. If one takes a close look through a loupe, it will be seen that the apex is now not as smooth as it appeared before. In addition, repeat this step shortly before the bevel is approaching its final shape and before the outermost 1mm is to be directly aimed for. <u>These two additional smoothing/polishing touches go a long way to diminish chances of tiny cracks along the edge.</u>

As the perceptive readers have likely noticed, dealing with a deep crack or a tear *in* a *way outlined above* is actually what in the opening to this chapter we referred to as one of the "major" damages – and thus intended for the Part 2. However… see Note [44].

[44] In their respective published handbooks, both Lehnart and Miller have stated that a crack/tear/nick deeper than 5 mm renders the blade "useless". We believe that statement to be utter nonsense but as with other similar 'facts', it is likely to spread still further afield… The approach we suggest here regarding repairs of such blades may be relatively unknown (or at

Repairing "schrupped up edge" and other kinds of minor damage

As we attempted to explain earlier, a schrupped up edge is somewhat like a chameleon appearing in an array of colours; it is might near impossible to name any single one of them and then offer a specific treatment. For one thing, it is often longer (but not necessarily deeper) than any of the other damages covered above. It can contain cracks (though often it doesn't). A portion of it may include a pronounced dent gradually running into a shallow curled up piece of the edge several cm long. It may be dented *along with* a crack, or be missing a piece of steel altogether. With other words it is a variously dulled and roughed up section of the edge, and our illustration in Figure 44 f. is an attempt to show it in that version.

All the versions of a schrupped edge are repaired by principally the same approach – a combination of the techniques advised regarding the dents, crack and tears. If a dent or a curled up edge is present, it should first be flattened. Then follow with the file etc. – exactly as for cracks and tears.

In addition to the types of damage discussed so far, the blade's bevel can lose a "half-moon" (i.e. semi-circular) piece. If such a piece has suddenly "disappeared", it is likely a sign that the bevel, which was probably rather thick for *general use,* confronted a rock of just the 'right' shape. Had it been appropriately thin, it likely would have torn instead. During the typically rough use to which "bush" blades are subjected, especially while working in rocky terrain, this sort of edge damage can be expected. It is generally easy to repair, because only seldom is it more than 2 mm deep. Treat the same as crack or a tear.

A file is, again, the fastest means to smooth the unevenness resulting from small missing pieces, or a mangled section of edge. As is the case with all repairs, the file should be followed by a medium grit stone, then preferably a fine one, and then the peening hammer.

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least is rarely talked about) but it certainly does work. We have re-profiled the bodies of many blades in this manner, not because we ever end up with large enough tears, but rather in line with our ongoing experimenting, in this case comparing the function of wide versus very narrow-bodied blades of various patterns. And (in case we perish before Part 2 manifests) we now decided to include at least something here – in order to help prevent those "useless"/ "damaged beyond repair" blades from needlessly ending in the scrap heap…

Chapter 10. Care of the Scythe, with a few notes on "safety"

General scythe care

In his charming 1999 song, Dancing with Scy', Matthew Heinz of Maine, USA, shares his enthusiasm for this tool, including a few words on scythe care: *"He don't ask for much, and he'll make a good crutch, when you mow 'til you're weak in the knees"*

Poetic license aside, we fully endorse Matthew's perspective; scythe care is generally undemanding of the owner's time, or other resources. To sum it up in a few words: Initially, remove all the lacquer and any labels from a new blade, and with the help of some abrasive shine its body up – from both sides, the more the better. Then keep it dry and protect it from moisture when not in use.

Of course, such an approach is not strictly followed by everyone, and it can get a bit more involved, especially regarding storage during the longer periods of non-use. Still, the variations of "good care" are rather intuitive, at least to those who already have experience with, and appreciation for, other hand tools.

The adage "rust never sleeps" may be a bit of an overstatement, but it certainly is an observation worthy of attention. Once particles of rust develop on a steel surface they never disappear on their own. At best (from tool owner's perspective) they sort of hibernate, which is the case in an adequately dry environment (no more than 20% air moisture). But as soon as moisture in the surrounding atmosphere increases, the rust resumes its growth.

We do not, however, want to trigger an unreasonable fear of rust. Scythe blades can certainly tolerate *some* rust for a while. Not to the point of being pitted, especially not in the bevel zone, and of course, rust should be removed as soon as reasonably possible *all the way* down to bare steel.

In temperate (though not overly damp) climates, if a blade was kept somewhat polished by frequent use during the previous season, it can hang all winter in a barn or open shed (not in stables where livestock resides), but *out of the direct elements like rain or snow*. It may accumulate small and shallow bits of rust interim, but be well enough overall. Thousands of blades have been stored in just those sorts of settings, un-oiled, all over Europe. When the grass began to grow and was again ready for cutting, many owners would simply take the scythe off its hook, peen and hone it, and begin mowing. A few minutes spent polishing (with the help of steel wool, medium grit emery or the modern sanding block), along with several mowing spells, can usually bring the blade back to the state it was in when put to rest the previous fall. That, however, will not be the case with a blade that *begins* the 'off season' already rusty. That rusting process likely started already during the mowing season, especially in cases of blades that are not dried *thoroughly* after each use. (Upon return from

a spell of mowing when the grass was still wet with dew, a thorough drying may necessitate the use of two rags in succession.) As an alternative to thorough drying, wiping with an oily rag after each use may be a good course to take. Oil helps prevent rust – the bane of many steel tools. Yet we do not find the use of oil necessary, even if it is nothing more than "free" used engine oil. [45]

In extremely humid weather, especially tropical climates during rainy seasons, the same principles apply, but additional measures may have to be taken. If the scythe is used on a regular basis, a thorough drying alone might suffice. To reduce exposure to the ambient humidity of the air the blade can be simply wrapped in a rag after first drying it.

When the blade is to be stored for longer periods between uses, a light coating of oil can be helpful or perhaps even 'necessary'. In all climates, the best option for longer-term storage is to remove the blade from its snath and store it in a very dry environment, such as in one's house or other heated building.

Keeping blades 'polished' goes a long way towards preventing rust. The ground-hugging side of a scythe blade frequently used and properly cleaned at the end of each mowing session will eventually acquire an almost mirror-like shine. To bring it to that state sooner rather than after many hours of early morning mowing, the owner ought to start the season with it at least partially polished by whatever means available (emery, sanding block, damp sand mixed with ashes applied with some scrubbing pad, etc.). Frequent use will do the rest.

On the other hand, the upper side of a blade calls for periodic treatment of this sort in any case, because the action of mowing does not polish it adequately. Does the upper side need to be polished? No, it doesn't. But it does seem to be psychologically uplifting to have in view a tool that at least *appears* to be well cared-for. On the pragmatic side, it is easier to clean a shiny blade prior to each whetting session in the field than a rusty one and also, upon returning from the field, to dry it thoroughly.

Care of rings and other blade attachment hardware

If the rings used feature the now common setscrews, those should be periodically removed,

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[45] The environmental and/or health-oriented purists would scoff at such an option (claiming that the residue left in the fields is damaging to Life). They do have a point, but our reasons for not using oil in this manner is more because we believe that the days of cheap oil are 'numbered'; exactly what that number may be is irrelevant. If we protest the building of new pipelines, fracking, or similar exploitations, is it not then our moral obligation to reduce, whenever possible, our dependence on this system?
Less environmentally objectionable alternatives for rust prevention are animal fats and vegetable oils. Vegetarians and vegans would frown upon the former. We do too, but for a different reason. Fats and oils, whether they are derived from animal, plant or mineral (ancient animal and plant remains) we consider 'precious' substances, undervalued and all too often misallocated within the "economy" of contemporary society.

their threads cleaned of accumulated debris, and lightly greased. Many scythes sold nowadays in Europe featuring the curved metal snath have their blades secured merely by a single bolt, which should also be periodically disassembled, cleaned and greased.

The “old style” rings held tight by means of a wedge are still widely used in some regions. These simple steel bands and their accompanying wedges do not require any maintenance to speak of.

Care of the snath

Wooden snaths are best stored out of direct sun or rain. Periodic oiling of the bottom 15 cm or so (perhaps in conjunction with cleaning the threads of the ring) is beneficial, but we find it unnecessary. In our view, the snath is a replaceable accessory; once it “wears out”, another can be homemade. And, if its user has been paying attention to subtleties of the scythe’s working dynamics – as influenced by the snath design – chances are good that the new snath will be an improvement on the old.

A few comments on “safety”

What in contemporary writing may be termed “scythe-related safety” is not our forte. We, after all, are among the supposedly reckless bunch, doing the majority of our mowing barefoot and gloveless, using both of these “safety accessories” – shoes and gloves – only when the cold weather sets in and frost glitters over the meadows on early mornings. There are no poisonous snakes in this region; if we lived in some of the many “snake infested” places on this planet we might learn to wear tall boots. But gloves while the weather is warm? Never. We also do not bother with blade guards and such, certainly not on the homestead. And if we wrap a rag around a freshly peened and honed blade before taking it somewhere on a trip, it is primarily to protect the blade, not people.

Frankly, the whole subject rather stumps us. Perhaps it is because we have yet to read some *comprehensive* guidelines that would have prevented us from the occasional confrontation with the edge of a sharp knife or other potentially ‘dangerous’ tools. Yes, the handling of them, even if only semi-sharp, poses risks. There are countless nuances involved in learning how to avoid accidents and that learning comes more from experience than the reading of books.

That said, we do know that it is while honing in the field when a scythe blade is most likely to remind its user “Pay Attention, mate!” The damage to the fingers is (usually) relatively minor and heals quickly. The benefit of these ‘warrior wounds’ is that the wounded may be inspired to do just that – pay attention. IF, consequently, that very attribute becomes at least a partial

instinct, then the mower will have learned a whole lot more than just how to not get cut by a scythe blade…

We have, for nearly 20 years, advocated a honing technique that we consider not only easier to learn but also inherently safer than those used in many other traditions, and that very approach is communicated in these pages. Still, we do not entertain the notion that it may actually prevent *all* potential mishaps. At best they will be reduced.

Gloves have been widely advocated for 'cut prevention' in contemporary writings on scythe matters. In addition to what we already wrote on that topic (in Chapter 6, Note 31), we'd like to add that for the really cautious folks, those gloves had better be made of Kevlar or another cut-resistant material (because if the edge would not readily slice through an average leather glove, the blade needs further sharpening to make it really fit to use). However, we cannot in good conscience advocate the use of some modern industrial product in order for someone to feel 'safe' while using a tool that for millennia was used by literally millions of people who mostly could not read, and could barely afford the needed accessories – never mind gloves – but who nevertheless managed to cut untold hectares of grass and grain to help this civilization expand and "develop". How did they do it? Prayers? Magic? Or simply "luck"?

We've now evolved into a culture steeped in fear, and one that seems to have made the wholesale choice to trade awareness for "safety gear". For those among our readers who might already question the 'wholesomeness' of the mainstream culture's message, and who wish to pick up the scythe, the single best piece of advice we can think of offering would be to cultivate what the Buddhists refer to as "mindful presence". With regard to the handling of *any* sharp tools, there is no adequate substitute, period.

With the fundamentals of our personal 'safety attitude' communicated, what follows are a few hints of the 'rational' sort.

Although – according to the aforementioned song – a scythe can "get a night's rest on his heel" we prefer to rest ours suspended with the blade up in the air. On our homestead, they are either hung against a wall on pegs, or suspended across wooden rails so that the blades are well above the height of a possibly inattentive visitor. In addition, they are usually pointing in the direction where nobody is likely to walk (say the back wall of a shed). However, at least within the homestead setting, these "safety measures" are as much for the prevention of damage to the blades' edges, as to people.

Precautions at public events

Years ago, when we used to travel to country fairs with two to three dozen scythes, the concern for onlookers took on another dimension. We'd arrive a day early and set up a

square framework covered with a tarp (to keep the contents away from blazing sun and/or possible rain) within which the scythes were suspended on rails with blades both above people's head level as well as pointing towards the middle of the structure (which was a "no trespassing" zone).

Many public scythe events in Europe feature simple racks, against which the scythes lean, often from both sides, so that the blades (pointing towards each other) are protected from easy confrontation with people (especially children) by the snaths positioned outwards. Such an arrangement does not, of course, double as protection of the tool from effects of weather, but is sufficient for a days' course or competition under clear skies.

Various safe/unsafe distances from the blade in action have been stated within some mowers' guidelines. Such hints are often exaggerating the threats and have significance *only in situations where other people and/or pets are nearby.* With other words, individuals who may possibly be threatened by the blade are the by-standers, rather than those who are operating the tool. Do the latter not *already* know how far their blade reaches to either side of themselves as they work? If not, they probably ought to refrain from offering a public demo.

Yet, because the onlookers do not usually read scythe using safety tips, it ought to be the responsibility of the person doing the cutting to adequately communicate what needs to be made clear in order to prevent accidents. We know by experience that implementing the safety rules during a public demo for hand tool-using dummies is not an easy task. It is especially so in case of children who often need to be asked more than once to *please* not stand here or run over there...

Delineating the safety zone by means of stakes and rope, coloured cord, or tape is one concrete step that can be taken. But perhaps because it seems like extra trouble to already overburdened organizers, it often does not happen…

However, the sort of potential accidents that we are addressing here are extremely rare. Suffice it to say that having taken part in many public scythe events in various countries – most of them failing to take the strict safety precautions – we recall a few "close calls", but *not even one* actual incident of an onlooker hurt by a scythe blade. (Perhaps the guardian angels of the scythe scene have been hard at work, and have made up for the lack of actual precautions? Whether that is the case or not, we'd like to thank them for being there!)

Chapter 11. The Homemade 'Eastern' snath

Among the various single components of a functional scythe, the snath (due to its length) is most troublesome and/or expensive to ship long distances around the globe. Yet the actual making of it on a home scale does not require significant woodworking skills or any specialized tools. Additionally, the raw materials abound practically everywhere; literally millions of potential snaths are left each year on the forest floor behind both small and large tree-cutting operations. In the still "underdeveloped" parts of the globe, sticks of wood suitable for snaths are commonly used for fencing, etc., or burned as firewood. Admittedly, making a snath that will indeed function as expected does call for gaining an understanding of snath and blade fitting (detailed in Chapter 5) beyond the level required to merely attach a blade to a purchased/commercial snath and make the (usually limited) adjustments. However, *once the process outlined below is understood*, it can be implemented – from start to a functional snath – in about an hour, in some cases less. Not necessarily on the first try, but what is otherwise the cost of a snath which is *already fitted to a person and the blade to be used with it*?

One more note on the topic of 'value': While a whole lot can be learned about scythes without the need to ever make one's own snaths, there are nuances of this tool's function that, we believe, can not be acquired any other way.

Regarding the principle design, from among the various styles of snaths, the straight-shafted 'Eastern' (typically one-grip) versions are the easiest of all to make. As mentioned in Chapter 3, they are *also more forgiving with regard to fitting blades to them.* For those reasons we begin the topic of snath-making with a version of this design.

Eliminating the journey to the sawmill

The approach presented here takes a detour from the industrial age's norm in that it assumes working with raw material, which we've come to refer to as 'wildwood' – meaning saplings or branches of trees, rather than mill-sawn lumber. In addition, we suggest that whenever possible, neither saplings nor healthy trees are cut *specifically* in order to make a snath. Instead, snath-makers can often utilize material left behind whenever wood is cut for other purposes, such as logs or firewood, roadside brush clearing and similar forest growth 'management' practices.

A few notes on species of wood fit for the task

Regarding the suitability of raw material the range is very wide, both in the North and South.

In our location we have made functional snaths out of every single species of deciduous trees or shrubs that grow to a large enough diameter (at minimum 35 mm or so, in the round). The *saplings* of the common evergreens (fir, pine, spruce) are mostly too weak, but *branches of* mature specimens (containing a far greater density of growth rings per cubic cm) are sufficiently strong. Naturally, we also make use of this region's traditionally preferred handle woods (ash and sugar maple), but for snaths their innate strength is not necessary.

One of our favorites is the lowly alder (Alnus incana) – the “good for nothing” pioneer species in all damp and neglected parts of Eastern Canada's countryside. Its strength is in the range of poplars and willows (both of which are suitable as well). The main reason we like alder for the shaft's material is that within the clumps of alder growth it is very easy to find just about any curvature a snath maker could dream of. Secondly, its supply is ‘never-ending’; if we did not occasionally cut back the new growth, Alnus would have reclaimed some of ‘our’ hayfields and pastures long ago. The local supply of poplar and willow is also in no short supply, though neither matches the shape-related bonanza of alder.

It is preferable that the wood be well seasoned prior to being used, or at least partially seasoned (whatever exactly that means to the respective reader). However, if circumstances dictate, even a green sapling can be cut off the stump one day, then promptly turned into a snath which can propel a blade the next morning, or sooner. Should *that* be the case, we recommend the following:

a) While in the midst of the initial snath-making steps outlined below, do not remove bark from any more than the bottom 15-20 cm of the shaft (where it helps to facilitate the marking of a few guiding lines while fitting the blade).

b) Once bark is removed, cover the freshly exposed wood with some air impermeable substance such as linseed oil/turpentine mix, lard, tallow or paint in order to slow down the drying process. Failing to do so often leads to “checks” which then are likely to continue deepening until they reach the center of the wood.

These hints are particularly pertinent if the material worked with consists of any fruitwood species (apple, cherry, plum, serviceberry etc.) or hop hornbeam (Ostrya virginiana; also called “ironwood”). It is also the case with practically all species cut at the height of their moisture content (from early spring to mid summer).

The grips themselves would really benefit by some pre-drying. We suggest that they (preferably several of them) are made well in advance of proceeding with the snath-making steps outlined below. Still, given ‘emergencies’, they will serve their purpose even if freshly cut.

Snath-making tools

There are many combinations of woodworking tools that can fill the need here. The ones we regularly use are:

a handsaw,

small hatchet,

drawknife,

hand brace with 2 or 3 bits of different size.

A rasp is the next very useful tool, as is some means of clamping the shaft securely while material is being removed. In this regard we consider the “shaving horse” a most convenient invention (for many other woodworking purposes as well). A vice can substitute, somewhat, and so can – if these conveniences are not available – a friend helping to steady the shaft against a chunk of wood laying on the ground. Some individuals can do the steadying alone (with the help of a forked tree trunk, for instance), requiring neither a shaving horse, a vice, or a friend...

One other aid we consider a ‘luxury’ (despite having made good use of it ourselves) is an accessory called the “plug cutter”, which can greatly speed up *accurate sizing of* the grips' tenons. However, we surely would not spend money on them (available in four sizes) if we were to make only a handful of grips. To refine the size of a tenon which had been roughed out with a hatchet, a jackknife and/or a rasp is adequate for an individuals' own snath-making purposes.

In case of limited tool options, keep in mind that a sharp hatchet can take over the role of the saw, and other than for sizable cross-grain cuts, the drawknife can replace the hatchet. The drawknife or the hatchet can, up to a point, take each others places, if need be. But if only one can be procured, the hatchet is definitely more fit for multiple tasks during snath-making. (Please note that we are referring to a hatchet sharp enough to take accurate *shavings* from the shaft's blade-attaching ‘flat’, the grips' tenons etc. Held in a ‘constricting grip’ near its head, it should, in all those brief surface corrections, be able to replace the common woodworking plane.)

Two other tools we are familiar with but do not presently use for this purpose ourselves, both of which can replace the hatchet, the saw and the drawknife, all in one, are a kukri/gurka knife and (even if less conveniently) a short-bladed machete.

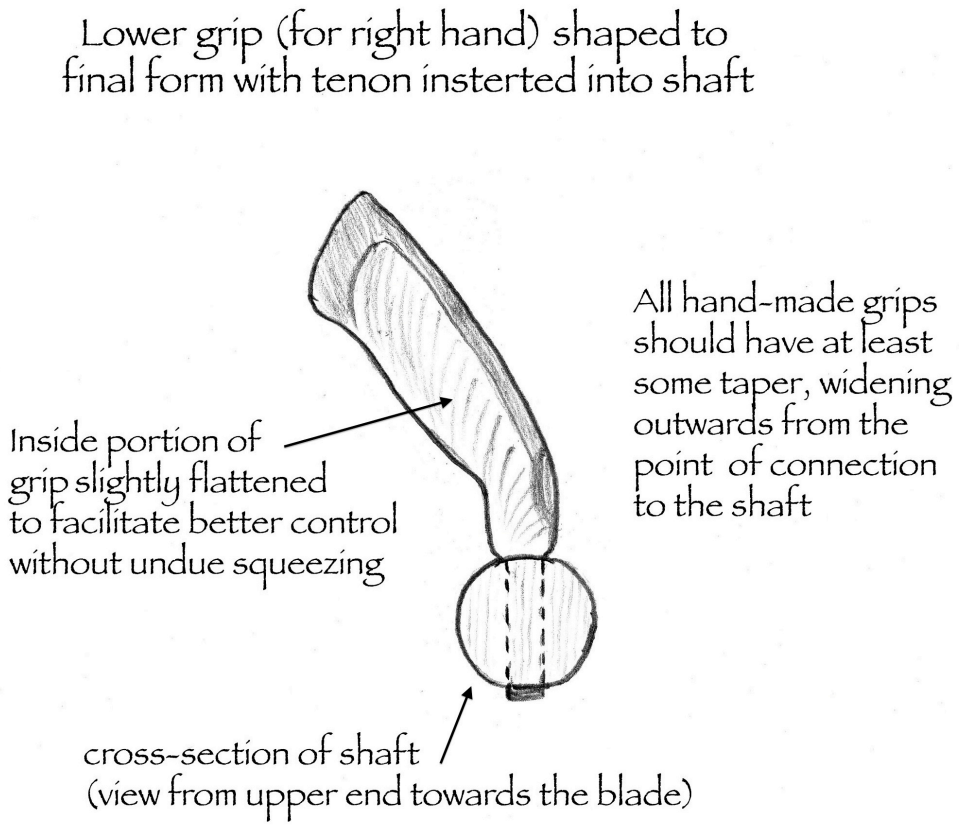
As a parting note on the subject of tools: In an emergency, a functional snath of the sort we are at this point discussing, CAN be made with a stiff, sharp-pointed small knife as the only

tool. Not a common little pocket knife, but something along the line of many traditional Scandinavian models – the design originating with wooden sled making as one of the Laplander life's needs in mind. Cross-grain cutting of a 40 mm piece of wood just takes a bit longer, the blade's knob's seat is no challenge for such a knife, and the making of a grip's mortise in the shaft can be helped with a small burning coal...

Making snath grips – a simple approach.

We have not found a simpler, more functional way to make grips on a home scale than shaping them from small diameter branches. This was common enough prior to the times when electrical lathes and routers became widespread in the industrial countries, and is still the approach of some small regional snath-makers in Europe. Where we broke away from tradition – on this count – is that we attach them by way of a *round* mortise / tenon joint (as in Figure 47). That appears to be something inconceivable in the old school of European snath-making joinery, where using glue to keep the joint tight was, until not very long ago, considered a poor practice. It is true that good glue makes up for the former skill of accurate workmanship, but here we confess to willingness in trading skill for a 'crutch'.

Figure 47.

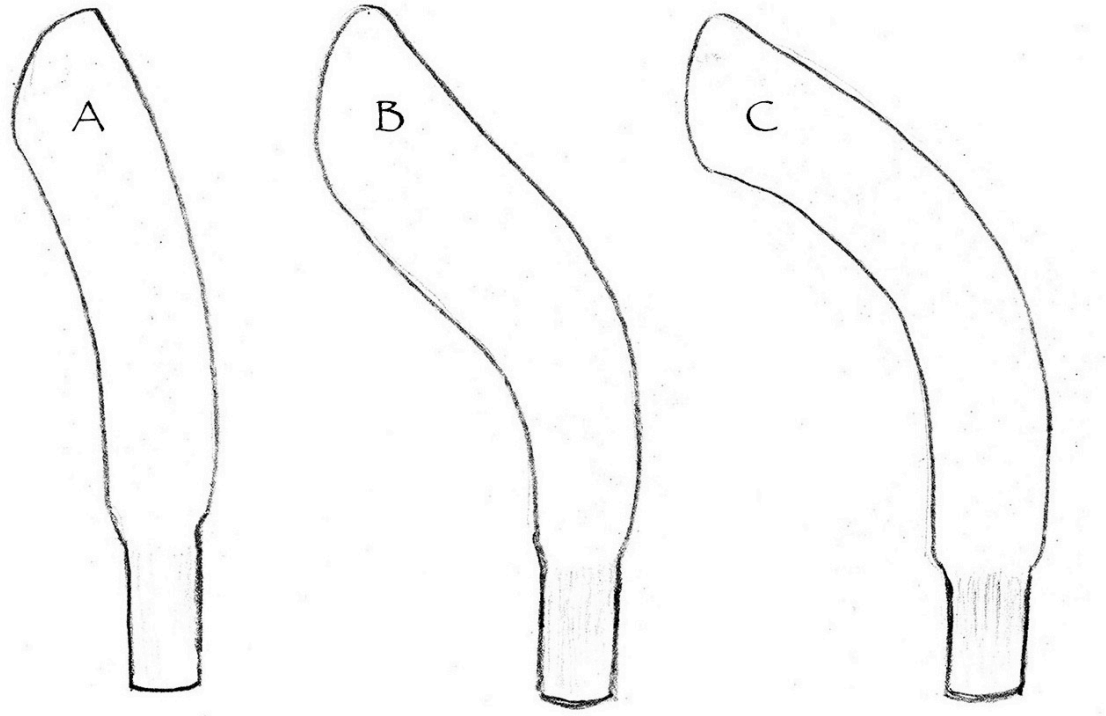


The shape of the grips

Consider the various curves illustrated in Figure 48, and then find something of similar shape from among discarded branches or small rounds of firewood. All three grip shapes (with variations in between) are suitable, though we consider ‘B’ closest to “ideal”.

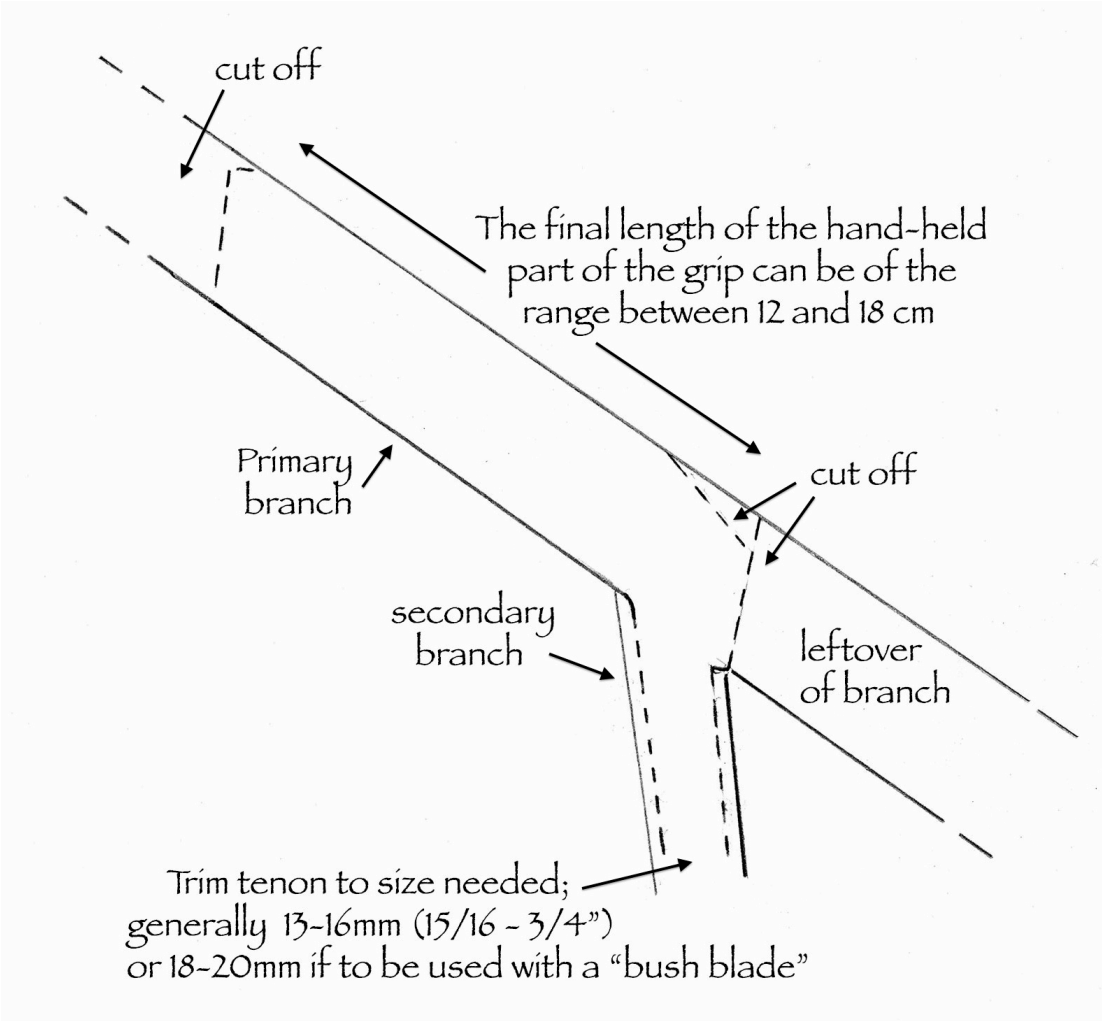
The differences between the shown curvatures can be used to help fine-tune the *Horizontal Balance* at the stage when the blade's relationship to the snath's bottom end is *already* more or less finalized, the mortise drilled into the shaft but the grip not yet solidly fixed. (Outlined below, in Step 12).

Figure 48. Some examples of functional grip shapes



As shown in Figure 48, a tenon can be shaped from the same size of raw material as will be needed for the whole grip. However, the easiest and least time consuming approach is to start with pieces 30-40 mm in diameter, which have smaller secondary limbs (10-20 mm) branching off at various angles. The straight (or very slightly curved) thicker portion becomes the part actually held in ones hand, and the smaller side branch becomes the tenon. Thus the grip-maker ends up with a tenon already closely sized for the intended purpose. See Figure 49.

Figure 49. A piece of a branch turned into a grip



Considering the ergonomic principles

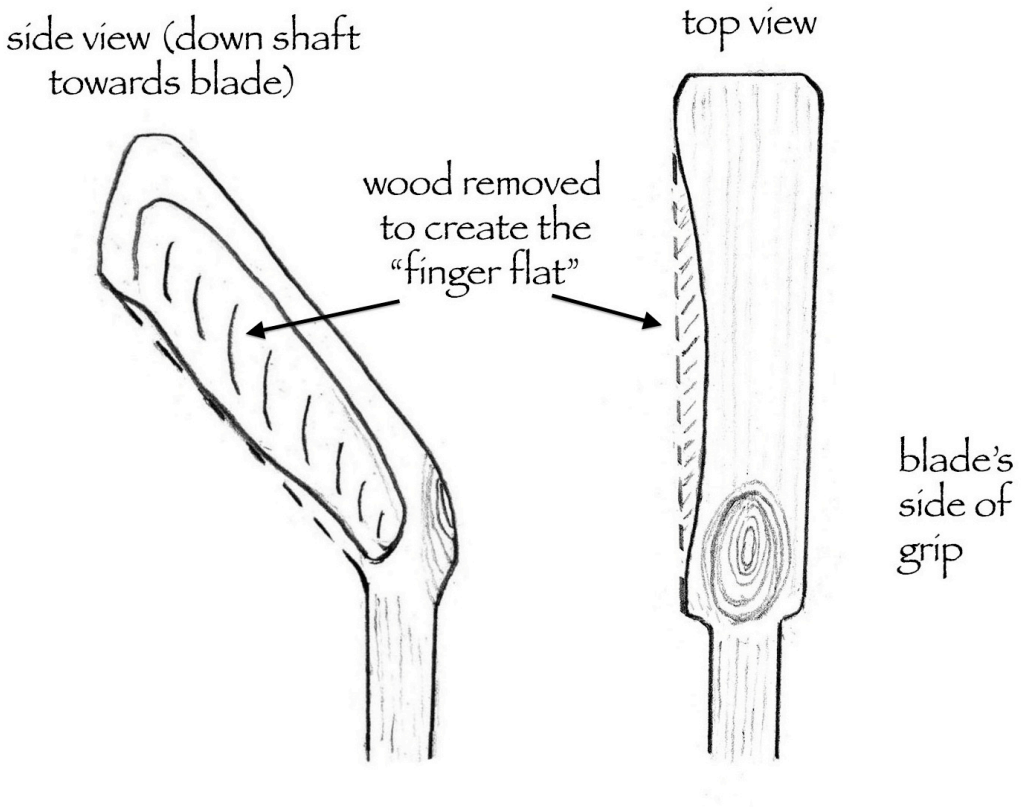
Most tools function best if their handles are shaped in such a way that minimal gripping is required for them to perform well. In the case of brooms, shovels or hayforks, a symmetrically round shape fulfills that role very well. With respect to snath grips, we believe that is not quite the case, however common it may be. In addition, we think that a snath grip ought to have a “knob” at its outermost end, because that *alone* reduces a *portion of* the (otherwise necessary) squeezing.

The quickest way to achieve at least some desired asymmetry (i.e. ‘improved functionality’ in this case) is to flatten the grip's inner side – a the one that the fingers rest against during use – *stopping short of the last 3-4 cm*, so as to leave a small “knob” (see Figure 50).

Our approach to this “grip-flattening” is to score the chosen finger-resting side of the branch with a few shallow and diagonal hatchet cuts, and then remove the chips in-between by directing strokes of equal depth in the opposite direction. Then finish to desired smoothness with a rasp or a carving knife.

It is convenient to perform this step before all the superfluous portions of the branch are cut off; leaving 15-20 cm of extra material can interim act as a convenient handle and thus put some distance between the hatchet's sharp edge and the person's fingers.

Figure 50. Shaping of the grip's “finger flat”



Making the snath's shaft

The sequence of steps in the guidelines below is somewhat different than has been the norm. Commercially, snaths are made from start to finish without much regard for exactly which blade the new owner may wish to use with it. Such an approach was likely born during times when blade options in any one region were limited, and it was easier for the village snath maker to figure out how to make his product be *almost* fit for the respective blades available in the local store, and leave the final fine-tuning to others. Well, much has changed since those times, and not always in line with changes in blade supply. What has consequently suffered are the details in how old or contemporary snath designs can

gracefully accept whatever blade may be obtainable these days, whether in regional stores or via mail-order.

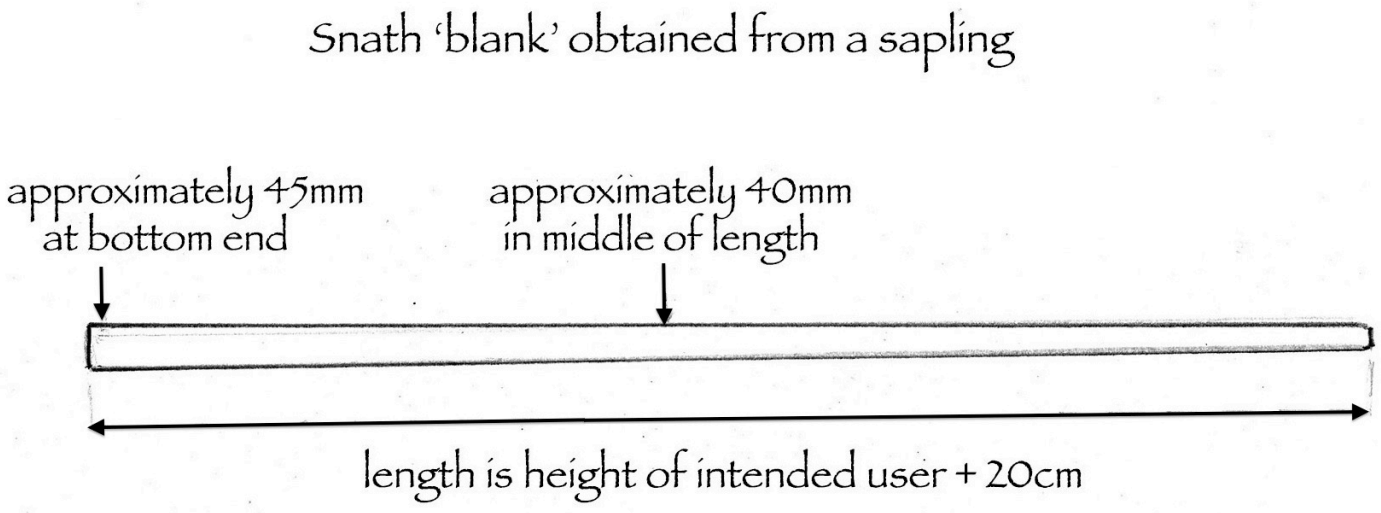
The diversion from tradition we take here is that we assume the blade to be used with the snath being made is *already* available for the snath maker to be guided by during the process. That is how we have fitted snath/blades for a rather long time.

Then one bright day several years ago it occurred to us to tentatively attach the blade to the shaft BEFORE the grip's exact position is ascertained. That turned out to be the single most significant among our few snath making "revelations". This one, in particular, takes much of the guesswork out of the blade-fitting process.

We shall start this segment with a piece of wood, still in the round as it came from the forest. It becomes the main shaft, and will be outfitted with a grip also shaped out of piece of a branch. No worries if the whole shaft is not *completely* straight; in many cases the lack of straightness can sometimes be advantageous.

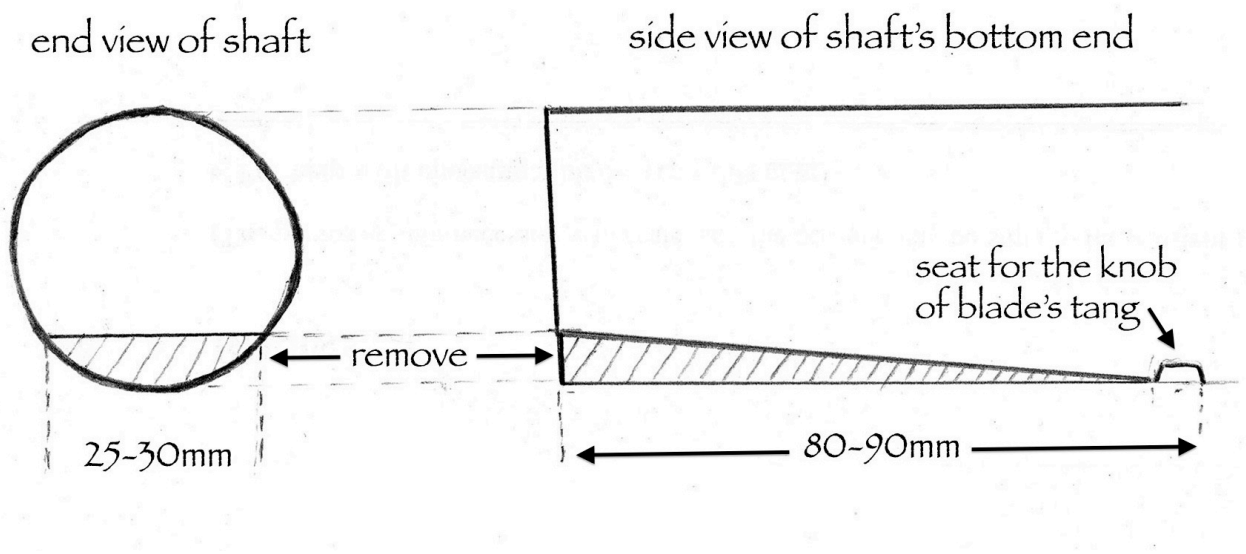
Step 1.
Obtain a relatively straight piece of wood about 20 cm longer than the height of the intended user, and approximately 40 mm in diameter *near the middle of its length.* This is somewhat longer and thicker than necessary but will provide a bit of room for error. Such a piece, illustrated in Figure 51, might measure 45 mm at its thicker end. The minimum depends on what species of wood is used, the weight / length of the blade to be used on that snath, and the sensibility of the person swinging the tool...

Figure 51.



Step 2.
Flatten approximately 8 cm on the underside of the shaft's end chosen as the one to hold the blade (Figure 52). That, in case of the ‘Eastern’ snath, would usually be the thicker of the two ends. The 'flat' (and it should be *flat*, not slightly rounded) needs to be only wide enough to accommodate the tang well enough without a wobble, no more. In addition, if there is some back and forth curvature in the raw piece, assure that the bottom 15-20 cm which is to receive the flat, is *parallel with the overall length* and does not make a slight deviation to either left or right.

Figure 52.



Step 3.
Make a seat for the tang's knob. (Don’t follow the seeming norm; refer to Figure 23 in Chapter 5 for its placement)

Step 4.
Attach the blade, temporarily. At this stage, to use an adjustable clamp of some sort may be better than an actual scythe ring because in order to allow most common scythe rings to slide over the tang would necessitate the sideways wood removal of that (40-45 mm wide) shaft. And, as will be detailed below, leaving extra material in that area *for now* may 'save the day' later.

Step 5.
With the blade flatly and *somewhat* firmly fixed against the shaft, check the *Hafting Angle* and shift the blade forward or backward slightly as needed to obtain the desired adjustment (refer to Chapter 5). Draw onto the bottom flat of the shaft two visible lines hugging both

sides of the tang. (They will be helpful once the end of the shaft is being shaped so as to accommodate the actual ring.)

Step 6.
Set the blade/shaft unit (with the blade down) alongside the body of user-to-be, (see Figure 2 in Chapter 3) locate the *point of the hip*, and then transfer that measurement onto the shaft by making a visible line with a pencil or a knife. This will be the *initial orientation point* for the placement of the grip – though *not* exactly where the mortise for the grip will be made. To settle on its exact distance from the blade, consider the following:

a) We suggest that beginners at this task leave approximately 8 cm of extra length as a safety measure – a piece which will be cut off later. (Reasons explained in Step 14.)

b) For the trimming version *of this style* of snath we suggest the grip be placed 5 cm *above* the mark (arrived at by finding the person's point of the hip). For use with blades 70 cm or longer or in relatively open terrain, place the grip 15 cm above that mark. As briefly discussed in Chapter 3, there are many uses for a 'multi-purpose' snath version – with the grip positioned halfway between the distances suggested above.

Combining these considerations, *at this stage* in the process, the respective task-oriented distances of the mortise mark should be 13, 18 or 23 cm (*above* the person's point of the hip).

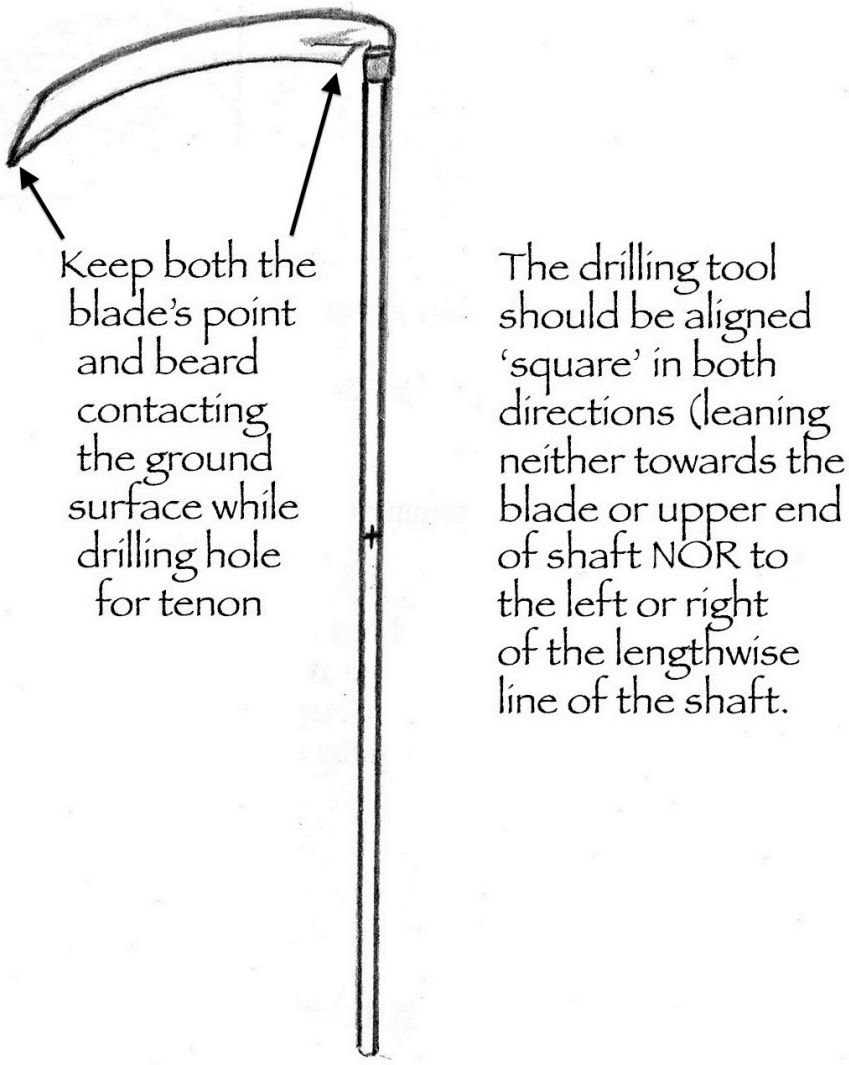
Step 7.

Lay the unit on a flat surface with the blade's edge downwards and see to it that both the blade's point and the point of its beard are touching the surface (see Figure 53, below).

Step 8.
With the blade contacting the surface as stated above, place another (lengthwise) line in *exactly* the center of the shaft, crossing the previous mark so as to have a little cross indicating the center of the mortise for the grip. Now drill the hole – with the drilling bit *positioned directly perpendicular to the shaft, and care taken to also keep it square the other way (left to right) while drilling*.

A 16 mm (3/4") size round hole (same, of course, for the grip's shank) is a good safe average for a variety of applications. In plenty of instances we use only a 13 mm (5/8") hole/grip's shank, and have used such 'weak' units for years. Conversely, for the so-called bush type work the mortise / tenon diameters can be increased to 18-22 mm.

Figure 53.

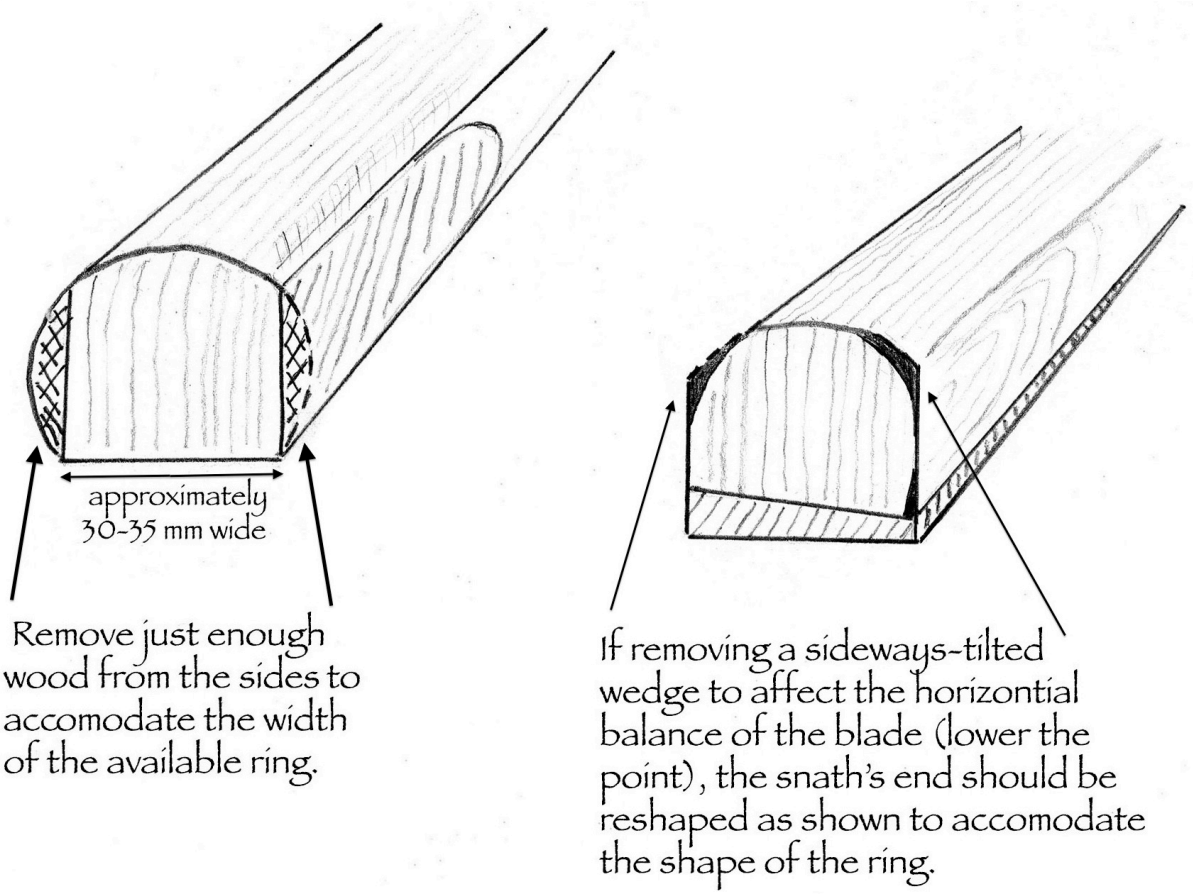


Step 9.
A grip can now be tentatively inserted but *not yet glued.* If accurately sized, it should fit snuggly and, even without being permanently fixed, make some testing in the field possible – in order to settle the grip's final position. (More on this below.)

Step 10.
At this point the blade – unless its tang is very steep (35 + degrees) – may not yet 'Lay' against the ground surface flat enough. In that case, an additional wedge of wood will need to be *removed* from the bottom end of the snath (as shown in Figure 54).

Step 11.
Before removing that extra material from the bottom, the sides of snath's end should be partially trimmed down to the width that will accommodate the intended ring (Figure 54).

Figure 54.

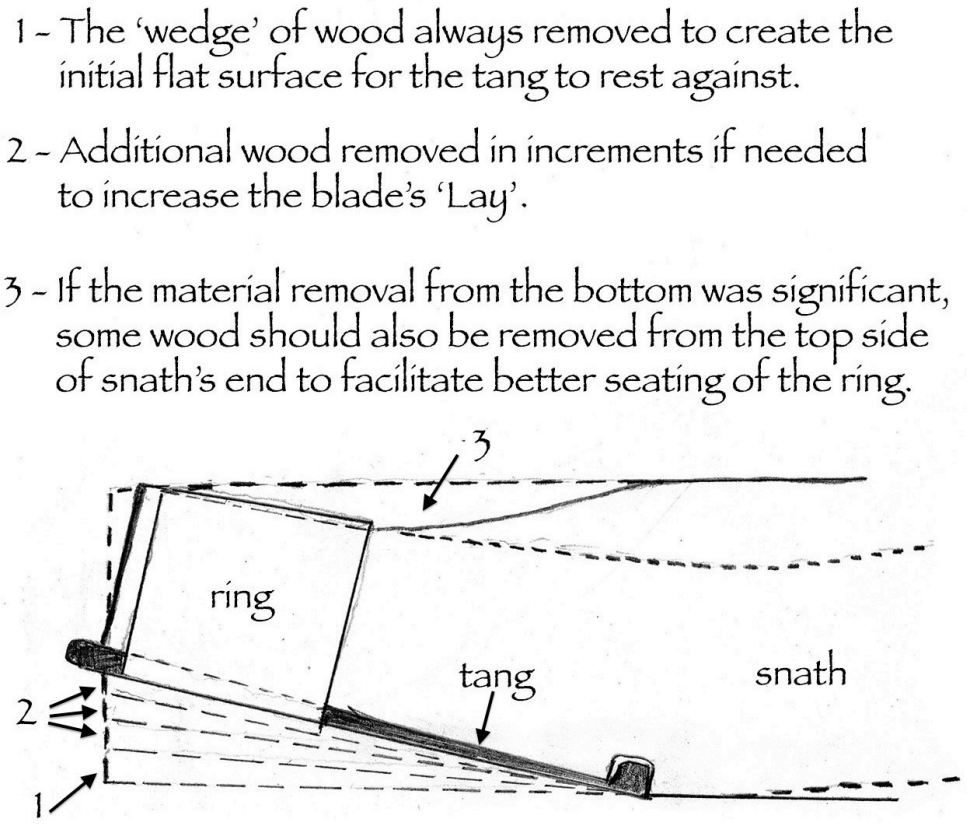


Onto the (now squared) sides, mark the lines of the additional wedge to be removed from the bottom in order to get the blade's final *Lay* as desired. Exactly how much wood to remove in order to do so will initially be a matter of 'somewhat calculated' guess; it is best to do so carefully, in perhaps 2-3 mm increments, or even less. Keep in mind that at this stage the snath is still longer (by the extra 'safety measure' of 8 cm) than its ultimate length, and that when cut off to final size the *Lay* will be somewhat affected – in that the blade's edge will end up *slightly further from the ground*. This can be compensated for beforehand, or an additional thin wedge of wood may be later removed from the bottom 'flat' of the finished snath (Figure 55, below).

Step 12.
Take the unit into both hands and simulate the mowing posture with the blade not quite

touching the ground. Focus on how comfortable the position of the right wrist feels *when the blade's point and beard are equidistant from ground surface.* Move the blade's point up and down, slowly, and see if in another position (than the shape of the present grip pre-dictates) the wrist would feel more at ease. If another grip, either straighter or more curved, is available (Figure 48) insert them both in turn and repeat the test. For instance, if in the most comfortable wrist position the blade's point has the tendency to hang a bit lower than its beard, inserting a grip which is slightly more curved will improve the unit's *Horizontal Balance*.

Figure 55.



Step 13.
Assuming the blade presently feels well balanced and has the desired *Lay,* as the final touch *before* permanently affixing the grip we suggest one more test:

Find a patch of semi-dense grass and spend a few minutes actually cutting with that almost finished new unit. Try to determine if the grip might feel more comfortable turned *slightly* outwards instead of pointing directly forwards (see Figure 56). Take a few strokes with it while it is turned a bit to the left, then right, and then back again. Repeat with slightly different

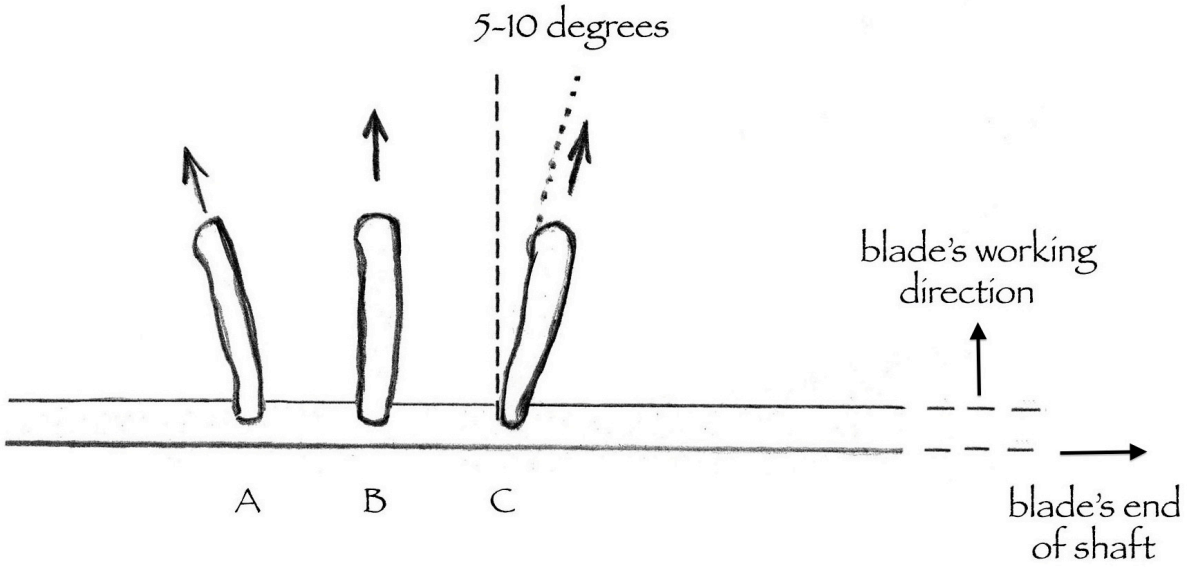
positions until it is fine-tuned to the “best” spot. Then mark a line on both the shaft and the grip, so that when the grip is pulled out to apply the glue (and/or rivet) it will, by lining up the marks, be replaced in *exactly* the same position.

We think that a *slight* (maximum 5-10 degrees) turn outwards (to the right, towards the blade, as in ‘c’) of the grip is preferable to exactly perpendicular to the snath. But this is something that ought to be decided by the individual user. Once that position is settled the grip can be permanently affixed, and the scythe (consisting of the snath and *the blade it was being made for*) is ready to be used.

Figure 56.

A, B, C; three positions arrived at by roatating the not-yet-glued tenon in the shaft during a short preliminary mowing test

Although “B” is most common, we consider “C” the most “hand friendly”



Step 14.
This step can be dispensed with once a person makes one or two snaths from start to finish and has learned how to avoid the possible mishaps without the need for a ‘safety measure’. But for now – in line with the (“safety measure”) approach we took as of Step 6, the snath can be cut down to the size it was originally calculated to be for the height of the user and one of the respective mowing tasks (trimming, field, or multipurpose, along with the terrain gradient variations) before the extra 8 cm were added to the shaft’s measurement.

This step consists of accurately transferring both angles (up/down and sideways) of the existing snath's flat 8 cm further up the snath, cutting off the surplus and re-making the 'flat' and the seat for tang's knob.

Two additional steps can provide a finishing touch; they are not essential, but recommended:

a) Smoothing the upper end of the shaft
b) Trimming the extra weight of the shaft's bottom half.

Regarding a):
Either just before or after the grip is fixed in place, the upper half of the shaft may call for some attention, especially if it has some knots or other rough spots. While in use (and depending on the type of use) the left hand will sometimes end up sliding up and down the shaft within a 25-30 cm range, sometimes more. For this reason the upper third or so of the shaft should be smooth and comfortable size-wise – of smaller diameter for small hands, larger for bear-paws).

Regarding b):
This step is less important to the actual function of the snath, but it can be a matter of an additional few minutes of time we consider worth taking. The shaft's dimension in the length between the blade and the grip has, up until now, received no attention and is, presumably, still 40-45 mm in diameter. An average snath's shaft needs not to be so thick and, depending on species of wood it is made of, it can be somewhat lightened. Try, initially, trimming some material off the top and bottom of the round, starting 5-10 cm below the grip and blending the removal in approximately the same thickness with the spot where the hole for the tang was drilled.

Snath sizing / adjustability; the multi-grip concept

Historically, snaths with easily adjustable grips were uncommon; even today they are not the global norm. [46]

The typical commercial approach to "adjustability" is to provide an arrangement whereby the grips (held in place by some bracket and/or small bolts) can be easily loosened, moved to alternate positions along the shaft and re-tightened. With that accomplished the unit is then referred to as "adjustable snath" – a term we consider misleading.

[46] Up until sometimes soon after WW2 the only two examples we are aware of were the sliding grips on traditional Russian and American (possibly UK) snaths. With the proliferation and widespread availability of the cheaply produced metal snath models with simple sliding grips – widely available throughout Europe and elsewhere – it is becoming more so the case.

What the adjustable *grips* of such a snath *do* allow is the accommodating of (up to a point) the user's height, or (with lesser effectiveness) the nature of work/terrain. Thus it could be said that they provide for diversity of users (and just for now let's pretend that they always do that well, which is also not "the whole truth"). What they do not automatically accommodate, or only sometimes and/or partially accommodate, is the diversity of blades' tang settings and thereby the blade/snath unit's harmonious fit. And because a snath without a blade is a useless thing for the task it claims to be, such snaths at best deserve the title "half adjustable" (that half being the user). Calling them "adjustable" – without qualification – gives the uninitiated the *impression* that they be adjusted so as to fit everyone, in any terrain and function well with a variety of blades. Mindful of that fact, we have as of long ago, and throughout these guidelines referred to these popular "adjustable snath" versions as "snaths with adjustable grips" instead.

For a snath to be truly adjustable it would need to have a metal joint somewhere within its bottom half OR have a piece of hardware attached to its very end that itself holds the blade, either of which contraptions would have to be simultaneously adjustable in 3 ways – from side to side, up-and-down and *rotatable* sideways. While this would be technically possible (and has been experimented with) it was given up on due to (you guessed it!) higher production costs.

We have no intention of getting that fancy; the path we pursue is helping people come to understand the underlying concepts and make snaths to suit each specific need without incurring cost aside from one's time.

A very practical arrangement is to place two grips – *both for the same hand* – into the traditionally one-grip shaft. Doing so can make such a snath be both partially and 'instantly adjustable' regarding length – that is, one for trimming and the other for field mowing (for a person of the same height, of course). The principle approach can also be applied while making what presently are two-grip snaths. Though we have not heard of anyone else making such a bizarre suggestion, among other aspects of snath design, we have played with this one in the field enough to feel that is a worthwhile/useful concept to present.

The awkward thing now is to throw the snath nomenclature we have used thus far for a bit of a loop, and quit (at least in a portion of the cases) referring to the Eastern style snath as a "one-grip snath" – a term which many people in the scythe circles presently understand. But because a certain amount of terminology-related confusion on scythe matters now appears to be the norm, and has to be reckoned with, it should not be too difficult to tweak the term in question here to something like 'The Eastern Multi-Grip Snath', no? In any case, that is the snath version we turn to now.

It really is very simple. In Step 6 (of the snath making process above) when the measurements to match the snath to its future user is being made, the snath maker can

additionally take the route of providing an *extra* grip (or two) for the same (right) hand. Such an approach can make *the snath itself* better suited for *both* 'trimming' and 'field' mowing than if it only featured the standard one grip. Taking this concept yet another step further, a third grip can be added, referred to as a 'multi-tasker', but in this case an enhanced one. Essentially a 3-grip snath. (A "three-gripper"?)

Keep in mind that we are talking of *all these grips to be for the same hand*. Plus, the grips are of the up-and-forward style (really the only ones suitable for the 'Eastern' style of snaths).

With the (round) mortises for them placed between 5-7 cm from each other, they can quite effectively fulfill the respective person's *grip* (not blade) adjustability needs, not interfere with each other while held, and not materially compromise the overall strength of the snath. One issue that may, perhaps, concern some folks could be the 'extra weight'. But the grips (when dry) can weigh as little as 50-60 grams each; we think the advantage of such *instant adjustability* fully justify so little extra weight *in that portion* of the snath.

Of course, for units dedicated to either 'trimming' OR 'field' moving, and used where the gradient of terrain does not change much, those extra grips would be superfluous. The situations where these multiple grips are most appreciated is in a very varied terrain – one changing after only little distance from perhaps level to a ditch followed by a steep incline, etc. – with all of them desired to be mowed in 'one go'. In situations like these (and they are not rare) it is far quicker to shift hand positions and continue more or less with the same bodily comfort than re-adjust the grip/s of an "adjustable snath" every few feet. Though the latter is theoretically possible, in real life scenarios nobody is likely to tinker with adjusting the grips so frequently. Well, the multiple grips help maintain the most suitable distance between the right hand and the blade, thereby reducing the bodily discomfort during those short spells when the single (adjustable) grip cause the snath feel momentarily too short or too long.

Figure 56 (above) more or less illustrates what the grip-featuring portion of this odd model – "Multi-Grip Eastern snath" – would look like when finished, except we suggest that <u>all</u> (2 or 3) grips are affixed in the position shown in 'C'.

As already mentioned, the concepts discussed in this section are readily applicable for the making of the typically two-grip snaths. Adding this touch we have made and used 4 and 5-grip snaths – and they function very well in similarly diverse situations mentioned above.