The Three-Dimensional Hand, Part II

Opening the Toolbox

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ABSTRACT *This article focuses on the phylogeny of the human hand. Paralleling his earlier work on the evolution of bipedalism from* Ardipithecus *through* Australopithecus *to the genus* Homo*, Boblett examines the no-less-radical development of the hand. Though our hands look far more similar to those of our simian ancestors than is the case with our feet, the changes in structure and function are no less profound. Boblett concludes with some practical advice on self-care of hands for Rolfers.*

Cook Ting was cutting up an ox for Lord Wen-hui. As every touch of his hand, every heave of his shoulder, every move of his feet, every thrust of his knee — zip! zoop! He slithered the knife along with a zing, and all was in perfect rhythm, as though he were performing the dance of the Mulberry Grove or keeping time to the Ching-shou music. "Ah, this is marvelous!" said Lord Wen-hui. "Imagine skill reaching such heights!" Cook Ting laid down his knife and replied,

"What I care about is the Way, which goes beyond skill. When I first began cutting up oxen, all I could see was the ox itself. After three years I no longer saw the whole ox. And now – now I go at it by spirit and don't look with my eyes. Perception and understanding have come to a stop and spirit moves where it wants. I go along with the natural makeup, strike in the big hollows, guide the knife through the big openings, and following things as they are. So I never touch the smallest

ligament or tendon, much less a main joint. A good cook changes his knife once a year – because he cuts. A mediocre cook changes his knife once a month – because he hacks. I've had this knife of mine for nineteen years and I've cut up thousands of oxen with it, and yet the blade is as good as though it had just come from the grindstone. There are spaces between the joints, and the blade of the knife has really no thickness. If you insert what has no thickness into such spaces, then there's plenty of room – more than enough for the blade to play about it. That's why after nineteen years the blade of my knife is still as good as when it first came from the grindstone. However, whenever I come to a complicated place, I size up the difficulties, tell myself to watch out and be careful, keep my eyes on what I'm doing, work very slowly, and move the knife with the greatest subtlety, until – flop! the whole thing comes apart like a clod of earth crumbling to the ground. I stand there holding the knife and look all around me, completely satisfied and reluctant to move on, and then I wipe off the knife and put it away." "Excellent!" said Lord Wen-hui. "I have heard the words of Cook Ting and learned how to care for life!"

Chuang Tzu (Watson 1964)

This article is very simple. It addresses the versatility of the human hand and the implications of this versatility for our self-care as Rolfers.

It is a continuation of my first article in this issue, "The Three-Dimensional Hand, Part I: Get a Grip!" (see page 34). That article consisted almost entirely of practical advice about stretches and equipment designed to facilitate stretches. My purpose was to give you tools to share with your clients – when appropriate.

I promised to save my usual phylogenetic musings for this companion piece. However, it would be a mistake to believe that I put all the practical stuff in that article and all the theoretical stuff in this one. Here, because it dovetails so neatly with the overall trend of human evolution, I present not a list of exercises, but an overall philosophy of how our hands evolved and how we Rolfers may best preserve these valuable tools.

So, my contribution is not new knowledge, but an encouragement to use knowledge we already have. As Rolfers, we were all taught to avoid overspecialization in our use of our hands as tools. But let's be honest: how many of us are tempted to fall back on one or two tried-and-true techniques, rather than consciously varying our use of the different parts of our hands? As Jan Sultan and a score of other teachers can testify, I myself am a recovering thumb-addict. And given the size of my itty-bitty thumbs, that addiction to using my thumbs was not smart! Therefore, as an addict among addicts, my job here is not instruction but persuasion. I am not teaching something new, but helping to break old patterns. I begin with the backstory, the evolution of a hand that keeps adding functions.

I. The Expanding Swiss-Army Knife

Bipedalism in human evolution did not evolve in one or even two stages. This is hardly news. However, anthropologists have focused primarily on the development of the foot in the various stages and *methods* of bipedalism. On the level of genus vs. species, the fully abducted big toe of *Ardipithecus* leads to the multiple-use toe box of *Australopithecus*, which in turns becomes the more specialized runner's foot of the genus *Homo*.

What were our hands doing in the mean time? Well, as they were less and less involved in tree-climbing (which shows in fingers becoming less and less curved), they took on a variety of other functions. In this way – and this is the underlying theme of what I am trying to convey in this section – the human hand does something that the foot does *not* do. Our hands express what is happening in the human body as a whole: a trend toward greater and greater generalization of movement compared to most other animals.

Instead of specializing, as our feet have done, our hands have taken on more and more tasks. This confession is hard for me to make, having spent so much of my life emphasizing the multiplicity of things that feet can do. But truly, the hand is the Swiss Army Knife of human evolution. More to the point, our flexible and multipurpose jack-of-all-trades bodies find their best expression in our amazingly versatile hands.

Here's a very complicated story made embarrassingly simplistic.

The hands of *Ardipithecus* were not the hands of tool-users. However, they were already adding something to the usual job of helping these animals climb around in trees: they were carrying food. And not just carrying food, which a chimp can do, but bringing lots of food over relatively long distances to share with others, something that requires walking on your hind legs. This is probably why an adult male *Ardipithecus* had relatively small canines compared to an adult male chimp. Instead of fighting other males for access to breeding with females, these new creatures resorted to something easier but apparently radical at the time: bribery!

This is old news in anthropology, but not (as far as I know) in the context of an *addition* to the uses of the hand. The *Ardipithecus* had curving fingers and hand-like feet, indicating a style of locomotion that still required a lot of climbing. Bringing stuff to share was an addition, rather than a complete replacement of older functions. That's the takeaway here: hands were now free to start taking on new tasks, even if only occasionally. And that was the beginning of a long journey.

Only with *Australopithecus* do we start to have tools – at least tools that were shaped, instead of objects just picked up,

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Figure 1: Bare Knuckles.

used, and discarded. But shaping tools requires a different hand. Among other things, it requires a stronger but different grip. Unlike the grip required for hanging, the new grip could hold objects relatively steady as stones were knocked against stones. (If you think this is easy, take up flint-knapping and get back to me.) This new grip is the origin of the enlarged thenar eminence in humans. But the australopithecine hand still has curved fingers. Again, a function is added. It does not replace another function.

When the climbing function *did* start to be replaced, a host of new tasks were being added. With the arrival of the genus *Homo*, we now have a hand without curved fingers – at least with most species of the genus. But the increasing multiplicity of cultural patterns in *Homo* convinces me that these new hands, whatever they may have lost or de-emphasized in earlier climbing abilities, must have added new skills. Even with the earliest *Homo*, we start to see the building of shelters, the probable use of fire, and certainly more efficient processing of animal carcasses than was the case with *Australopithecus*. So, although I cannot point to specific anatomical changes that accompanied these new technological adaptations, I am sure that the versatility of the hand has increased over time in the *Homo* genus.

To recap: the hand is the main point of application for a generalist animal that keeps adding things to its repertoire of movements. Therefore, overspecialization in hand-use goes against the way the hand has evolved. Injury is inevitable if we ignore this.

I repeat what I stated at the beginning: The purpose of this brief survey is not to provide new facts, but to put old and well-known facts into a new – and I hope persuasive – perspective that will change behaviors, for those of us who need to change behaviors. How specifically can we accomplish this?

II. Self-Care for Rolfers

I am a cross-dresser!

Did that grab your attention? What I mean is that I wear some items made for women; specifically, shoes and gloves. My reason is not a fondness for high heels and such. Rather, it's the fact that my hands and feet are small, even for my size. My Vibram FiveFingers® shoes and my hiking gloves are only available to me in *women's* sizes.

What has this to do with my self-care as a Rolfer? My little hands are simultaneously a gift and a challenge in my Rolfing® Structural Integration (SI) practice. On the one hand, my little fingers are an advantage when I enter narrow and congested places. I find seventh-hour work a lot easier than do some of my sturdier-handed colleagues. But compared to my more solidly-constructed friends, I was initially more prone to pain in my hands. When I say *initially*, I'm talking about seventeen years ago. In retrospect, this is surprising, given that I've always done a lot of mystical musing about mindful walking and running as "playing the piano with your toes." It took me years to start using my hands in a variety of ways. Opening up that toolbox, laying out the tools, choosing my tools wisely – these were skills that I only developed over time. Nor am I finished learning. I keep finding the hidden drawers that contain more tools, tools I never knew were in the box.

I have made the mistake of relying too much on my thumbs – and paid the price.

Now I save my thumbs for the times when they are the best tool for the task at hand. Instead I use fingertips, the heel of the hand, and various configurations of knuckles, not to mention elbows and forearms. Out of all these, however, I find myself called to emphasize one of these tools. I do this because this tool fits so well with the phylogeny of movement, especially as it can help us work on bodies.

III. Knuckles: Rolfing SI as Butchery

This tool that I want to highlight is the edge of the four knuckles at the ends of the first metacarpals, used as an edged tool for separating intermuscular septa and other lines of potential freedom (see Figure 1).

I like knuckles because they are hard. They're almost like using stones or other tools, which some bodyworkers do. But knuckles still have nerve endings, especially if we train ourselves to perceive through our knuckles.

But there's another thing I like about knuckles: they wake up old patterns in me. They awaken body dynamics that help me use my weight effectively when I apply force. And at 108 pounds, I need all the help I can get! I'm not talking about knuckle-walking here. I'm talking about something more recent, but still very old. Our ancestors were butchering most animals long before we hunted or killed them. As scavengers, our first tools were not weapons but *food processors*, tools that were used to chop up a variety of plant and animal matter. We knew that separating a joint quickly was often the difference between carrying off the leg of an abandoned kill and having to surrender it to our competitors.

I like to use my knuckles because they remind me of the edge of a hand-ax fitting neatly into my palm (see Figure 2). I can recruit very old synapses to the task of *deconstructing bodies*. I can relax into my task instead of muscling through it.

The key, I feel, is to get the ego out of the way. And the ego usually lives in our heads. To the extent that we allow all our other tools to reveal their potentialities and to communicate their truths, our work will be play.

By the way, it helps that I am personally familiar with cutting up meat. I am a committed carnivore, and I prefer my meat organic. Organic meat is expensive, but the bigger the piece, the lower the price per pound. I have learned to deal with legs of lamb, whole ducks, etc. And separating tissues feels a lot like cutting up meat – though that's not something I generally tell my clients! This helps with body mechanics, but also with perception. Which brings me to my final point.

IV. Parting Shots

My hands are smarter than my head. This makes it increasingly difficult to put into words the things I learn when I work. My hands question the tissues under them, make decisions, choose forks in the road, and lead me on explorations that I then struggle to explain verbally. (Granted, going back over the anatomy is vital if I ever want to repeat what I just did. That's why I continue to be an anatomy geek.)

In having hands smarter than my head, I am far from unique. Ask any good cook, potter, calligrapher, the list goes on. Potentially, we all have hands smarter than our heads. Why is this? It is because our hands are vastly older than our heads. Therefore, they are vastly wiser.

So proper care of the hand is not just about good body mechanics. It is also about listening to our hands. It is about allowing the hands to guide our perceptions. Like the human body overall, the human hand is designed for generalist work – but also generality of perception. Like the rest of the body, the hand has evolved to *do*, but also to *perceive*, many things well, not just a few things perfectly. And as I have often repeated, the perfect is the enemy of the good.

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Figure 2: Knuckles with tool. Note the different placement of the thumb compared to Figure 1. The tool is not an Olduvai hand ax, but a *gua sha* tool of remarkably similar shape.

Bibliography

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