Soft-Back Draw

This technique involves fully hardening the tool steel or plain high-carbon steel blade, and then carefully using a torch on the spine to 'draw-out' or soften the spine, in order to provide the desirable selective hardness. This technique is described, once again, in Wayne Goddard's "The Wonder of Knifemaking," and is most readily associated with the knifemaking of master-smith Ed Fowler. Again, a visually striking temper line results, though this is a highly practiced skill.

Our process:

First you must decide wether you wish to leave the temper line in on the finished blade; if so, finish the blade completly after the first draw.

1. After blade is destressed, place the blade with its edge in distilled water to avoid mineral deposits. Only place 1/8" or so of the blade in the water. Water may also be painted onto the tip of the blade (1/8" of the edge) to prohibit the the edge of the steel from being drawn out near the tip.
2. Start at the tang of the blade, pre-heating the steel slowly and evenly with the torch to avoid any heat shock. This process requires experience with the torch and can be practiced with any old bar of steel. The temper line will unfold in front of you. Keep in mind that there is a small delay between the heat of the torch and the temper lines that will appear. This causes you to led with the torch, how much will depend on the mass of steel being heated; practice is the solution.

3. Allow to air cool

4. Destress

5. Allow to air cool.

Oxide color/app. temp./result
yellow = 400 deg F. (destress range)
straw = 450 deg F.
brown = 480 deg F.
purple = 550 deg F.
dark blue = 590 deg. F.
greenish blue = 630 deg F. (Spring range)
gray = 1000- 1400 deg. F (quick anneal)

How soft is soft enough?
It is clear to us that the soft back method is applied differently between different makers and their various blades for diffent applications. We use this method on the camper and these are our objectives:
1. Make the blade edge (app. 1/3 of blade) as hard as workable.
2. Make the the spine as soft as needed to pass the flex test*, while keeping the spine as hard as possible so the blade may reach its potential strength and toughness.
One must always consider that as the spine of a knife becomes softer, the force required to flex the blade decreases.

* currently our flex test method is as follows: place 1" of blade tip in a fixed vise. Flexing the base of the blade until it is perpendicular to the blade tip (held in vise).