



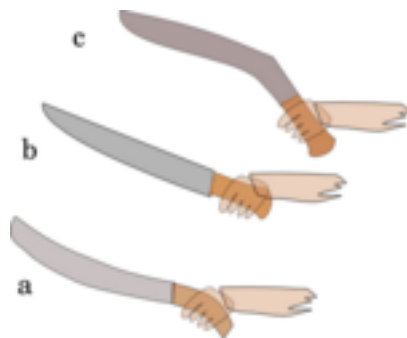
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User and (big) knives performances.

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- Gear reviews and tests - Edged tools -



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Description :

Considerations on the influence of the user on knife performance.

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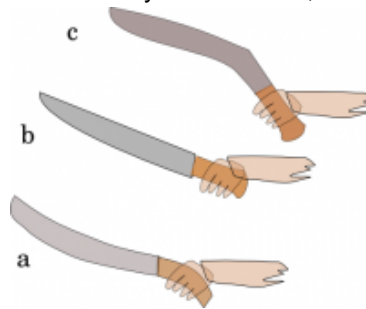
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This article is an essay to understand what makes a knife cut, independantly of the material it is made of.

A consideration on blades geometries

Blades of chopping knives enter roughfully into 3 types, the forward curved blades, kukri (khukuri), bolos, falcatas, the straight blades, modern knives machetes, and the backward curved blades, some parangs, goloks, sabres, katanas and other sabres...

Each geometry presents advantages for a number of styles and uses, from chopping to slicing.



Outlines

a): backward curve.

b): straight.

c): forward curve.

Backward curved

Backward curved blades are excellent choppers, because when used with a rotating draw cut, their cutting power on soft material is simply impressive. That is the power of the fearsome sabre cut.

For slicing, they are useful, as the slight belly can be used with advantage, as the tip may simply protrude in the air, but the general curve helps slicing, and general use, it can be used for hashing, or even as a sickle, though may be not the easiest geometry for that.

Forward curved

Forward curved blades also make excellent choppers. They can be often used in a variety of cut types, from the draw cut to the "inversed" draw cut. While knives presenting only a recurve can rather be called "sickles". Knives of this type often present a belly and a recurve, as with the kukri and bolo, and therefore can do a multitude of tasks and be used into harder material than simply a sickle.

For slicing, well, it depends what and the exact geometry, for sure a sickle may not be a kitchen knife, While a kukri does a lot of things quite well, thanks to its usable belly.

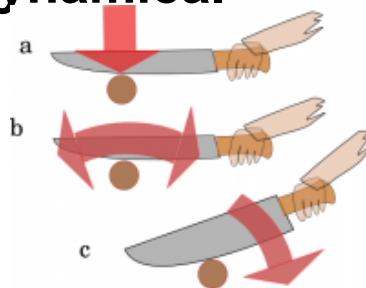
Straight

Purely straight edges well are in between the two. A purely straight edge without a belly may also see limited use, but on a machete, by example, it does allow to be used as a chopper or a slicer in a variety of strokes.

A consideration on blades profiles

Blades profiles will indeed greatly influence the efficiency. Read more about profiles at : [Sharpening experiences](#)

Types of cut, non dynamical



Types of cuts

a): Pushing.

b): Slicing.

c): Rolling.

There are three basic types of cut.

- (a) Pushing, Push cutting, when the edge is pushed through the material. as is the case for a razor, a chisel. Generally adapted to softer material. Pushing requires extremely polished and smoothly profiled edges in order to minimize adherence and maximize ease of penetration
- (b) Slicing, Slice cutting, when the edge is used in a sawing movement the material. Slicing requires coarse or dented edges in order to maximize the sawing movement. Kitchen knives are often used this way. Cutting ropes and tough fibrous materials requires slicing.
- (c) Rolling, rolling the edge over the material, giving a rotation to the edge. Rolling requires like pushing polished edges, and thin profiles. An ulu, may be used this way, some round bladed leather knives too.

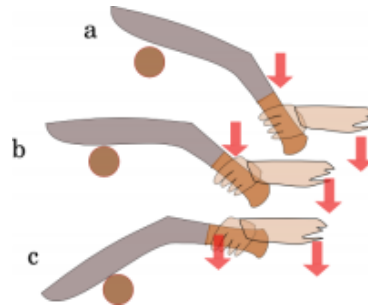
Indeed, other uses are possible like piercing, but this mainly requires an adequate tip.

The combination of any or all of these together will be called shearing. and makes cutting in general more efficient.

Chopping is the act of push cutting after having accelerated the blade before it encounters the material, using it's inertia from it's mass and speed in order to obtain a deep cut. Speed and inertia add dynamics.

Chopping: cutting under dynamics

These movements are shown here with knives, but they could be imagined using different sort of axes, sickles or other dynamical cutting tools.



Chopping

The normal movement of chopping, here shown with a kukri.

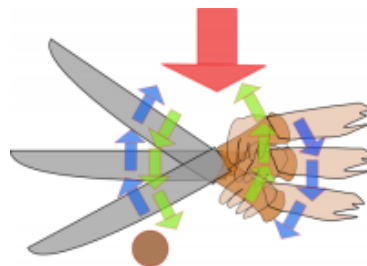
a): blade dragged a lot behind hand, creating a shearing effect.

b): blade at flat impact, push cut.

c): blade forced forward creating a shearing effect.

Depending on how a blade is held, different effects can be observed. the position b) is the most standard one, and results in the edge simply push-cutting. This is here demonstrated using a kukri geometry , but is possible with all kind of blade types. The position a) creates a shearing cut, because the edge enters the material at an angle. the infamous guillotine's blade, angled at 45 degrees is said to improve cutting by 40 percent on a variety of materials (not to say heads). The c) position creates the same kind of effect, but is also more dangerous as it makes the movement prone to glances and therefore changes of direction.

Rotating or rolling



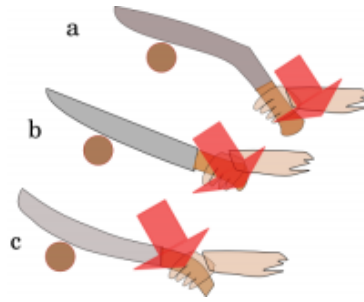
Rotating

This shows impact rotation.

Two possible ways: in the direction of the green arrows (tip down) or in the direction of the blue arrow (tip up).

Rotating at impact will also create a moderate shearing effect. The rotation can happen in two directions, tip down and hand up, or tip up and hand down. Rotating is best done when associated with a draw cut or inversed draw cut.

Draw cut or sabre cut



Draw cut

Here is shown using different blade geometries how a draw cut can be performed.

a): using a kukri.

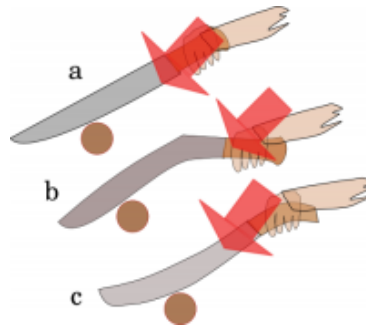
b): using a straight knife.

c): using a golok.

The draw cut or saber cut is achieved by pulling the knife at impact. Another way is to drag the blade slightly behind the hand with the arm in a rotational movement from the shoulder. This creates a strong shearing effect, as the edge push cuts and slices in the same time. It is in the example shown with various blade types. Some blade types make it instinctive, some more difficult.

It is a surprising thing, as one can cut 6" sapling for a day in 3 or 4 strokes and then suddenly master a draw cut that flies through it at first stroke, the blade not even feeling it or being stopped.

Inversed draw cut or wrist snap



Inversed draw cut

Here is shown using different blade geometries an inversed draw cut.

a): using a straight knife.

b): using a kukri.

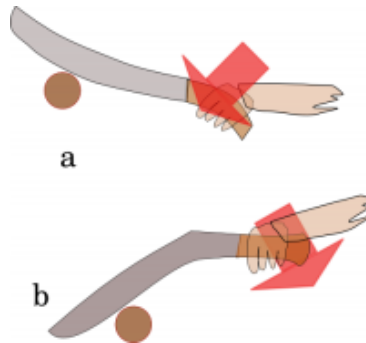
c): using a golok.

The inversed draw cut consist of pushing the blade away instead of pulling it down. most people describe it as a wrist snap at the moment of impact or slightly before. Again, in this example it is shown using different geometries and some blade types like the kukri are better than others at that.

User and (big) knives performances.

Like for the draw cut, the cutting power is much stronger, though it is difficult in the extreme to make it as powerful as an extreme draw cut, but the blade may not be stopped by what usually stops it.

The forced cut



Forced cut

Here is an example of a forced cut,

a): using a backward curved blade.

b): using a forward curved blade.

The forced cut happens when the geometry's natural tendency is used to force the edge in the material to cut, by pulling it in or pushing it in depending on the blade geometry. It could be thought that it is similar to a simple chopping movement using a flat bladed machete, hitting flat, but not exactly as the shoulder and arm and torso are really implied into pulling, or pushing away laterally, giving it even more power.

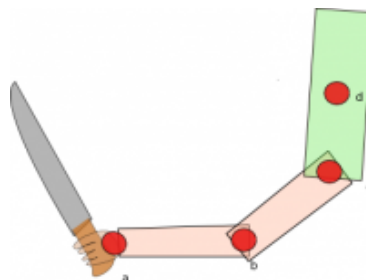
It is generally applied by people using great force, which makes it quiet dangerous in case of miss, glance, or deflection.

Combinations

Most of the time, an effective movement will be a combination of the previous basic moves.

Rotation points

Indeed nothing is simple, and any of these moments is subjected to anatomy, and while chopping or using a knife in general, a lot of joints are used to create either translations or rotations or complex rotations, in order to create the desired effects, and increase or lower power.



Points or rotation

Here simplified:

- a) wrist
- b) ankle
- c) shoulder
- d) spine

So, indeed efficiency while chopping, is a question of coordination, and using the right dose of power. Often gravity is quite enough to achieve the desired effect.

Safety

I insist that full full force blows are prone to lead to serious injuries. The correct manner is to speed the blade, and then let it impact. This will save the handles/blade junctions, is less tiring, and will produce less unsafe glances deflections and cut-through. Working with gravity is the right way. At least start the learning curve this way, after it is easy to add power properly.

Conclusion

This article is just written to explore and explain different cutting techniques. Use the right technique, but be aware of the dangers and read [Handling and working with knives, big blades, axes and hatchets.](#) before doing anything stupid.

Post-scriptum :V1.0 missing a paragraph on profiles. This article is for the moment rather in a draft state, comments welcomed.